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Electrical Microdrill & Saw

Sl.No.	Specifications
1	**CONSOLE**
•	It should be a multispecialty console with provision to attach multiple handpieces such as Neuro Drill, ENT Shaver(microdebriber), Small bone saws & Heavy Duty orthopaedic power tools, Bone mill etc.
•	It should have touchscreen capability.
•	It should have the provision to attach 2 or 3 hand pieces simultaneously and should be able to select any one handpiece by a click of the footswitch.
•	The console should have the provision to use 2 handpieces simultaneously with 1or 2 foot switches.
•	Power Supply should be 220-240V only 50-60Hz.
•	It should identify different hand pieces with display on console.
•	It should be programmable as per surgeon preference.
•	It should have function of controlling brightness, contrast and alarms on the console.
•	It should have the option of controlling the speeds and features of the different types of hand pieces from the same unit.
•	Console should offer change from variable/fixed mode forward / reverese / ossicilation mode.
•	Integrated irrigation pump should be available for debrider, drill & saw system.
•	Should have option to save surgeon preferred setting inside the console /Presset setting must be there
•	Should have torque adjustment software to deliver desired torque as per surgeon preference.
2	**FOOTSWITCH**
•	Should be bi-directional footswitch with two pads.
•	Should have fully programmable footswitch as user needs.
•	User should be able to control following functions via footswitch Forward/ Reverse/Oscillation, Increase/ Decrease the speed, Enable/Disable the handpiece.
•	Should have identification marks for ease of use.
3	**MICRO DRILL HANDPIECE**
•	Should run at RPM upto 50000.
•	Sterilizable through steam/ETO/ flash autoclavable.
•	Should have torque in range of 4.5-4.8 in oz.
•	Weight of the handpiece should not be more than 200grms
•	Should be made of durable material.
•	Should have special coating tolearble to multiple SPD processing cycles.
4	**MICRO SAW HANDPIECES**
•	Maintainence free motor to be provided with each type of saw
•	Sterilizable through steam/ETO/ flash autoclavable
•	Should have output/peak power of 130 watt or more

•	Should have special coating tolearble to multiple SPD processing cycles
•	Should have straight attachment with micro drill of length between 8 to 11cm
•	Should have angled attachment with micro drill of length between 13-16cm
•	Should have compatibility with torque adjustment software in console to deliver torque as per the need of surgeon
a	**Saggital Saw**
•	Should run at CPM of 25000 cpm or more
•	Weight of the handpiece should not be more than 200grms
b	**Oscillating Saw**
•	Should run at CPM of 20000 cpm
•	Weight of the handpiece should not be more than 250grms
c	**Reciprocating saw**
•	Should run at CPM of 14000 cpm
•	Weight of the handpiece should not be more than 250 grms
5	**Universal Driver**
•	Should run at RPM of 1500 cpm
•	Weight of the handpiece should not be more than 600 grms
•	Should have Torque up to 14in/Ibs
•	Should be supplied with Universal Collet which takes both wires and pins between 0.7 to 3.2 mm range
6	**Connecting Cord**
•	Should be supplied with cord used to connect micro drill, Saggital Saw, Oscillating saw and reciporcating saw to console.
•	Length of cord should be up to 12 ft
7	**BURS/BLADES**
•	Should be supplied with cutting burs for Micro drill fom size in between 2mm to 7mm -10Pcs of Each size
•	Should be supplied with diamond burs for micro drill from size in between 2 mm to 7mm - 10Pcs of Each size
•	Should be supplied with assorted saw blades of different sizes.
•	Should be supplied with routers in sizes range of 8mm/ 12 mm/ 20 mm / 30 mm for M/S Surgery compatible with micro drill -1 Pcs of Each size
8	**Other**
•	International Standards: The unit should comply with international standard and should have EU CE from a notified body/US FDA/CDSCO/BIS
•	Must be supplied with Steriliser Container -1 set which could accommodate all the attchments

	Grossing Station
Sl.No.	**Specifications**
1	The equipment should be a floor mounted & should have hydraulic height adjustment facility from 2.5 feet to 3.5 feet approximately.
2	"There should be facility for video, audio recording as well as photography attachment. The photography attachment should have facility for enlargement.
3	Should be supplied with the following: (i) Camera mount facility for digital camera to securely hold camera, should have adjustable ball and socket system, to let the user put camera right where he/she wants it and also should allow ease of adjustment & better coverage. (ii) Video camera mount which holds video camera securely, adjustable ball & socket system, in order to let the user to put the video camera right where he/she wants it & also allow for ease of adjustment & better coverage.
4	Should be supplied with the following: (1) Digital SLR Camera with 18-55 lens, CMOS Sensor, 16 GB card for recording good quality of photographs with computer inter phase (18.0 Mega Pixel). HDMI cable & Carry bag should also be provided. (2) Video Camera: Quality should be suitable for purpose of recording grossing steps, a CC TV Camera should be provided.
5	Specification for CC TV Camera:-
6	Should have 16 Mega pixel or better.
7	Optical Zoom-12x or better Digital Zoom-16x or better o Focus-Autofocus o Built-Durable & robust, shock resistant and capable of withstanding light showers. Video-Full HD 1080, should save still images during video recording.
8	Sensor-CMOS Sensor o Connectivity-USB 2.0
9	A compatible DVR with foot switch should be provided.
10	Memory-Minimum 16 GB Micro SD Card or better.
11	Dimensions-Less than 90 mm (w) x 90 mm (h) x 200 mm (d)
12	Weight-Not more than 900 gram.
13	Accessories- USB Cable, AC Adaptor, Power Cord, Lens Cap, Micro HDMI Cable.
14	Warranty-Two (2) years.

15	(3) Digital voice recorder: Audio recorder stacked with premium features and enhanced DSS Player Pro with flex arm microphone and Dictation software for outstanding performance should be available. For IT support, the following should be supplied: (i) Computer from Branded company 3.0GHZ, Intel Core i5 or more ,4 GB DDR 3RAM or more, DVD writer, 500 GB or higher HDD, along with 18" Flat LED screen monitor, 2USB 2.0 port SD Card slot with in-built CPU. (ii) Mount for Monitor and keyboard with mouse. There should be facility for digital measurement of grossing specimens
16	There should be IT support for storage and retrieval of data recorded with TFT display and recording system.
17	There should be a formalin tank on top of the station with direct supply system to the work area or there should be a formalin container with spigot.
18	Should have Hot and Cold water mixing faucet with foot operated control (foot switch/pedal) for hot and cold water On/Off.
19	The station should be made of noncorrosive high grade stainless steel.
20	Should have Self Contained Ventilation Assembly with blowers & replacement filters. 10 additional filters should be provided. Sink with removable filter and ½ hp Commercial Disposal system of corrosion resistant stainless steel construction with on/ off switch should be provided.
21	ILLUMINATION: (i) Top mounted LED LIGHT fixtures (ii) Incandescent light with 3X MAGNIFIER mounted on flexible arm. Magnetic front board should be available to stick instruments for grossing.
22	Dimension of the table should be approximately: Length: 4.5 to 5.5 feet. Height (Lowest): 6.5 to 7.0 feet. Height (Fully elevated): 7.0 to 9.0 feet. Width: 2 to 3 feet.
23	Equipment should have END RINSE ASSEMBLY (with ON/OFF valve) which allows debris to flow towards the sink basin.
24	ii. Should be supplied with SPRAY HOSE with Easy grip assembly with flexible hose, conveniently placed for easy spray cleaning of debris.
25	iii. DISSECTION BOARD: Polypropylene construction to help preserve dissecting knives and scalpels when in use.
26	v. REMOVABLE MEASURING RULE: Anticorrosive metal device for ruling a portion of the subject should be provided, the ruler should include a scale in centimetres and inches. Document supporting track record and satisfactory performance from institutes of national importance (minimum one) should be provided.
27	Five (5) years warranty and Five (5) years CMC.
28	Following Accessories should be provided:

1	KNIFE SHARPENER to provide straight and serrated edges; should be 100% diamond abrasive; should have a three step process to provide razor sharp edges. First step should be Sharpening, second step should be honing and the last step should be for stropping and polishing.
2	HAND HELD BONE SAW: Autopsy Saw with Bone vacuum dust collector having HEPA filter should be provided. Autopsy saw should come with 10 feet cord for greater mobility and with following blades and accessories:- i. Round Blade without arbour (2.5 in/6 cm): 2 Nos. ii. Section Blade without arbour (2.5 in/6 cm): 2 Nos. iii. Standard Saw Arbor: 2 Nos. The saw should be able to be connected to the Bone Vacuum Dust Collector. Bone Vacuum Dust Collector should come with vacuum nozzle, disposable filter cartridge (HEPA Filter) and 10 feet power cable.
3	C- FOLD PAPER TOWEL HOLDER: Made of stainless steel.
4	EYE WASH DRENCH ASSEMBLY: Should have flip down way to remove eye contaminants, auto flow eyewash.
5	HANDS FREE SOAP DISPENSER: should have pump mechanism to provide quick and precise dispensing; should be Deck or Wall Mount
6	ADJUSTABLE AND STATIONERY STAINLESS STEEL SHELVING to keep accessories
7	WRITING PLATFORM with a lift over storage drawer.
8	HANGING DIGITAL AUTOPSY SCALE with Scale Pole & Bracket factory fitted to weigh specimens of 0.1 Kg x 13.6 Kg • Ability to 0 tare bow, ring and pan • Bow, ring and pan should be provided • The Scale Pole height should be able to be secured anywhere along with 360 degree turning ability
9	CASSETTE HOLDERS: three boxes which can be mount to rail in front of the grossing station.
10	TWO FORM HOLDERS mounted on the table to store documents away from any fluids and risk of damage.
11	GLOVE BOX HOLDER· 05 YEARS WARRANTY WITH QUOTE FOR NEXT 05 YEARS CMC IS REQUIRED INCLUDING ALL ACCESSORIES.

Fully Automated Immuno-histochemistry Setup

Sl.No.	Specifications
1	Fully automated complete walk away slide stainer for IHC, FDA approved DISH Her2/Neu, ISH and FISH
2	Baking to counter staining should be on-board.
3	Compatibility for paraffin (dewaxed), and frozen sections aswell as cytology smears.
4	Should be capable of running 4 or more staining protocols.
5	Should have throughput of at least 20 slides at a time.
6	IHC run time should not be more than 3.5 hour
7	Antibody & micro reagent Consumption per slide should not be more than 100pI.
8	It should be open for third party primary antibody.
9	It should able to do test as well as control on sameslide without any extra Consumption of reagents.
10	Level sensors for the reagents on board the system.
11	The system should have built in Antigen Retrieval System & not a separate module system.
12	Should have a Slide Labeling System. (Bar code reader/ Printer)
13	Should have facility of Individual programming for each slide with any protocol.
14	Should have humidity and temperature regulation for operation between 35”C 100oC and 10-90% humidity.
15	Should be compatible for use with standardized protocols oruserdefined protocols.
16	Should come with compatible computer and software.
17	The software should be upgradable. Supplier must upgrade the software with latest version from time to time at no extra cost.
18	The reagent carousal holds at least 22-25 ready to use reagent container.
19	The equipment should be US-FDA / European CE / ISO/BIS/CDSCO/Equivalent certified.
20	All installation / service reports are to be attached along with satisfactory performance and servicing report from a government institute.
21	Demonstration of equipment is required during technical evaluation
22	Five years warranty and CMC afterward cost should be provided.
23	Instrument should be able to do FDA approved ALK (D5F3), Her2/neu and PD-L1 assay for targeted drug therapy, MMR etc.
24	Instrument should be able to perform FDA approved Dual ISH for Her-2/neu and Chromosome 17.
25	Instrument should have the capability to run both DAB and red detection at the same time in a single run.
26	Company should provide operators training, instrument qualifications, operation qualification, performance qualification, training certificate, free of cost
27	Should be modular, future attachment and upgradation of modules for higher workloads should be possible.

Automated High Throughput Liquid Based Cytology (LBC)

Sl.No.	Specifications
1	The system should work on the principle of Liquid Based Cytology.
2	The system should be USA FDA/CE/ISO/BOIOS/CDSCO approved.
3	The system should be capable of handling a high throughput and able to process multiple specimens at the same time for best lab efficiencies with Automation.
4	The preservative fluid for Liquid Based Sample collection must be nonhazardous and easy to transport and store with shelf life.
5	The System should be capable of preparing thin layered slides within a standardized smear diameter from the specimen for easy analysis and interpretation preferably less than 15mm diameter.
6	The system should be capable of providing a complete solution of automated slide preparation and automated staining for both gynecological and non-gynecological workloads.
7	The sample collection system should be capable of use with various methods of specimen collection systems like brushes, spatula, and endo-cervical brushes.
8	All the accessory equipment like a centrifuge, sample racks, vortex mixer, pipettes, and ancillaries required for making a smear should be provided along with the equipment
9	The system should have proven capability of minimizing unsatisfactory cases and should work well with bloody and mucoid specimens without any additional testing procedures than normal methods for the system.
10	The system should be capable of performing well with Gynecological and Non Gynecological specimens.
11	The system should be capable of preparing multiple slides from the same specimen if required for archiving, research or additional work
12	The system should be compatible with ancillary tests like immunohistochemistry HPV DNA testing.
13	The system should be capable of providing a complete solution of automated slide preparation and automated staining for both gynecological and non-gynecological workloads.
14	The system should have a high throughput equivalent to 30-35 slides/hour.
15	The system should be robust and capable of running at regular electric requirements as in India.
16	The system should have proven capability of a statistically significant increase in Cervical Cancer diagnosis like HSIL+ and LSIL+ detection over conventional pap smears, hence capable of replacing conventional pap smears for cervical cancer screenings.
17	Terms and Conditions of the training component of faculty, research student and Technologist should be specifically mentioned.

18	The Hidden cost along with bulleted list of reagents, chemical and other materials required but not included with the machine, should be elaborated and price to be quoted separately.
19	Provision for power backup in case of power failure should be there with the machine.
20	Warranty 5 years & CMC 5 years.

	Refrigerated Micro-Centrifuge with Plates
Sl.No.	Technical Specification
1	Automatic Rotor Detection, Check of presence of Accessories and compatibility with maximum Speed
2	Minimum 10 Storage Programing
3	Shot Spin and Pre-Cool function should be there
4	Temperature Range up to -20 Deg. C
5	Digitally adjustment of Acceleration and Deceleration.
6	Setting facility for RCF and RPM both
7	Inside Bowl must be made by Stainless Steel
8	Controlled by Microprocessor Controlled along with 4 inch. LCD Alpha numerical Display.
9	Safety opening of the Lid in case of any absence of Electricity.
10	Construction in accordance with MD Directives and safety standards .
11	Maximum Capacity of RPM from 19,000 to 20,000 with Max. RCF of 37570
12	Noice level below
13	Capacity of 48 Tube of 2.0ml
14	Capacity of 96 Wells (8 X Microtitor) with 3200 RPM and 1470 RCF
15	Capacity of 2ml / 1.5ml with 24 tubes capacity (RPM from 14,000 to 15,000)
16	Last Set Parameter Recall facility
17	Calibration Window on Lind for speed.
18	Motor Overload Protection
19	Log of cumulative Run Time
20	Imbalance detection with Centrifugation Cut-Off.

	Ultrasound Machine
Sl.No.	**Specifications**
	A State-of-the-Art high end. USFDA/CE/Equivalent Indian Standards CERTIFIED Medical Ultrasound unit to be supplied Quoted unit should be capable of performing all Abdominal and Pelvic Imaging in Adults and Pediatric age group. Imaging of Small Parts. Endo-cavitary and musculoskeletal Imaging. Systems should have the capability of Fatty Liver Finding, Shear Wave Ultrasound Elastography and Contrast Imaging facility.
A	**The system should have the following essential features:**
1	The system should incorporate facility for High Resolution B mode, B+B, Quad B, M Mode, PW, Colour Doppler. Powder Doppler, Angio, Duplex and Triplex imaging modes.
2	Shear Wave Ultrasound Elastography Imaging should be provided to evaluate Relative Tissue Stiffness for Liver on Convex, Breast and other small part applications on Linear and Prostate for Endo-cavity Probe and Strain based elastography for Breast, prostate and other small part applications on Linear
3	The system should include at least 23" or more Full HD monitor with 1920*1080 pixel resolution with IPS technology/ LCD Monitor with Back Lit LED Monitor for better contrast and color sensitivity, arm with tilt, swivel and height adjustment facility, a separate touch screen should also be available
4	System should have 256 Grey scale with 12 bit converter
5	The system should have a fast boot up time of less than 60 seconds, when switch on from "OFF" position.
6	Dynamic range should be 230 dB Or more
7	System should have 2,00,000 ore more digital channel
8	Frame rate should be 2000 or more.
9	The system should have imaging depth of 50 cm or more
10	System should have real time compound imaging and it should available with trapezoid imaging in Linear probe/Convex Probe
11	The system should have Tissue Harmonic Imaging (THI) facility. The system should have THI capability on phased linear, 3D and curved array transducers. THI should be available in colour flow imaging, Mmode and 3D rendering modes.
12	The system should be able to work in combined mode of Harmonic image and Real- time compound imaging. The system should have Tissue Harmonic Imaging in Power Doppler mode.
13	Complete contrast imaging package with quantification should be provided as optional. It should be able to detect fundamental as well as second harmonic response of the contrast agent, dynamic contrast imaging with quantification in user selectable region of interest (Optional)
14	The system should have facility for extended field of viewing, reconstruction / panoramic imaging.

15	System should have 4 universal probe port connectivity
16	The system should have auto optimization features for ease of use and automatic quantification of Doppler parameters in real time and freeze modes.
17	Coded excitation /equivalent technology should be available to improve penetration and recover more tissue information for greater detail resolution at extended depths
18	One-touch image optimization should be available in 2D mode with one button automatic adjustment of TGC.
19	4x or more Zoom facility with high resolution results should be available in the system.
20	The system should have Cine loop review facility in individual and mixed modes with memory up to minimum of 400 images and 30 seconds of Doppler.
21	Equipment to be offered with following electronic Broad Bandwidth Probes
12(a)	Convex Array Transducer 1-5 MHz (+/- 1MHz) or higher range
12(b)	Linear transducer 5- 13 MHz (+/- 1MHz) or higher range and should be available
12c	Hockey stick transducer of frequency range of 7 – 17 MHz (-+ 2MHZ).
12(d)	Broad band Endocavitary Probe with frequency range 2-12 MHz (-+2 MHz) or higher range with reusable biopsy guide.
12(e)	Phased array probe 1- 5 Mhz (+/- 1MHz) or higher range and should be compatible for cardiac application with CW Doppler.
21(f)	Shear Wave Ultrasound Elastography and Contrast Imaging facility should be available in Convex Array Transducer & Linear transducer. Elastography measurement should be displayed in both m/s and Kpascel
22	The system should have facility of direct storage and retrieval of B/W and colour images (both frozen and cine loops) in the in-built hard disk drive inbuilt hard disk storage for images should be 500GB or more.
23	The system should have USB archival (DICOM and PC formal) facility.
24	The system should be DICOM 3.0 ready (like send, receive, print, acknowledge etc.)
25	A thermal Printer along with a certified DICOM Direct color paper printer (A4 size) / Direct Laser Jet Color Printer (No print through additional software) must be supplied along with the system.
26	The unit should be connected with institute RIS-PACS network in ready to use configuration
27	On line UPS For 30 minutes back up to support all functions of the unit.
29	System should have the Tissue adaptive technology to change the speed/intensity of sound apart from acoustic power option to adjust it according to the destiny of the tissues.
31	System should be with facilities of Color Flow, Power Flow, Directional Power flow & High spatial & temporal resolution color flow (fine flow, i.e., B Flow or e flow).
32	Advanced O&G and Contrast Imaging Package, basic cardiac application package, Fatty Liver Finding with Comprehensive Statically Report Package Must be included .
B	**After Sales and Warranty**

1	Comprehensive onsite warranty for five years from the date of issue of installation Certificate by the hospital should be provided. The warranty shall cover main unit including all transducers, accessories, batteries, plastic or rubber parts third party items and everything supplied as part of this tender.
2	Five years' comprehensive maintenance contract covering everything as warranty should be quoted. Breakup of yearly cost of CMC from 6th to 10th year should be mentioned in price bid.
3	After sales service: a factory trained service engineer should be available in Delhi. Service call must be attended within 12 hours.
4	Uptime guarantee: 95% uptime guarantee of the facility should be provided. Lf the downtime of the Facility (entire facility or part of it) exceeds 5%, penalty in the form of extension of warranty for the period double of the downtime period will be imposed.
	IMPORTANT INSTRUCTIONS:
1	All information in the tender document must be supported by original product data sheets or should be certified by the principals. Computer generated data sheet or photocopies or emails shall not be accepted.
2	All information asked for must be provided in the compliance statement under the headings given above.
3	There should be at least three working installations of the quoted models in the county with 'satisfactory service certificate' from the users should be submitted.
4	If the unit is being quoted by Indian agency which is not a direct subsidiary of the principals: an undertaking from the principals must be provided that in case of discontinuation or change of the agency, merger, acquisition or any corporate rearrangement. the principal will arrange for onsite maintenance of the unit and abide by all terms and conditions of the tender.
5	Spare parts and repair for the next 10 years must be ensured.

	MRI 1.5 T
Sl No.	**Specifications**
I	1.5 Tesla MRI System with state-of-the-art latest features commercially available at the time of supply should be quoted. The bidder should submit an undertaking that the system and any part thereof is not recycled/refurbished. The system should be based on user friendly platform, reliable and capable of providing excellent performance for clinical imaging and research. The detailed specification that follows shall be understood to be minimum requirement.
II	Should have import/manufacturing license from Central licensing Authority or State licensing authority of CDSCO for Medical Devices and copy of valid license should be submitted for the quoted model.In case the vendor has not yet obtained import/manufacturing license from CDSCO for the quoted model, proof of application for CDSCO medical device license to be submitted in the bid document and valid CDSCO license to be produced at the time of supply/ NOA for the quoted model
III	Offered system should be BIS / European CE with 4 digit notified body no / USFDA certified.
I V	The model / version should be the latest and launched in or after 2017. The undertaking should be submitted from the manufacturer for the same
1	**MAGNET**
a	Whole Body 1.5 Tesla Magnetic Resonance Imaging System optimized for higher performance in Whole Body and Vascular examinations with superconducting magnet, high performance gradients and digital Radio Frequency System
b	1.5T active shielded super conductive magnet should be short bore and non-claustrophobic.
c	It should have at least 60 cm patient bore with flared opening with maximum magnet length og 150Cm
e	Homogeneity of magnet should be less than 2 ppm over 50cm DSV
f	The magnet should be well ventilated and illuminated with built-in 2 way intercom for communication with patient.
g	Cryogen vessel to be of Helium only with appropriate super thermal shielding and refrigeration facility for minimum Helium boil-off, Specify the Helium tank capacity and boil-off rate.
h	Helium level monitoring equipment in the magnet and facility for appropriate quick shutdown of the magnet in the event of emergency
i	Helium refill time should not be not less than 2years. Please mention the helium refill time.
2	**SHIM SYSTEM**
a	High performance, highly stable shim system with global and localized automated shimming for high homogeneity magnetic field for imaging and spectroscopy.
b	Auto shim should be available to shim the magnet with patient in position
3	**GRADIENT SYSTEM**
a.	Actively shielded Gradient system
b.	The gradient should be actively shielded with each axis having a slew rate of at least 125 T/m/s and a peak amplitude of 33 mT/m.

c.	The system should have efficient and adequate Eddy current compensation
d.	Effective cooling system for gradient coil and power supply
4	**RF SYSTEM**
a.	A fully digital RF system capable of transmitting power of at least 12 kw.
b.	It should also have at least 64 independent RF receiver channels along with necessary hardware to support quadrature ICP array/Matrix coils.
c.	It should support Parallel acquisition techniques with a factor of up to 4 in 2D.
d.	Should allow remote selection of coils and / or coil elements.
5	**Patient Table**
a	The table should be fully motorized, MRI Compatible computer controlled table movement in vertical and horizontal directions Position accuracy should be +/- 1.0 mm or better
b	Should be able to take at least 140 kg load.
c	The table should have facility for manual traction in case of emergency.
d.	Cushions and other patient comfort accessories. All parts of the table should be protected from liquid spill
e	The table should have patient hand-held alarm system.
f	The table should deliver the protocols for automatic bolus chasing in peripheral angio with automatic table movement.
6	**COMPUTER SYSTEM /IMAGE PROCESSOR I OPERATOR CONSOLE**
a.	The main Host computer should have a 19 inches or more high resolution LCD TFT color monitor with minimum 2MP matrix display.
b.	The system should have image storage capacity of at least 2,00,000 images in 256x256 matrix.
c.	The main console should have integrated facility for music system for the patient in the magnet room or dedicated music system should be supplied, if the main console does not have integrated facility for music system.
d.	Two way intercom system for patient communication.
e.	Latest Branded Computer with minimum withb i5 & 8GB RAM, included with 21" or more TFT/LCD monitor.
f.	MRI System should be enabled and networked to RIS/HIS/PACS
g.	The MR system should be regularly maintained including all accessories within the 5 Years Warranty and 5 Years CAMC period . If there is any software updates released by the company that has to be done at site without any additional charge.
h.	The MR computing software system should offer built-in security controls to protect the system from vulnerabilities that can result in cyberattacks or inappropriate access to patient data. The built-in security should comply with the latest international standards of data security and encryption, as well as with existing regulations to protect personal and protected health information (e.g. GDPR, HIPAA, any local regulation) , during the complete life of the system.
7	**MEASUREMENT SYSTEM**
a.	Largest Field of View should be at least 45 cm in all three axis.
b.	The measurement matrix should be from 128x128 to 1024x1024.
c.	Minimum 2D slice thickness mm should be equal to or less than 0.5
d.	Minimum 3D slice thickness mm should be equal to or less than 0.1
8	**COIL SYSTEM**

a.	The main body coil integrated to the magnet must be Quadrature / CP. In addition to this following coils should be quoted. Separate coil should be provided with respect toeach application mentioned below. There will be no overlap of a single coil on multiple application. Each coil would be supplied with its individual connector. The overlap of the connector with the coils is also not permissible.
b.	Neuro-vascular Coil with 11 or more channels or Head / Neck Coil , capable of high resolution neuro-vascular imaging
c..	Spine Array/Matrix Coils with atleast 12 channels for thoracic and lumbar spine imaging.
d.	Body Array/Matrix coil with 16 channels or more with at least 38 cm Z- axis coverage for imaging of abdomen, angiograms and heart with one or two body coils
e.	Dedicated Suitable surface coil/coil combination for peripheral angiography of 16 or more channel with coverage of 80cm or more.
f.	One Bilateral Breast Coil with at least 4 channels.
g.	SHOULDER coils a.a. Dedicated Rigid Shoulder coil —6 channel -1 No b.flex coils — 2nos. (One large and one small as specified below & as per BOQ) i.Flex Coil (16 channel or more) OR multipurpose coil of 16 channel or more- Large FOV - 1 No ii.Flex Coil (4 channel or more) - Small FOV -1 No
h.	Dedicated Knee Coil with at least 8 channels.
i.	High resolution foot/ ankle coil — 8 channels or more
	The system should continuously monitor the RF coils used during scanning to detect failure modes. RF coils should not require either set up time or coil tuning; Multi coil connection for up to 2 or more coils simultaneous scanning without patient repositioning i.e. like 4GTIM/ GEM/Dstream coil combination should be quoted as standard.
	Suitable Coil Storage Cart should be supplied for keeping the all supplied coils.
	Added Para : The bidder should provide line wise break-up for offered number and name/model of the coil against each coil specified in the technical specification & BOQ.
9	**APPLICATION SEQUENCES**
a.	The system should have basic sequences package with Spin Echo, InversionRecovery, Turbo Spin Echo with high turbo factor of 256 or more, Gradient Echo with ETL of 255 or more, FLAIR.
b.	Single slice, multiple single slice, multiple slice, multiple stacks, radial stacks and 3D acquisitions for all applications.
c.	Single and Multi shot EPI imaging techniques with ETL factor of 255 or more
d.	Fat suppression for high quality images both STIR and SPIR.
e.	The system should acquire motion artifact free images in T2 studies of brain in restless patients (Propeller, Multivane, Blade etc)
f.	Dynamic study for pre and post contrast scans and time intensity studies
g.	MR angio Imaging: Should have 2D/3D TOF, 2D/3D PC , MTS and TONE, CE- MRA, Facilities for Accelerated time resolved vascular imaging with applications like Treats/Tracks/Tricks sequences.

h.	Fat and water excitation package. Diffusion Weighted Imaging, with at least b value of 5000 or more.
i.	Bolus chasing with automatic and manual triggering from fluro mode to 3D acquisition mode with moving table facility.
j.	Non contrast enhanced peripheral angiography for arterial flow with Native/Trance/Inhance sequences
k.	Whole body screening imaging studies for metastasis
I.	High resolution Abdominal and Liver imaging in breathold and free breathing modes with respirator triggered volume acquisitions
m.	The system should have basic and advanced MRCP packages including free breathing and 3D techniques.
n.	The system should have facility for flow quantification of CSF, vessel flow and hepatobiliary system.
o.	The system should have the Hydrogen, Single Voxel spectroscopy, Multivoxel,Multislice&Multiangle 2D, 3D Spectroscopy and Chemical shift imaging in 2D/3D. The complete processing/post-processing software including color metabolite maps should be available on main console. Complete prostate spectroscopy hardware and applications should be provided.
p.	Advanced Cardiac Applications: VCG gating, Morphology/wall motion; Cine perfusion imaging; Myocardial viability imaging; Arrhythmia rejection techniques, Advanced Cardiac Ventricular Measurement Analysis; Cine Cardiac Tagging Techniques; Coronary artery techniques; real time interactive imaging, 2D/3D fast field echo/balanced/steady state techniques and evaluation package on workstation
q.	Advanced Breast imaging Package.
r.	Perfusion imaging of brain (both contrast and T1 perfusion) Iron and fat quantification software for liver heart, etc .T1 and T2 relaxation values
s.	Susceptibility weighted imaging (i.e.SWI) Nenous BOLD imaging.
t.	Multi Direction DWI and DTI with minimum of 32 directions (Complete package including quantification and tractography software). The post processing software should be able to quantify the FA, ADC, number of Fibres through a ROI. The Fibre depiction should be editable as per the angular and FA threshold.
u.	High resolution imaging for inner ear
10	**Workstation (Other than Main Console)**
1	Server client architecture with 3 concurrent user licenses to be supplied with the workstation for all the application. Licenses : 3 Concurrent license here implies the capability to process all the loaded software to be accessible and usable on all the systems simultaneously without any processing delay. Hardware : Node: The vendor has to supply the hardware in the form of CPU and Medical grade monitor 18" or more. Hardware Server : The server should have image storage capacity of at least 4 Tera bytes or more, and at least 64 GB RAM. The server hardware to be included with 24" or more TFT / LCD monitor. Mandatory hardware replacement of the server, client PCs and medical grade monitors to the latest available and compatible version, after 5 years from installation. DICOM 3.0 compatibility and interfacing with other modalities must be possible.

2	All necessary software including post-processing software for all offered applications including evaluation for fMRI, perfusion (T1 perfusion and T2* perfusion), diffusion, DTI with fibre tracking, cardiac evaluation, and other associated post processing like MIP, MPR, surface reconstruction should be provided.
	The workstation should have the following features:
a.	Cardiac perfusion analysis, quantitative T1 mapping with colour metabolite mapping, quantification of the CSF flow data.
b.	Image Fusion software should be provided for Inter-modality and Intra-modality fusion.
c.	Software for vascular properties like IAUC, KEP as standard.
d.	DSA images should be viewable in Subtraction mode.
e.	Necessary and adequate hardware and software for sending and receiving the patient data {text + images}. Printing of films should be possible from both main console and workstation.
f.	Workstation should also be able to function independent of the main console. Post processing of the MRS data including for CSI with paramagnetic metabolic mapping
g.	Capability to calculate colour display of real MTT, real CBV, and real CBF
h.	Compatibility with data from other MRI system for post processing.
i.	Output in the form of jpeg, avi / equivalent formats should be possible.
j.	Cardiac Package: two licenses: The workstation should have display of Cardiac cine images in movie mode with rapid avi creation and should have comprehensive cardiac post processing software including for coronary MRA with regular free updates in future. Calculation of ventricular area and volume, stroke volume, ejection fraction and relative ejection fraction, Time volume diagram generation, filling rates and myocardial wall motion, Graphic display of output calculation of flow and velocity parameter with colour coded display of velocity parameters. Diffusion tensor Imaging, 3D myocardial tagging should be possible.
k.	Cartilage Assesment software to be included as standard .
11	**SAFETY FEATURES**
	The System should have following safety features
a.	The magnet system should include an Emergency Ramp Down unit (ERDU) for fast reduction of the magnetic field with Ramp Down time below 3 minutes
b.	The magnet should have quench bands that contain the fringe fields to a specified value in the event of a magnet quench
c.	Real time SAR calculation should be performed by software to ensure that RF power levels comply with regulatory guidelines and are displayed on each image
d.	The system shall have manual override of the motor drive for quick removal of the patients from the magnet bore
e.	Temperature sensor (built in) for magnet refrigeration efficiency must be provided.
f.	A CCTV system with colour LCD display to observe the patient should be provided:
12	**Additional Points**
1	Sequence optimization using compressed sensing/Hyper Sense/Compressed Sense technique should be offered in Neuro, body, cardiac &MSK imaging for all sequence 2D, 3D Scans.
2	Multi-slice Simultaneous Sequence to provide Better image quality in EPI and TSE sequence.
3	Sequence to provide IRON and FAT quantification.
4	Prostate spectroscopy must be offered.
13	**DOCUMENTATION**

a.	DICOM compatible Dry Chemistry laser camera with integrated processor for filming from main console & workstation.
b.	Printing on films of 14" x 17",11" x 14" and 10" x 8" sizes in a resolution of 500 or more dpi. It should be possible to connect other imaging modalities to the printer. 500 no.s of each-size films to be provided.
14	UPS
a.	The system should be provided with UPS system for the complete system with at least 30 minute back up.
15	**SUITABLE RF ENCLOSURE**
	RF Cabin: The system should be supplied with the RF cabin with RF room shielding, RF Door, RF window, and interiors for the same should be carried out suitably.
16	**ACCESSORIES**
1	Storage box for all coils
2	MRI Compatible Dual Syringe Pressure injector : Independent dual-Syringe Pressure injector with following Features; Non-ferrous, automatic syringe size detection, performs single and dual phase contrast injections, provides Saline flush delivery and allows timed contrast delivery Must be compatible with 5, 7.5 &10m1 pre-filled contrast syringes and 50 ml syringes for both saline & contrast (100 Nos of 50 ml Syringes with 100 nos. of tube connectors should be provided) Must be able to observe progress of injection and view injection result
3	MRI Compatible ECG electrodes (100 no.s Disposable Electrodes for MRI Image gating)
4	One MRI compatible Multiparmeter Vital Signs Patient Monitor of 5000 Gauss Compliance in MRI Room and One Slave monitor in console room with following modules provision to monitor the following; Monitor should be atleast 10" display
a.	Heart rate
b.	ECG
c.	NIBP — Size of Cuffs (adult &pediatric neonatal)
d.	Respiration (Capnograph)
e.	Oxygen saturation — Pulse oximeter with adult, pediatric probe, and neonatal probes - 2 sets (with the spare probes), Should have plethysmograph perfusion factor.
f.	ETCO2 and ETAA (end tidal anesthetic agents)
g.	All consumables required for installation & commissioning of the system should be supplied. 200 Nos. of per patient consumables should be provided during supply of the system. Unit price for per patient consumable should be quoted separately and the same should be valid during warranty period.
h.	1 IBP
i	Dual Temperature (adult and pediatric)
5	MRI Room oxygen deficiency level monitor -1 no MRI compatible WHEEL CHAIR - 2 NOS
6	Arrangement of Gas lines from available MGPS of Hospital (complying with the best in quality and safety as per the existing international norms) in recovery room and magnet room. Any problem / maintainence will be a part of the complete warranty and CMC and hence these works should be undertaken accordingly. — MRI compatible high pressure gas outlet for :
a.	Oxygen
b.	Air

c.	Nitrous Oxide with MRI compatible indexed system.
d.	Vacuum suction
7	MRI Compatible 1 set of Laryngoscope :4 sizes blades- Neonatal, paediatrics, adult, extra
8	MRI compatible Magill forceps : Adult & paediatric size- Two each.
9	Stylet for endotracheal tube : Adult, paediatric size- Three each
10	MRI compatible Clamps 2 Nos : Either towel clip or artery forceps.
11	MRI Compatible two IV stands.
12	Two non-magnetic height adjustable patient transfer trolleys, which do not alarm in FerroMagnetic Detector System, should be provided
13	Two Anaesthesia bed/trolley for recovery room
14	Metal detectors:,
i.	Hand held metal detector- 02 nos.
ii.	Walk through Metal detector with multiple fluxgate or equivalent sensor to help detect approaching ferro magnetic hazards and with door ignore function to be installed at entry door of MRI Scanner Room (Zone III type) - 01 no. Must have continuous detection or alert capability following MRI door opening, or following preceding alert. Must allow passage of patient trolley.
15	Phantoms to be provided for regular QA studies.
16	Complete manuals and other necessary documentations should be provided.
17	TRAINING
	On site Training for a period of 4 Weeks
18	SITE MODIFICATION WORK- 1.5 T MRI
a.	The system should be installed and handed over in working condition with all necessary electrical, air conditioning and civil work undertaken by the vendor in consultation with the user dept.
b.	All necessary interconnecting interfaces, cable, modules, and other hardware and software to fully integrate the system for full operational status.
	The Site-Modification Scope of Work - MRI The scope of work includes complete Civil work, Electrical, Plumbing, Furnishing, Air-conditioning, Fire detection system for the construction of 1.5 T MRI Scan Centre.
a.	The MRI should be sited in such a manner; in order to minimise the effect of fringe magnetic field on surrounding areas. The areas lying within 5 Gauss line should be clearly demarcated and cordoned off with adequate warning.
b.	Care should be taken to provide easy negotiation of the patient stretchers/ trolleys through corridors and doors.
c.	RF shielding for doors, walls, glass viewer etc.
d.	Furniture like desk, chairs, shelves etc.
e.	Patient stretcher and other furniture/ accessory to make the scan centre functional.
	The cost of Site Modification Work for the area of 1500sq.ft and Air-conditioning of Tonnage 25 TR (including standby unit/s) will be considered for Ranking / Evaluation purpose
	Moreover Bidders will have to quote the Unit Rates of the following components of Site Modification work and detailed BOQ should be mentioned.
a.	Civil works (in units like sq.m / cubic m , kg etc)
b.	Electrical work (in unit s like per metre price , unit price for panel , isolation etc)

c.	Public health (plumbing and sanitary fittings like per metre of pipe, number of points etc.)
d.	Air Conditioning (HVAC)-25tr ge, type of false ceiling and sq.m rate etc
e.	Interior Furnishing & Furniture
f.	Miscellaneous
	Scope of work for Site Modification MRI unit works:- The supplier should inspect the proposed site and submit all the detailed structural and architectural drawings and BOQ for the proposed MRI Scan Centres along with technical bid of the tender. The MRI SCAN CENTRE shall consist of the following rooms:
a.	MRI Room
b.	Console room
c.	Equipment room
d.	Patient preparation room (two components, - one for the induction of patients undergoing MRI under anaesthesia and other room as recovery)
g.	Radiologist room
	Civil work
	Demolition of existing walls etc and reconstruction under MRI complex is unambiguously included in the Site Modification scope of work. This includes, but is not limited to expanding the area of MRI gantry room so as to make it compliant for installation of a 1.5T strength magnet.
a)	Civil construction work including construction of brick wall, plastering, flooring as per the approved plan and equipment layout plan.
b)	Concrete bed at MRI equipment area.
c)	Platform for unloading and shifting the MRI should be provided if necessary.
d)	Platform for Chiller unit would be provided. Fencing and weather protection facility should be provided for the Chiller unit.
e)	Cable tray, trench & channel — necessary trenches, cable tray and channels at required location would be provided. Supply Installation of Main core cable from the LT panel to MR room is also a part of the tender
f)	All the construction/Modification work to be done as per the final plan approved by the purchaser.
g)	Active and passive room shielding for magnetic, fringe field should be provided as per the requirement of the equipment.
h)	The entire complex will be made rodent/pest proof.
i)	**Decommissioning of Older MRI System &associatedequipment is responsibility of the Bidder and must be included in the offer**
a)	**Flooring :**

	Anti static Vinyl flooring within the Magnet room Providing and laying approved quality , colour, design and shade fully homogeneous 600 x 600 mm(thickness to be specified by the manufacturer) vitrified tile flooring (Marbonite or Granamite, confirming to IS code 15622 with water absorption less than 0.08%) flooring in pattern as detailed in drawing or as directed by the EIC and grouted with matching colour approved quality readymade grout, curing, cleaning etc to required line level etc. all complete at all leads, lifts and heights to the entire satisfaction of the EIC. Providing and fixing 2- 3mm thick POP protection over polythene covering sheet to flooring areas till handed over and cleaning, etc all complete as per drawings & specification and as directed by EIC with 100mm tile skirting to match in console room , equipment room , patient preparation room, reporting room , patient waiting area and radiologist room. Note: Mode of measurement (Finished surface area of the tiles shall be measured and paid. Rate shall be inclusive of providing and laying levelling course, PVC spacers, providing and applying epoxy grout and no additional payment shall be made for wastages)
	50 mm thick cement concrete flooring at all heights and locations including scaffolding , preparing the surfaces , neat cement finished to correct line or as required to receive architectural finish , level and plumb , curing wherever required complete as per requirements and drawings , with Vinyl flooring in MRI equipment / UPS room.
b)	**Painting**
	Two coats Plastic Emulsion Paint over 2 coats of wall putty including primer in patient preparation area, Lobby area, console room, MRI equipment room etc. Pre laminated particleboard wall panelling in MRI examination room.
c)	**False Ceiling**
	Acoustical tile for ceiling with light weight insulating material of high quality supported on grid or finished seamless with support above ceiling. Finished with white paint or powder coated with white paint, if metallic. Ceiling height to suit the equipment mount and clearances.
d)	**Plumbing work**
	Copper pipes to be used for plumbing the Chiller to the MRI
	Note:
1	All sanitary wares & CP brass fitting & fixtures shall be of first quality with ISI mark (unless otherwise specified) and shall be of the make as per the latest approved list of materials as per list of approved make/model, if any. They shall be got approved by the Engineer-in-charge before incorporating in the work, however the water supply line and drain line will be provided by consignee upto MRI complex under scope of vendor.
2	All the items include testing after completion of the work. Concealed/underground GI pipe line is to be wrapped with hessian cloth and painted with two coats of anticorrosive paint. Disposing off: The surplus excavated materials by mechanical transport lead up to 2KM to the nearby dumping pits/dumping areas within institute campus identified by Engineer in charge, including all lifts, loading, unloading, stacking etc. complete as per specifications & as directed by the EIC.
e)	**Electric work**
	The supplier shall be required to specify the total load requirements for the MRI scan centre including the load of air conditioning , room lighting and for the accessories if any. The supply line will be provided by the Institute up to one point within the MRI Scan centre area. The distribution panel shall be provided by the vendor. Few lights in each room shall be connected to the UPS to provide emergency lighting. The electrical work shall include the following

a.	Wiring — All interior electrical wiring- with main distribution panel board, necessary MCBs, DB, joint box, switch box etc. the wires shall be of copper of different capacity as per the load and should be renowned make as listed below.
b.	Switches light and power points should be of modular type and of standard make as listed below.
c.	General lights — LED light fittings with 500 Lux Illumination
d.	MRI compatible lights for MRI examination room. The bulbs used within the RF cage should be easy replaceable and locally available.
e.	All wires used must be FRLS (Fire Retardant with low smoke) type only
f.	Adequate number of earthing required for equipment and accessories should be provided by the equipment vendor.
f)	**AIR CONDITIONING:**
i.	Total capacity of the Air-Conditioning for the entire MRI scan centre area should be at least 25 TR.(incl. standby airconditioning). However, if the installed system requires more capacity, it will be the responsibility of the supplier.
ii.	Ductable Split / Ductable package air conditioners may be used according to room requirement and suitability. Humidity control should be effective to eliminate moisture condensation on equipment surface. The Air conditioning should be designed with standby provision to function 24 hours a day.
iii.	The outdoor units of AC should have grill coverings to prevent theft and damage.
g)	**Environment specifications:**
	Relative Humidity range: To be maintained between 60% and 80% in all areas except equipment room which shall be as per requirement of the equipment.
ii.	Temperature ranges: 22 ± 2° C in all areas except equipment room which shall be as per requirement of the equipment.
iii.	Air conditioning load: The heat load calculations and maintaining the desired temperature and humidity shall be the responsibility of the bidder
h)	**Furniture:**
i.	Revolving chairs height adjustable, medium-back with hand-rest . — 6 NO.S
ii.	Chairs for patient waiting area — Three seater (chrome plated). - 10 NO.S
iii.	Cupboard with laminate door shutters for storage of spare parts and accessories (approx size of 6'X3') and records as per requirement. — 3 NO.S
iv.	Drug trolleys for patient preparation area.- 1 NO.
v.	Patient Examination couch -1no
vi.	Tables for Workstation nodes- 2 NO.S
vii.	Changing room with 6 lockers and one dressing table to be supplied
viii.	Dustbins (plastic with lid) : 10 no.s.
ix.	All the rooms in the complex will be signposted. Sun film & ventilation blinds / curtain will be put up in all windows.
a.	All furniture items should be of standard make as mentioned in the table below.
i)	**Miscellaneous:**
1	Reporting room should have LED X-ray Film viewer with adjustable brightness; capable of holding 3 films of 1411x1711 size. — 2 no.s
2	Cabling of Network (LAN) connectivity for camera system, console system, workstation and computers etc
4	SCREENER FOR IMPLANT DETECTION -1 No
	LIST OF ITEMS AND SUGGESTED MANUFACTURERS
SL NO	ITEMS PREFERRED MAKES
A	FLOORING VITRIFIED TILES -Somany, Kajaria, H&RJohnson, RAK india

B	PAINT -Dulux, Asian Paints , Nerolac
C	PLUMBING - Kohler, Jaguar , Grohe , Roca
D	SANITARY ITEMS - CERA, Hindware, Parryware
E	ELECTRICAL
1	CABLES - Finolex, Havells ,V-Guard
2	SWITCHES - Legrand, L&T, Crabtree , Roma
3	DISTRIBUTION BOX , MCB - Legrand, L&T, Siemens, Havels
4	LIGHT FITTINGS - Philips / Crompton / Wipro/syska
F	AIR CONDINTIONING - Daikin, Hitachi, Blue Star, Voltas,
g	FURNITURE - Hermen Miller , Godrej , Featherlite,Geeken
	BILL OF QUANTITY
S.NO	ITEM
1	Whole body 1.5 Tesla Magnetic Resonance Imaging system - 32 channels RF system ; as specified - Qty 1 no.
2	System Body Coil - Quadrature - Qtylno
3	Neuro-vascular Coil with 16 or more channels OR Head / Neck neuro-vascular imaging Coil - qty 1 no
4	Spine Array/Matrix Coils with atleast 32 channels Qty -1 no
5	Body Array/Matrix coil with 32 channels or more (with one or two body coils) -1 No
6	Dedicated Suitable surface coil/coil combination for peripheral angiography of 32 or more channel -1 No
7	One Bilateral Breast Coil with at least 16 channels -1 Set
8	Flex Coil (16 channel or more) OR multipurpose coil of 16 channel or more- Large FOV -1 No
9	Flex Coil (4 channel or more) - Small FOV -1 No
10	Dedicated Rigid Shoulder coil —16 channel -1 No
11	Dedicated Knee Coil with atleast 15 channels. qty-1 no.
12	High resolution foot/ ankle coil — 8 channels or more -1 No
13	Coil Storage Cart qty-1 no.
14	Server : Thin-client server as per specification qtylno
15	Licenses: Concurrent licenses for Server. Qty-2 nos.
16	Node Hardware: CPU and Medical grade monitor (32 inch or more; 2 megapixels or more resolution). Qty2nos.
17	Antivirus software of reputed make for two licenses software (perpetual type or license to be renewed by the supplier) as per specification Qty-1 .nos.
18	Cardiac Package - License qty-2 nos.
19	Cartilage Assessment software to be included .Qty -1 no.
20	Voice recognition software qty 2 nos.
	ACCESSORIES
1	Storage box for all coils qty 1 no
2	Dual Syringe Pressure injector qty-1 no.
3	syringes (50 ml) -Dual Syringe Pressure injector qty -100
4	connector -Dual Syringe Pressure injector syringe qty -100
5	MRI Compatible ECG electrodes (disposable) - qty-100
6	MRI compatible Multiparmeter Vital Signs Patient Monitor and One Slave monitor, as per specification -qty 1 set
7	1.5 T MRI Compatible sets of Laryngoscope : 4 sizes blades- Neonatal, paediatrics, adult, extra large - qty 1 set
10	1.5 T MRI compatible Magill forceps : Adult size- qty2 nos.

11	1.5 T MRI compatible Magill forceps : Paediatric size- qty 2 nos.
12	Stylet for endotracheal tube : Adult size qty 3. nos.
13	Stylet for endotracheal tube : Paediatric size qty 3nos.
14	1.5 T MRI compatible Clamps : Either towel clip or artery forceps qty - 2 nos.
15	1.5 T MRI Compatible IV stands qty 2 No
16	1.5 T MRI compatible suction apparatus qty 2 no.
17	Non-magnetic patient transfer trolleys qty 2 no.
18	Metal detectors : Handheld qty 2 nos.
19	Metal detector: Walk-through qty 1 no.
20	Phantoms to be provided for regular QA studies. Qty 1
21	a Dry Chemistry laser camera as specified qty -1 no b. films (14 x 17)inch , (11x 14) inch , (10 x 8)inch- 500 Nos each size
	Components of Site Modification Work: 1500 sqft
1	**Civil works**
2	Electrical work Including Electrical Panel/Earthing
3	Public health (plumbing and sanitary fittings).
4	Air Conditioning -25TR
	Furniture:
1	Revolving chairs height adjustable, medium-back with hand-rest - qty 6 nos.
2	Chairs for patient waiting area — Three seater (chrome plated). Qty 10 Nos.
3	Cupboard with laminate door shutters for storage of spare parts and accessories (approx size of 6'X3') and records as per requirement. — 3 NO.S
4	Drug trolleys for patient preparation area. Qty- 1 Nos.
5	Patient examination couch qty- 1nos.
6	Tables for Workstation nodes. Qty -2 nos.
7	Changing room with 6 lockers and one dressing table to be supplied qty 1 set
8	Dustbins (plastic with lid) to be provided as required. Qty- 10nos.
9	Room Signage 1 LS
10	Venetian Blinds 1 LS
	Miscellaneous:
1	LED X-ray Film viewer with adjustable brightness; capable of holding 3 films of 14"x17" size. Qty 2 nos.
2	Cabling of Network (LAN) connectivity for camera system, console system, workstation and computers etc 1 LS
3	Fire extinguisher ABC type of 2kg each as required for the building safety - 5 nos.
4	UPS qty 1 no.
5	MRI Room oxygen deficiency level monitor -1 no
6	MRI compatible WHEEL CHAIR - 2 NOS
GENERAL TECHNICAL SPECIFICATIONS	
GENERAL POINTS:	
1. Warranty :	
	a)Five years Comprehensive Warranty as per Conditions of Contract of the TE document
	for complete equipment (including Batteries for UPS, other vacuum tic parts wherever
	applicable) Warranty period will be 5 years from the date of installation, commissioning
	and Site Modification Work from the date of satisfactory installation, commissioning,
	trial run & handing over of equipment to Hospital/Institution/Medical College.
	b) 95% up time Warranty of complete equipment with extension of Warranty period by double the downtime period on 24 (hrs) X 7 (days) X 365 (days) basis.

	c)All software updates should be provided free of cost during Warranty period.

	Cardiopulmonary Exercise Testing System (CPET)
Sl.No.	**Specifications**
	CARDIOPULMONARY EXCERCISE TESTING SYSTEM (CPET)
	The Cardiopulmonary Exercise Testing System should be trolley mounted with inbuilt Thermal Printer/external Laser printer with the following specificastions:
	Cardio-pulmonary Exercise Test: The system should ae able to pertorm online by Breath measurernent of VO2, VCO2, VE, VT, RF, RER/Calorimetry. FeT02/PETO2, FeTCO2/PETCO2, Work load, HR etc. Estimated Cardiac Output & Stroke Volume.
	Spirometry: FVC. SVC. MVV & Routine Pre and Post Bronchodilator Testing
	Pulse Oximeter with Finger Clip sensor
	Integrated 12 Lead ECG with full disclosure.
	CPET System should have integrated Automatic Blood Pressure Measurement of Same make/through Ergo cycle
	Technical Specifications:
	Flow meter: Shoutd be digital Bi-direction turbine/ variable orifice pneumatochograph with a range of 0.03 to 15 L/s or better
	Ventilation Range 5 - 300 L/m, Accuracy ± 2.5%
	02 Sensor: Type: Paramagnetic / Spectrophotometer/Electrochemical, Range: 0-40% 02. Accuracy: ± 0.01%
	CO2 Sensor: Type: Non Dispersing Infrared (NDIR)/Ultrasonic, Range: 0-10% CO2, Accuracy: ± 0.01%
	Environmental Sensors: The system should have Temperature. Barometric and Humidity Sensors.
	Note:In case sensors are consumable,the same should be supplied for entire warranty and CMC period
	Power Supply: The operating AC Voltage range should be 100-240V AC -10% 50/60Hz.
	Interface: It should have interface for connecting to latest computer.
	Cycle Ergometer: Compatible and automatically controlled by CPET system. Load range 20-999 watts in steps of 5 watts, RPM 30-130, adjustable Seat Height and handle bard, Automatic BP measurement. Graphic I CD Display, RS232 Interface. Should also be programmable and also run without PC if needed.
	Treadmill: Speed range 0-20 Km/h, Elevation 0-24%. Running surface 150 X 50 cm. Maximum Load 200 kg. Heavy Duty 2 HP motor or above should be quoted. Emergency stop. It should be CE/FDA certified and compatible with cardiopulmonary exercise testing machine.

	Software: Software should be supplied with the equipment. The management software should be designed for window 8/10 environments.
	Essential Acct: The system should be supplied with all essential accessories required like Mobile cart. Calibration gas cylinders-02 nos., Regulator - 01 nos.. Branded Desktop Computer system Intel Core 13 Processor, 8 GB RAM. 500 GB HDD, Dual 18.5" LED Color Monitors, DVD Writer, 8 USB ports. Com Port, Keyboard, Mouse, Windows 8/10. Color Deskjet Printer UPS 1KVA in ready to use configuration.
	Training for the system to be provided to Doctor & technician for 3 days
	List of standard accessories and List of consumables with their life should be provided.
	Quality assurance: The system should have European CE/US FDA and ISO certifications
	Unit should be supplied with UPS 3KVA with 1 hours backup for Stress test with Treadmill
	Should be provided Laptop 15" (i5, BGB, 500 GB SSD, Licenced Windows, Licenced Microsoft Office)
	Should be provided with Split AC(Inverter AC) of 2 T - 2 nos. The necessary installation to be done/arranged by the bidder
	Unit should be supplied with fofiowing accessories
	a) Main Unit Integrated system with inbuilt thermal printer/External Laser printer: 1nob.
	b) Heavy Duty Treadmill: 1no
	c) Pnemotach Sensor/Bi directional turbine sensor: 1 no
	d) Seal tight mask (Large, Medium): 1no each
	e) Color Laser Printer: 1no
	f) Chest Electrodes far 100 patients
	g) Calibration Gas Cylinder 3 Ltr: 2 no.if required
	h) Thermo Hygrometer : 1no.
	i) Thermal paper pack - 100 nos.or 1000 sheets of plain paper for laser printer
	J) Disposable ECG Electrodes for 100 patients
	k) Office table for placing the laptop and printer
	I) Trolley for Calibration Gas Cylinder : 2 nos
	m) Crash Cart
	Advanced Medicine cart constructed of CRCA Powder Coated MS Sheet of thickness 1.2mm. overall dimension of L 996 w x 625H x 1550mm ABS grade made top sheet with 3mm thickness should be used.

	Should have 7 drawers with drawer configuration: 6 small Oimesnions atleast (380(L)x590(W)X70(H)mm) + 1 Large (380(L)x590(W)X22O(H)mm).all drawers should be lockable through central locking. Should have anti-tilt mechanism. should have 7 drawers with medicine bins/containers & adjustable acrylic separators.Should have key lock type central locking mechanism for drawers.
	Should have sharps container — 2qty., push/pull writing surface, utility tray, document holder, catheter holder, Tilt bins mounted on top for storage, SS Bridge shelf for keeping daily use items handy, ABS vacuum formed top tray of thickness 3mm, Aluminum push handle of dia. 25mm built into the end panel for smooth stable movement.
	Integrated pull out writing surface top.
	Trolley should be light, sturdy, scratch and dent resistant. , should have a waste bin discarding syringes and gloves, Phrase 4 TPE corner bumpers for collision protection, Single wheel front locking castors should have 125mm diameter to facilitate quiet and easy movement. Aluminum handle pipe should have section of 25mm with length of 365mm & should have thickness of 1mm giving a glossy finish. Thermosetting epoxy polyester with semi-gloss finish powder coating must be used. Safe working load must be 47kgs.
	The crash cart should be manufactured under ISO 13485:2016 certificate from NABCB certified agency. Should have CE certificate from european notified body with 4 digit registration code, ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018 Certified

Immunoassay Analyzers			
Sl.No.	**Specification**	**Specification Name**	**Bid Requirement**
1	Performance Parameters	Type of Configuration	Floor
		Processing modes	continuous random access, Batch, continuous, random access, stat
		Type of Automation	fully automated
		Throughput of the system per hour	300.0 Or higher
		Number of Sample	100.0 Or higher
		Sample volume per test in µL	1.0 - 5.0 Or lower
		Type of method	chemiluminescence
		Cardiac Markers	Yes Or higher
		Tests which can be performed by Cardiac Markers	CK-MB, Troponin I, Myoglobin, hs-cTnl, Hs - Troponin - I, BNP
		Infectious Bio Markers	Yes Or higher
		Tests which can be performed by Bio Markers	Nephrocheck, NA if not supplied
		Tumor Markers	Yes Or higher
		Tests which can be performed by Tumor Markers	Ferritin, AFP, CEA, Total PSA, f-PSA, CA 125, CA 15.3, CA 19-9, NA if not supplied
		Anemia profile	Yes Or higher
		Tests which can be performed by Anemia profile	Vitamin B12, ferritin, Folate (FA), NA if not supplied
		Bone Metabolism	Yes Or higher
		Tests which can be performed by Bone metabolism	Intact PTH, Calcitonin, 25-OH Vitamin D, NA if not supplied
		Thyroid profile	Yes Or higher

2		Tests which can be performed by thyroid profile	TSH (3rd generation), FDA 510 (k) cleared, T4, T3, FT4, FT3, Tg (Thyroglobulin), TGA (Anti - tg), Anti - TPO, Intact PTH, NA if not supplied
		Infertility	Yes Or higher
		Tests which can be performed for infertility	FSH, LH, HCG/ß-HCG, PRL, Estradiol, Progesterone, free estriol, Testosterone, DHEA - S, AMH, NA if not supplied
		Vitamin D	Yes Or higher
		Tests which can be performed for Vitamin D	Vitamin (125OH), NA if not supplied
		Ferritin	Yes Or higher
		Tests which can be performed for ferritin	Ferritin, NA if not supplied
		Infectious Test	Yes Or higher
		Tests which can be performed for Infectious Test	HIV DUO ULTRA, ANTI-HCV, HBS AG ULTRA, TOXO IGM / IGG II, CMV IGG / IGM, RUB IGM / RUB IGG II, NA if not supplied
		Dual,triple or quad prenatal screening tests	Yes Or higher
	Test Menu	Tests which can be performed for prenatal screening	AFP (prenatal screening), PAPP - A, HCG/ß-HCG, free Estriol, NA if not supplied
3		Closed-tube sampling	Yes, No Or higher
		Direct tube sampling	Yes Or higher
		Auto dilution	Yes Or higher
		Abnormal values flag	Yes Or higher
		Autowash	Yes Or higher
		Stat loading facility	Yes Or higher
		Inbuilt facility for reagent mixing	Yes Or higher

	System Features	Availability of inbuilt refrigeration system for long onboard stability of reagents	Yes Or higher
		Type of Calibration	automatic, Automatic and manual
		Calibration stability	28 ?
		LOT specific calibration	Yes, No Or higher
4	Data Management	Type of display	LED, LCD, Color graphic TFT
		Size of Display in inches	15.0 Or higher
		Type of user interface or Data entry	touchscreen
		HIS/LIS Interface	RS 232 serial, Ethernet
		Type of External storage	USB
5	Accessories, Spare Parts and Consumables	Availability of micro capillary adaptor	Yes, No Or higher
6	Miscellaneous Parameters	Warranty (Option of comprehensive warranty is available through bidding only, which if opted will supersede normal warranty in the catalogue)	5, 1, 2, 3, 4
	Additional Specification Parameters - Immunoassay Analyzers		
1	The bidder and OEM shall declare all other tests performed on the system and add on system as on the closing date of bids.		The bidder and OEM shall declare all other tests performed on the system and add on system as on the closing date of bids.
2	Minimum 100 test pack (or multiple of fifty) of all tests; with calibrators and controls two times a day taking 25 days in a month, shall be provided as start up kit.		Minimum 100 test pack (or multiple of fifty) of all tests; with calibrators and controls two times a day taking 25 days in a month, shall be provided as start up kit.
3	Cost of 100 test pack (or multiple of fifty of all tests; with calibrators and controls shall be provided in the sheet with price bid and indicating discount over MRP.		Cost of 100 test pack (or multiple of fifty of all tests; with calibrators and controls shall be provided in the sheet with price bid and indicating discount over MRP.

4	Warranty for 5 years followed by CMC for 5 years including Spares & onsite services at NEIGRIHMS Shillong.	Warranty for 5 years followed by CMC for 5 years including Spares & onsite services at NEIGRIHMS Shillong.
5	Buy back value to be offerred in ATC of bid is % Cost of the system covering Reserve value(RDV) is Rs 296809.63 for old obsolete	Buy back value to be offerred in ATC of bid is % Cost of the system covering Reserve value(RDV) is Rs 296809.63 for old obsolete
	Technical Specification	
1	Document supporting track record and satisfactory performance from	
2	Support for induction and follow up training of technical staff, on-site	
3	Five (5) years warranty and Five (5) years CMC should be provided.	
4	Counter Guarantee acknowledgement dully sealed and signed by the	
5	100 test pack of all test indicated in the bidding specification including	
6	Minimum 100 test pack (or multiple of fifty) of all tests; with calibrators	

	Nursing Skill Lab
Sl.No.	**Specifications**
1	**Multi-Venous IV Arm (Adult & Pediatric)**
	1. Life-like arm, simulating intravenous injection at ante-cubital vein & dorsum of hand, latex
	free with replaceable skin.
	2. Accessible veins should include median, basilica and cephalic.
	3. Designed for simulating injection, peripheral intravenous therapy with feeling of vein
	penetration & blood flush back. It shall allow for repeated puncture without causing leak.
	4. Both Adult & Pediatric IV Arm should be accessorized with the following:
	5. 1 Replacement skin and multi-vein system,
	6. 1 Blood concentrate,
	7. 1Blood Bag with Tubing and Connector,
	8. 1 Clamp and Hook in the carry case, 5 Syringes, 1 Manikin Lubricant,
	9. 1 Carry Case and user manual.
2	**Soft tissue injection trainerfor intramuscular,intradermal and Subcutaneous injection.**
	1. Shall have tissue layers representing epidermis, dermis, fat and muscle layer, simulating for
	subcutaneous, intradermal and intramuscular injection, latex free with replaceable tissue.
	2. It should have strap for hybrid simulation
	3. It should have provision for teaching Subcutaneous injection, Intradermal and intramuscular injection, Management of tissue, Professional-to-patient communication
	4. Epidermis layer should peel back to quickly release sub-cuticular liquid
	5. It should easily attach to an arm or thigh to help teach professional-to-patient communication
	6. It should be supplied with skin pad, muscle block and epidermis.
3	**Adult CPR Trainer.**
	1. An Adult upper body torso for CPR training
	2. It should be Latex free
	3. The manikin should have the following:-
	4. A soft nose which can be occluded using the nose pinch technique.
	5. Facility for head tilt/chin lift and jaw thrust to open the airway.
	6. Visible chest rise on effective ventilation and wireless feedback.
	7. Feedback on ventilation volume, stomach inflation, clicker for chest compression as well as wrong hand position
	8. A disposable lower airway with an integral one-way valve
	9. Wifi connectivity for wireless tablets, smart-phones and/or LCD wired feedback providing both student and instructor feedback.
	10. The manikin should give feedback on Chest compression, Release, Compression Rate,Ventilation Volume & wrong hand placement.
	11. It should allow for remote training.
	12. Scoring based on compression & flow fraction to measure progress of student

	13. Monitoring up to 20 manikins should be possible with the software.
	14. Accessorized with manikin faces, airways, manikin wipes, LCD compression and ventilation feedback devices with user guide Training-material.
	15. It should be supplied with AED trainer
	16. The AED Trainer must resemble a realistic automated external defibrillator (AED).
	17. The AED Trainer must be pre-programed with 10 scenarios.
	18. The AED Trainer must have clear, audible voice prompts. The speaker volume must be adjustable with or without the optional remote control.
	19. The AED Trainer must include a soft carry case. The unit must be powered by 6 C-cell batteries contained in a battery case simulating actual AED battery.
	20. The AED Trainer must contain a status display window that can be manually changed by the instructor.
	21. The AED Trainer must contain an LED display indicating selection of volume level and scenario chosen.
	22. The AED Trainer must simulate the following conditions in pre-programmed scenarios and be able to manually override them with the remote control. Artifact motion, Poor pad placement, Correct pad placement, Shockable rhythm, Non-shockable rhythm, Low Battery,Replace Battery, Error Condition
4	**Infant CPR Trainer**
	1. It should be a 3-month-old Little Baby
	2. The manikin should have the following:-
	3. Head-tilt with open/locked airway.
	4. Feedback on hand positioning
	5. Visible chest-rise on ventilations
	6. Be able to see and feel the baby's ribs
	7. Landmarks, nipples, breast tip
	8. Limbs with realistic movement
	9. Choking training should be possible
	10. It should teach all the parameters of high-quality CPR as defined by the AHA.
	11. It should have the software to allow instructors to monitor multiple students simultaneously
	12. It should have feedback technology on compression rate, depth, recoil, chest compression fraction,hand placement and ventilations.
	13. It should have Audio-crying feedback for choking training
	14. It should allow for remote training
	15. It should have durable construction with realistic length and weight
5	**Pediatric manikin**
	1. It should be a realistic manikin for training in a wide range of pediatric advanced life saving skills in pre-hospital emergencies.
	2. It should have Realistic airway for insertion of standard airway devices.
	3. The simulator should have:-
	4. Normal & Difficult Airway
	5. Airway opening acquired by head tilt, chin lift and jaw thrust,
	6. Oro-pharyngeal and nasopharyngeal airways;
	7. Bag-Valve-Mask ventilation;

	8. Orotracheal and nasotracheal intubation
	9. Sellick Maneuver;
	10. LMA insertion
	11. Mechanical air sounds with correct placement of ET Tube
	12. Intravenous drug administration via IV bolus or drip using the multi-venous pediatric IV arm.
	13. Realistic needle insertion/feel at the medial malleolus & tibial tuberosity for intra-osseous infusion.
	14. It should allow for the auscultation of normal and abnormal heart, breath, and bowel sounds.
	15. Handheld, intuitive touch screen remote for easy 'pick up and play experience
	16. It should allow to operate on-the-fly/ utilize scenarios and themes for consistent simulation training.
	17. Mobile-teach anywhere
	18. Simulated Patient Monitor Parameters should include ECG (2 traces);SpO2; CO2; ABP;CVP; PAP; PCWP; NIBP; TOF; Cardiac Output; Temperature (core and peripheral); AGT(labelled); awRR; N2O; ICP;O2;pH;X-Ray Display;12Lead ECG Display
6	**Nursing training Simulator**
	1. Administration of eardrops
	2. Oral via NG tube
	3. Bilateral pre-ported IV arms with capability for intravenous bolus or push through intravenous infusion when attached to a fluid bag.
	4. Female multi-venous IV training arm with capability of IV cannulation placement
	5. Bilateral deltoid, ventral gluteal, dorsal gluteal and thigh injection sites
	6. Palpable anatomy to aid in site selection includes anterior superior iliac crest, pubic symphysis and greater trochanter.
	7. Vaginal canal allows for insertion of vaginal suppositories or medications
	8. Anal opening should accept real and simulated rectal suppositories
	9. Wig for hair care procedures
	10. Ear canal for practice of irrigation and cleaning
	11. Oral care and hygiene
	12. Removable upper denture for oral and denture care
	13. Bed baths and skin care
	14. Patient simulator should allow manipulation into dorsal recumbent position for perineal care
	15. Perineal care, including separation of the labia for cleansing
	16. Patient positioning for prevention of pressure ulcers
	17. Bandage and binder application
	18. Nasal packing
	19. Dressing and dressing changes
	20. Toes spread for bandaging
	21. Full articulation for realistic patient handling procedures
	22. Head can be flexed into chin to chest position and remain flexed until repositioned
	23. Sits unassisted and bends at waist to tripod position
	24. Protective positioning
	25. Patient transfer techniques

	26. Range of motion exercises
	27. Accurate anatomical landmarks for insertion of NG Tube to correct measurement (nose to earlobe to xiphoid process.)
	28. It should be able to provide necessary clinical and communication skills to handle the uncertainties,complications,and complexities of geriatric nursing to maximize training outcomes
	29. Lavage and gavage
	30. Port in upper left abdomen for pre-placement of J tube for feeding
	31. Female genitalia with realistic anatomy, includes labia majora, labia minora, urethral opening,clitoris,and vagina.
	32. Labia minora in naturally closed position, when opened exposes urethral opening
	33. Manipulation into supine position with knees flexed is possible
	34. Genitalia should accept straight or indwelling catheters
	35. Genitalia should attach to an internal system including an internal urinary reservoir for urinary catheterization with ability to pressurize reservoir for proper fluid return.
	36. Manipulation into Sims' position for enema administration possible
	37. Anal opening should accept real and simulated rectal suppositories
	38. Interchangeable stomas, to include normal, dusky (non-perfusing), and infected
	39. Realistic airway with uvula, epiglottis, vocal cords and esophagus
	40. Various oxygen delivery methods with visible chest rise including nasal cannula, masks,trach collar/mask,CPAP device.
	41. Bag-mask ventilation
	42. Suctioning (Oral & Nasopharyngeal)
	43. Concealed port in neck for insertion of tracheostomy tube
	44. Trach care tracheal suctioning with fluid
	45. Ventilations with chest rise
	46. CPR Capable
	47. Oral/Nasal Intubation
	48. Supraglottic Airway Insertion
	49. BVM Ventilation
	50. Head tilt/Chin lift
	51. Jaw thrust w/articulated jaw
	52. Sellick's Manuver
	53. Chest compressions with maximum compression depth of 70mm
	54. ECG monitoring capabilities
	55. Defibrillation, cardioversion and pacing (training pads – apex and sternum)
	56. Invisible port below the clavicle for pre-placement of central line catheter for site care,dressing change,flushing lines,and continous or intermittent infusion.
	57. Female multi-venous IV training arm with capability of IV cannulation
	58. Blinking eyes with adjustable blink rate
	59. Ability to open, close or partially close for consciousness cue
	60. Interchangeable pupils (normal, dilated, constricted)
	61. Spontaneous breathing synchronized with selected breath rate (0-60 bpm)
	62. Bilateral chest rise
	63. Palpable pulse synchronized with ECG

	64. Adjustable in strength (weak, normal and strong)
	65. Bilateral carotid pulses (same pulse left and right)
	66. Brachial and radial pulses in the right and left arm, with right and left independent control
	67. Brachial pulse disabled and turned off if the pressure in the cuff is larger than 20 mmHg
	68. Radial pulse turned off when the pressure in the BP cuff is larger or equal to the set systolic BP
	69. Bilateral femoral pulses (same pulse left and right)
	70. Bilateral pedal pulses with right and left independent control
	71. Bilateral measurement of non-invasive blood pressure (auscultated or palpated)
	72. Korotkoff sounds synchronized with programmable ECG
	73. Korotkoff volume control in 10 steps (0-9) available in both arms
	74. Auscultatory gap on/ off feature
	75. Pressure range of 0-300mmHg
	76. Heart, lung and bowel sounds may be auscultated with real stethoscope
	77. Anterior and posterior lung sounds synchronized with the set breathing rate (0-60 bpm) and chest rise on the manikin.
	78. Normal, Coarse crackles, Fine crackles, Pleural rub, Pneumonia, Rhonchi, Stridor,Wheezes,No sound
	79. Lung sound and sound volume may be set individually for each lung – left and right, upper and lower.
	80. Anterior and posterior lung sound auscultation site
	81. Heart sounds synchronized with the ECG (QRS)
	82. Normal, Aortic stenosis, Austin Flint Murmur, Friction Rub, Mitral Valve Prolapse, Systolic Murmur,Diastolic Murmur,OS@70ms/Open Snap MS
	83. Non-perfusing rhythms should not generate heart sounds
	84. Four independently controlled auscultation areas for bowel sounds, centered around the umbilicus
	85. Bowel sounds should be continuous repetitive sounds repeated infinitely
	86. Normal, Hyperactive, Borborygmus, Hypoactive, No Sound
	87. Auscultation of fetal heart tones, instead of bowel sounds, are available for auscultation from the abdomen
	88. Fetal Normal 140bpm, Fetal Tachycardia 200bpm, Fetal Bradycardia 100bpm
	89. Palpable anatomy for assessment and site location, including clavicle, sternum, spine, ribs(frontt and sides),xiphoid process,scapula,anterior superior iliac crest,pubic symphysis,and greater trochanter.
	90. Completely wireless and self-contained
7	**Newborn Manikin**
	1. It should be Educational effective allowing specific neonatal resuscitation skills to be taught individual or in combination with other skills.
	2. It should have realistic anatomical landmarks and durable design to simulate a full-term female newborn.
	3. It should be Lightweight and portable design to be highly mobile for use in multiple clinical settings.

	4. It should be easy to use and designed to be integrated into all neonatal training curricula.
	5. It should be clinically relevant to acquire the skills in training for neonatal life support.
	6. It should represent a full term (40 week), 50th percentile newborn female, measuring 21 inches and weighing 7lbs
	7. The airway should be designed to allow for training in all aspects of newborn airway management,including the use of positive-pressure airway devices,and the placement of ET tubes and LMAs.
	8. The torso should include functionality to relieve a tension pneumothorax via needle decompression.
	9. The patent umbilicus has a manually generated pulse and can be assessed, cut and can be catheterized for IV access
	10. IO access in both legs.
	11. Should allow positioning of the newborn to simulate opening the airway via head tilt, chin lift or jaw thrust
	12. It should have a Positive Pressure Ventilation (BVM, T-Piece resuscitator, or anesthesia bag)
	13. It should have ET tube intubation
	14. It should allow for LMA insertion
	15. It should have provision for Orogastric tube insertion
	16. It should have provision for Stomach distension (when ET is misplaced)
	17. Suctioning (of the nares, nasopharynx, oropharynx, esophagus and the lungs via an ET tube)- Fluids should not be introduced into the airway
	18. Meconium module for suction removal
	19. Bilateral and unilateral (with mainstem intubation) chest rise and fall with mechanical ventilation
	20. Pneumothorax - Needle thoracentesis left mid axillary (pneumothorax).
	21. It should have features for –
	22. Manual chest compression at appropriate depth (1/3 AP) and force
	23. Manual umbilical pulse
	24. Umbilical Vein/ Artery access via patent umbilicus
	25. IO access in left and right lower leg, tibial tuberosity and medial malleolus.
8	**Airway Managedment Trainer**
	1. It should have provision for realistic practice to develop proficiency in Airway Management Skill
	2. It should have a lifelike Upper torso and head to stimulate real world complications when practicing a variety of intubation,ventilation and suction techniques.
	3. Should have facility for management of difficult airways and features a manually inflatable tongue to stimulate obstructed airway.
9	**NG Tube & Tracheostomy care Trainer**
	1. Head should feature anatomical landmarks, trachea, esophagus, simulated lungs and stomach.

	2. Lungs and stomach may be filled with fluid for realistic practice of many procedures: -Tracheostomy care and Tracheal suctioning facility -NG tube insertion and removal -NG tube irrigation, instillation and monitoring -Feeding tube insertion and removal -Gastric lavage and gavage -Naso-enteric and esophageal tube insertion care and removal -Oropharyngeal and nasopharyngeal insertion and suctioning -Insertion, securing and care of endotracheal tube
10	**Trauma manikin**
	1. The manikin should be portable, durable, extremely rugged, life like realistic, in appearance with adult full body (size of 162.5 cm)
	2. Intubation head must be there for advanced Airway management training
	3. Intubation head must allow insertion of airway devises in addition with LMA, combitube,theking LT
	4. Head can be tilted forward, backward or rotated to 90 degrees to either side
	5. Right mainstream intubation, oropharyngeal, nasopharyngeal airway insertion can be practiced
	6. 6 Bag mask valve ventilation should be performed
	7. Stomach auscultation, manually generated carotid pulse, articulated body for full range motion must be standard part of manikin
	8. Realistic articulation must allow the manikin to perform various setting for adult extrication
	9. Manikin must be mobile and can be used on field, triage, mass casualty training exercise
	10. Manikin platform should be flexible
	11. Various optional modules can be attached with manikin to accommodate training including trauma,NBC,bleeding control,first-aid
	12. A set of wound lay-ons, bloodsplats and simulated blood designed for use on manikins or humans to simulate injuries. Over 30 wound lay-ons with Velcro design allowing easy application and detachment a. Dilated pupil b. Contusions, lacerations and abrasions c. Distended jugular vein d. Flail chest segment e. Fractures-open and closed. f. Burns -1st ,2nd and 3rd degree g. Impaled object h. Abdominal evisceration i. Stab wound j. Projectile entry/exit (small land large caliber) k. Blood splats with Red simulated blood l. Soft-sided carry case
11	**Birthing Simulators for training normal delivery & Postpartum complications**
1	Shall have realistic pelvic floor, Articulating thighs for McRobert's procedure, Stretchable perineum, Soft, flexible birthing canal

2	Skin washable and latex free
3	It should be suitable for use with Simulated/Standardized Patient
4	Anatomy should have: Birth canal and cervix, Ischial spines and pubic bone, Gynecoid pelvis, Articulating thighs, fully articulated baby with clavicles, fontanelles, flexible head and detachable umbilical cord and placenta
5	It should have option for lower legs for all fours position
6	It should teach Normal, Vaginal breech, Shoulder dystocia with force feedback, Vaginal assisted (forceps and vacuum devices), Third stage of labor, Cord prolapse, Urinary catheter placement, IM injection
7	Shoulder dystocia with force feedback
8	It should represent early labor cervixes effacement, dilatation and ripeness in line with Bishop's scoring
9	Numerous presenting parts should include flexed, deflexed, brow, face, breech, caput and molding
10	Inserts to represent early labor cervixes effacement, dilatation and ripeness in line with Bishop's scoring
11	Markers to allow tutor to read positioning in situ
12	Dynamic positioning mechanism to allow adjustment of dilation in active labor
13	Realistic representation of cervixes, including anterior lip, and presenting parts in soft birth canal, with palpable ischial spines
14	Assessment and Bishop's scoring of: Cervical dilation (1-10cm) Cervical effacement (0-100%) Cervical ripeness/consistency (soft, medium, hard) Cervical position (anterior, mid, posterior) Fetal station (-3 to +3)
15	Assessment of and artificial rupture of membranes
16	Assessment of presenting part - flexed, deflexed, brow, face, breech, caput and moulding and caput formation
17	Downloadable Birthing Simulator software to allow trainees' actions and interventions to be recorded during drills, with time to deliver baby
18	PDFs of trainee drills can be saved and printed for debriefing
19	Wireless Force Monitoring Baby
20	Latex free
21	Fully articulated baby with clavicles, fontanelles, flexible fetal joints, head and detachable umbilical cord and placenta
22	It should be supplied with Postpartum Hemorrhage Module
23	Early postpartum management should include uterine massage, Progress of labor, including fetal descent, rotation, and cervical effacement and dilatation
12	**Birthing simulators and skill trainer**
	Low fidelity Birthing simulator
1	The simulator should be ideal for demonstrating the mechanics of various birthing positions and train skills including abdominal and vaginal examinations, normal birth, vacuum assisted delivery, shoulder dystocia and breech.
2	It can be used as a table-top model for demonstration and skills training and it is ideal for insitu team simulation and training respectful care
3	It should give birth to a highly realistic newborn simulator
4	It should accommodate various birthing positions
5	Skills trainer with anatomically correct landmarks

6	It should be made of durable fabrics, and requires no lubrication during use.
7	Birthing simulator should have the facilities to train the following:
	Fetal heart rate monitoring -Vaginal delivery -Breech delivery -Vacuum delivery -Incomplete placenta
8	Birthing Simulator and Skills Trainer should comprise the following:
	Placenta w/umbilical cord and membranes -2 Ties for umbilical cord -2 pairs of gloves -Fetoscope -Urine catheter -20 ml syringe -Fetal skull with fontanelles - Cervix cups (4, 6 & 8 cm dilations) - B295Newborn Simulator (dark or light complexion) - Hat - Two sheets to simulate towels - Table clamp - Carrying bag - Directions for use
9	It should facilitate 3,000 births without use of lubricants
10	It should have a realistic articulated newborn manikin with fontanels and anatomical landmarks.
11	The Bony structure of the newborn should make possible to identify the important landmark in breech and shoulder presentations
12	It should facilitate training for management of malpresentations including breech and shoulder dystocia.
13	It should have a realistic fetal head, birth canal and pelvic floor to facilitate natural rotation of the head as it descends
13	**IUD training manikin**
1	The manikin should be accompanied with surgical tools. It should provide comprehensive IUD training at all stages.
2	Simplified human anatomical model of a postpartum uterus after birth. It should support training in postpartum intrauterine device insertion, uterine balloon tamponade insertions and other postpartum uterus interventions.
3	Simplified human anatomical model with both an interval uterus and a post-abortion uterus. It should support training for a variety of sexual and reproductive health interventions such as vaginal examinations, IUD insertion and removal, and for inspecting anteverted and retroverted position of the uterus.
4	The manikin should be supplied with surgical tools- Kelly Forceps, Sponge forceps, Sim Speculum, Sponge forceps, Vullselum Forceps, Cusco Speculum, Uterine sound tool, MVA Cannula, Artery Forceps.
5	Should be provided with male genitalia for condom placements
14	**Breast Examination**
1	It should be latex free and provide skills to perform clinical Breast examination
2	Soft tissue breasts should look and feel realistic

3	It should facilitate training on examination of different breast pathologies including carcinomas, cysts, aspiration of cyst, fibrocystic diseases and fibro adenoma, Identification of lymphnodes (axillary, supra & infraclavicular)
4	Clavicular and axilla pads for accurate lymph node placement
5	Both Simulated Patient and bench top training should be possible
	Turnkey work
1	It Should include
2	All modification, Alteration of Civil structure as per the requirement of Skill lab.
3	All the necessary partition to be done with High density Ply wood with Mica finished upto 2.5 ft to 3 ft from the floor and above that must be 12 mm toughened itched glass
4	Signage for the entire area
5	Storage rack in each and every room as per the requirement & indicated in the layout with lock and Key facility
6	Blinds/Curtain with rails required for the entire area
7	Electrical & lights fittings must be of adequate no as per the requirement.
8	The bidder has to submit the detail 3D drawing as well as the Items offered in the technical bid
9	6 nos of CCTV camera Ceiling Mounted Camera with LMS to display /debriefing scenarios.
10	Hand washing facility in the skills lab
1	**Debriefing Room/Multipurpose room**
1	It should accommodate 30+2 people at a time
2	Must be supplied with 30 no Student chair with writing Self and cushion and two nos. of executive chair
3	Must be supplied one Table with two nos of executive chair.
4	The room should have supplied with 1 no large 96” UHD interactive board
5	Must include audio-visual system including Microphone, speaker and audio amplifier system which must be integrated with LMS for debriefing the skills and scenarios
6	Sound proofing of the room is also included if required
7	One podium
2	**Full body Mannequin Room & other Full patient model mannequin**
1	Must be supplied with bed, and other furniture’s
2	Must have control room
3	Adequate no of work table, Executive chair, Control system must be a part of the system
3	**Furniture**
1	As mentioned above in room wise
2	Chairs and table for reception Area
3	Executive Table & chairs for Office room
4	Storage lockers for storage area
5	Particle board /Engineered wood /Laminated board will not be acceptable
6	Individual demonstration Table For task trainers
a	Should have door Opening only
b	Must have locking mechanism for safe storage

c	Must have Shelf with channels which can be dragged outside which will be easier for placement of task trainers/mannequins
d	Work/Demonstration tables should be off the ground of around 4-6” with sturdy legs
e	Table top should be afloat jerk out of at least 6” from all sides
7	Furniture approved make Godrej / Midmark/ Featherlike / NilkamalEtc with BIFMA or equivalent Quality certification

	Orthopedic Battery Operated Drill System
Sl.No.	**Specifications**
	Drill and Reamer Hand piece:1No.
•	Selection of Drilling and Reaming with Hand Piece or attachment hand
•	Should have dual or single trigger for forward and reverse mode
•	Drilling Speed – 0 to 1,100 rpm, Reaming Speed – 0 to 400 rpm
•	Should have variable speed control on the hand piece
•	Ream torque of 80-200 in/lbs
•	Drill torque of 15-40 in/lbs
•	Should have DC brushless motor for low maintenance
•	Should be supply with appropriate adaptors for drilling, reaming and pin placement and wire placement
•	Weight of hand piece with battery should be not more than 1.5 kg
•	Fully Cannulated 4.0 mm hand piece
•	Should have Pistol grip Hand piece
•	Toolless 360˚ attachments insertion
•	Should be autoclavable
•	Dedicated Forward and Reveres switch with safe mode
•	Can be calibrated for the consistence performance
	Saggital Saw Hand piece: 1 No.
•	Should have 10,000 cycles per minute or more
•	Weight of hand piece with battery should be Not more than 1.7 Kgs.
•	Blade mount should be adjustable to different angles with 360˚ rotation
•	Should have tool less mounting of accessories
•	Should have DC brush less motor for low maintenance
•	Should be autoclavable
•	Should have safe mode
•	Blade arc of excursion should be 3˚-6˚
	Reciprocating Saw Hand Piece : 01 No
•	Should have Safe Mode
•	Should have control with Trigger with Free speed of 10,000 cycles per minute or more
•	Weight of hand piece with battery should be Not more than 1.7 kg
•	Should have DC brush less motor for low maintenance.
•	Should have Pistol grip Hand piece
•	Should have tool less mounting of accessories for all blades or attachments. .
•	Should be autoclavable.
•	With different blades it should have minimum speed of 10,000 CPM
	Drill and reaming Attachments: 1 No. (each)
•	1/4 inch Jacobs Drill Attachment with key
•	Quick Connect attachment
•	Reamer Attachment Chuck
•	Hudson Attachment
•	Hudson Modified attachment

•	K Wire Collet Attachment(0.7 mm to 3.2 mm)
•	DHS/DCS attachment
	Battery Charger: 1 No.
•	220-240 volts charger
•	Should have capability to identify the worn out battery
•	Should have to charge four batteries at a time without any module or modification need
•	Should have an indicator to provide battery status for charging.
•	Should have reconditioning futures for battery for Ni cd battery
•	Should be able to charge different batteries with same charger
	Battery Kit: 4 Nos.
•	Li Ion/Ni-MH batteries with low internal impedance to deliver higher current than other battery types,
•	Should be of minimum 9.6 V
•	Should have a run time of minimum 15 minutes
•	Should include Autoclavable outer housing
•	Shield to protect battery from the housing
•	180˚opening of battery housing for easy insertion of battery
	Oscillating Saw Blades -5 Blades each
•	Width 15-25 mm, length 85-95 mm, Cutting thickness 1.25-1.30 mm
•	Width 10-15 mm, length 75-95 mm, cutting thickness 0.5-1.5 mm
•	Width 15-25 mm, length 80-90 mm, cutting thickness 0.5-1.5 mm
•	Width 15mm -25mm, Length 85-95 mm, Cutting Thickness 1.30 -1.40mm
•	Width – 8-10 mm, length – 20-35 mm, thickness – 0.3-0.4 mm
	Certification:
•	Should have BIS certification or should have ISO Certificate
	Service & Support:
•	The company must be have their service center in India with ability to provide service within 24 hrs. notice
•	The company must provide a loaner support in case equipment is under warranty or under CMC
•	Company has to provide training & education for equipment handling to all CSSD, Bio Medical & OT Staff
•	Company must provide the maintenance schedule with minimum 2 onsite services in a year have with company trained engineer
	EMD Status

Furniture For Modular OT	
Sl.No.	**Specification**
Category 1	
1	**Sofa Set (5 Seater / L shape) - Leather type - 6 units**
Size	L Shape 2600mmW*2275mmW* 770mmD* 840mmmH
Understructure	S' Spring suspension system built in the base frame for a bouncy feel, Solid pinewood back frame
Foam	28D – 75 mm thick 32D – 25 mm thick super soft foam With 32D – 25 mm thick super soft topper foam. [200GSM recron sheet on the top of the topper foam for leatherette option only], Back cushion is made of [upper foam : 32D 175 mm + lower foam : 32D 100 mm] super soft foam
Upholstery	Leatherite
Legs	Polypropylene with 20% Talc filled High impact durable legs
Display Side unit	Material : PLT of thickness 18mm and PVC
	Lipping of thickness 2mm
2	**Center table - 6 units**
Size	Overall Size : W x D x H - 1202 x 594 x 411mm
Body	All panels are made of 18mm Prelaminated Particle Board, with all exposed edges having 2mm thick PVC edge banding. Middle horizontal panel provides storage area. Four nylon bushes are provided.

Top	It has top surfaces made of glass & PLT panel. 8mm thick toughened glass with UV plate glued on it. This glass is fixed with the side vertical panels. PLT top panel is hinged with side vertical panels to open upwards
Finish	PLT panels are in WENGE shade having SUEDE finish. UV guled plates under glass have SUNRAY finish.
3	**Locker (for 20 People) - 5 units**
Size	For 5 units - 1875mmW* 470mmD* 1950mmH
Construction	Material Should be CRCA 0.5mm Thickness and doors 0.6mm thick CRCA. Construction Should be Rigid knockdown construction
Locking	Should be provided with Cam Lock
Capacity	Shelf Uniformly Distributed Load Capacity per each shelf level is 20 Kg maximum
Finish	Epoxy Polyester Powder coated to the thickness of 50 microns (+/- 10).
4	**Wardrobe with hanger compartments - 4 units**
Size	Product Size:900mm(W)x507mm(D)x1950mm(H)
Construction	Construction & Material : Aesthetically appealing Slimline, completely, knock down construction,
	Removable Skirting to cover integral legs, Legs fitted with screw type leveler, Made from combination of CRCA 0.8 mm & 0.6 mm Thickness.
Main Door	Main Door Steel Hinged Door, Main Door Locking / handle: Handle & Base Aesthetically appealing,
	Ergonomic, flush with door made from Zinc alloy, 3 way 90 Degree Removable key type Cam lock & locking mechanism

Body	Height wise Adjustable Shelf Mounting, 2 Nos. Of Full Adj.Shelves . 1 no. Full length Hanging rod below top shelf mounted on Snap-on type plastic brackets
Finish	Epoxy Powder coated to the thickness of 50 microns (+-10). Product should be green pro certified
Certification	Green pro by CII/Equivalent
5	**Scrub almirah (Front glass Door)**
Size	1981H x 916W x 486D
Construction	Welded body made with thick CRCA 'D' Grade. Shelf should be made up of 0.7 thick CRCA 'D'
	Grade. Back should be made up of 0.8 mm thick CRCA 'D' Grade. Doors should be made up of 0.8
	mm Thick High Yield strength CRCA and glass. All other components should be made up of 0.9mm
	Thick CRCA'D' Grade. Passed trhough 7 tank pre-treatment process flow i.e degreasing , water
	rinsing, Derusting , water rising , phosphating , Water rinsing, passivation
Handle	Brass Handle and a two way locking mechanism with shooting Bolt.
Shelf	Shelves should be height adjustable with a uniformly distributed load capacity of maximum 40 kg per shelf
Finish	Epoxy powder coating finish of thickness 50 micron(+_10).M10 Screw type leveller with hex plastic base for levelling.
6	**Recliner - 1 seater - 4 units (leather)**
Size	87 x 107 x 86 cm
Foam	24 Density foam + Pocket Spring (49 Nos. of Dia 50 mm / seat) Spring Rod Dia =1.6 mm+ 24 density foam.

Fab Leather Upholstery	The microfibre fabric upholstery gives it a leather like feel, while giving it an edgy look.
Lumbar Support	Feel your body relax as you take a seat. Superior back support is provided by the chair to contour
	to the natural curve of your spine
Construction	Kncked Down
7	**4 Seater table with chair for cafeteria - 4 units**
Size	1135mm x1135mm x (H)750mm
Top	The Table top to be made out of 25mm thick colourful pre laminated mdf board. The working edges shall be provided with machine pressed 2mm thick PVC edging using special hot melt glue at hot temperature
Understructure	The table top shall be supported with ms powder coated pole. Bend pipe understructure of MS powder coated pipe dia 38 mm, 2mm thick with SS machine crews
Legs	MS powdoer coated legs
Glide	Glides are fixed at thw bottom
8	**Cafeteria chair - 16 units**
Seat / Back	The seat and back are made up of injection moulded high impact strength polypropylene polymer compund with indoor grade UV resistance. Seat size : 52.5 cm (W) x 53.2 cm (D) Back size : 51.6 cm (W) x 40.5 cm (H)
Understructure	MS Powder coated understructure. The powder coated (DFT 50+/-10 micorns) welded tubular frame is made from dia 2.22+/-0.03 cm x 0.16 +/- 0.0128 cm and 3.5 +/- 0.03 cm x 1.5 +/- 0.03 cm x 0.16 +/- 0.0128 cm MS ERW tube

Shoe	The shoes are made of high impact strength Polypropylene polymer compund with indoor grade UV resistance and pressed fitted with tubular frame	
Overall dimansion	Width (W) : 52.5 cm - Depth (D) : 55.8 cm - Height (H) : 84.5 cm - Seat Height (SH) : 45.0 cm.	
Certification	Product should be Greenguard Gold (UL), IAQ Gold, GRIHA & SVAGRIHA/Equivalent Cerified	
9	**Almirah with front glass door - 12 units**	
Size	1981H x 916W x 486D	
Construction	Welded body made with thick CRCA 'D' Grade. Shelf should be made up of 0.7 thick CRCA 'D'	
	Grade. Back should be made up of 0.8 mm thick CRCA 'D' Grade. Doors should be made up of 0.8	
	mm Thick High Yield strength CRCA and glass. All other components should be made up of 0.9mm	
	Thick CRCA'D' Grade. Passed trhough 7 tank pre-treatment process flow i.e degreasing , water rinsing, Derusting , water rising , phosphating , Water rinsing, passivation	
Handle	Brass Handle and a two way locking mechanism with shooting Bolt.	
Shelf	Shelves should be height adjustable with a uniformly distributed load capacity of maximum 40 kg per shelf	
Finish	Epoxy powder coating finish of thickness 50 micron(+_10).M10 Screw type leveller with hex plastic base for levelling.	
EMD		
Conclusion for Category 1		
Category 2		
10		Window Curtain With Railing
11		Partition Curtains

	Vessel Sealing and Bipolar Resection
Sl.No.	**Specifications**
1	It should be anintegrated system with 300W output generator and a single LCD touch screen for Monopolar,Bi-Polar, Vessel Fusion and Under-water Bipolar Resection in Saline integrated in one generator.
2	The system must be micro-process or controlled which should identify the tissue type with a real time feedback system, and adjust the power togetthe desired surgical effect on the tissue.
3	The Power Efficiency Rating of the generator should be more than 96%.
4	System should have 2 monopolar output,1Bipolar output and1Vessel Sealing output.
5	The system having 2 monopolar outputs, both working simultaneously, atone time 2 cautery pencils should work together.
6	The Monopolar output must have Cut,Blend, ,Soft Coag, Fulgurate and Spray mode.
7	The Bi-Polar must have Low,Standard and Macro mode with AutoBi-Polar control with Bipolar current ammeter.
8	The system should be able to be used with ablation procedures and instruments.
9	System should have separate monopolar,bipolar&Vessel Sealing footpedal.
10	System should have adequate internal memory for storage of programs and error data foratleast 500 cases.
11	The system should be able to store settings and minimum 10 different program settings.
12	The system should have one different Vessel Fusion output which should be able to seal and divide artery, veins along with tissue bundle up to and including 7mm in diameter, and fused vessels should be able to withstand more than 3 times of normal systolic blood pressure(i.e. approx. 300mmhg).
13	The Vessel seal system should be of minimum of 300W at a rated load of 20 ohms.
14	The vessel sealing system should have simple audio visual feedback display from the generator. This should include:
A	System should have System Error Indicator
B	System should have System status indicators such as Self test, ready for use, ready for sealing/seal cycle complete, sealing in process
C	Seal cycle incomplete/Complete alert
D	System should have usage limit indicator
E	System should have instruments status indicator.
15	The vessel sealing system should support both open and laparoscopic hand instruments
16	The vessel sealing hand instruments should have cutting independent of sealing.
17	There should be an option of enabling or disabling the footswitches.
18	The system should have demo mode facility / recall facility to recall the last setting used by user.
19	System should have bipolar resection with saline facility in-built in the integrated in main unit software without any interfacing cable
20	Selectable range of bipolar cut initiation, should have 5/6 combinations of cutting and coagulation settings.
21	System should be compatible of Polyhesive /adoptive contact quality monitoring system.

22	System should have audio-visual alarm facility, to indicate any breakage of direct contact between the patient and patient plate.
23	All open surgery including head and neck and thyroid can be precisely controlled with very less thermal spread by using sealing technique.
24	Integrated seal with choice of cut of 10 mm and 5 mm should be there.
25	Vessel sealing instrument should have nano-coated jaws and should be having curved tip for dissection purpose.
26	Vessel sealing instruments should not work under auto-cut.
27	Both Footswitch and hand control mode should be available.
28	System should be Compatible with Argon Coagulator and smoke evacuator and CUSA
29	The system should be upgradable and should have RS232, USB, Ethernet port/wireless for on field software downloads, upgrades and serviceability.
30	Mounting Cart manufacturer by the original principal manufacturer, to be provided with the equipment.
	• Accessories :
1	Bipolar Foot Switch - 1Nos.
2	Monopolar Foot Switch - 1 Nos.
3	Universal Active Adapter - 2 Nos
4	Vessel sealing Footswitch - 1Nos.
5	Disposable Hand Switching Pencil - 1Box (10 pcs)
6	Disposable Patient Plate - 1Box (5 Pcs)
7	Bipolar Cable (Reusable) - 5Nos.
8	Monopolar Cable (Reusable) - 3Nos
9	Cushing Bipolar Forcep Long & short Straight - 2Nos.each
10	Curved Maryland Jaw vessel sealing instrument 37cm (Box of 6pcs) - 5 Pcs
11	Straight jaw Blunt Tip vessel sealing instrument 37cm (Box of 6pcs) - 5 Pcs
12	Open surgery small vessel sealing instrument (Boxof6pcs) - 5 Pcs
13	Open surgery Curved Maryland Jaw vessel sealing instrument 23cm - 5 Pcs
14	Bipolar Resection cable - 1Nos
15	Bipolar Resection Foot Switch - 1Nos.
	Term & Conditions
31	The system should be USFDA/BIS/European CE approved.
32	The Vessel sealing instruments should also be USFDA/BIS /CDSCO/BIS Approved
33	The Manufacturer/Agent should quote the latest model available in the market. (Undertaking to be given by the Manufacturer).
34	Warranty & CMC – 5 years must be quoted as % in the technical bid which should Not more than 5% of the quoted value.

	3D mapping anatomical Electrophysiology system
Sl.No.	**Specifications**
1	Capable of 3D non-fluoroscopic mapping of arrhythmia facilitates radio frequency ablation
2	Electro anatomic 3D mapping should be based on location technique
3	Platform based on PC computer
4	The equipment should be State of Art with capability to create 3D map of multiple Arrhythmias
5	System should be based upon open Platform allowing the use of any make of regular EP catheters form multiple manufacturers for both 3D Mapping & Ablation
6	Intuitive Graphical representation of catheters up to 256 Shadows to identify previous position.
7	System should offer both Contact & Advanced Non-Contact Mapping for multiple arrhythmias
8	Should have the capability of Single Beat Non-Contact Mapping to treat Non-sustained arrhythmias & create Voltage Map from a SINGLE PVC beat
9	Intuitive Simultaneous Graphical display with Real time navigation. Should offer uninterrupted view of unlimited number EP catheters and minimum 128 Catheter Electrodes in a three-Dimensional Map.
10	Must have the capability to record simultaneously up to 3000 Virtual Unipolar Electrograms& display them as selected by user
11	Should store permanently at least 10 beats of patient data & have the facility to make a Map from stored ECG in the Review mode.
12	Should have Respiration compensation facility by measuring actual change by impedance & modest patient movement should not affect the procedure
13	Should have the capability of creating Real time geometry from up to 20 electrodes on the catheter
14	Should offer Fly Eye mode to check the electrode signals & impedance
15	Should offer 1 TB Hard drive with separate partition of 400 GB of patient data storage
16	Should offer option of doing pediatric cases as well on the 3D system.
17	Should offer feature of simultaneous Real time and Review Options.
18	While doing complex fractionated electrogram (CFE) mapping system should allow user to define data collection interval from 1-8 seconds
19	D system should be able to integrate with all the equipment's in the Cath lab including wide range of Recording system, Generators (including Cryo)
20	3D System should have a minimum of 2 KHz sampling rate for best signal quality
21	Should be BIS approved as mark of quality standard
22	Should provide the software and option of Remote clinical support

23	Should have advanced capability of displaying simultaneous 2 live Voltage & time maps
24	Should display both Bipolar and Unipolar maps for enhanced visualization
25	Should be able to do faster high-density mapping by allowing point collection from all electrodes of the catheter
26	Should provide option of Automatic mapping of the defined area for faster mapping and marking points automatically.
27	Should provide compatible Contact Force Technology
28	**Documentation:**
1	User / Technical / Maintenance manuals to be supplied in English.
2	Log book with instructions for daily, weekly, monthly and quarterly maintenance checklist. The job description of the hospital technician and company service engineer should be clearly spelt out.
3	Cost close consumables and accessories which are not covered under warranty (no spare parts will be considered) & CMC period has to quote in schedule XI as percentage value in the Technical Bid which will be freeze for entire warranty & CMC period ,Failing which bid will be treated as non-compliant
29	**Environmental factors:**
1	Shall meet IEC-60601-1-2:2001 (Or Equivalent BIS) General Requirements of safety for Electromagnetic Compatibility or should comply with 89/366/ECC; EMC-Directive. Certificate must be submitted
2	The unit shall be capable of operating continuously in ambient temperature of 30-40 deg C and relative humidity of 15-90%
3	The unit shall be capable of being stored continuously in ambient temperature of 10- 50 deg C and relative humidity of 15 – 90 % .
30	**Warranty and Maintenance**
1	Warranty for 5 years followed by CMC for 5 years including Spares & service
2	Mandatory 2 PMs / Year with unlimited breakdown calls has to be attended by the bidder/manufacturer throughout the warranty & CMC period at site .i.e. NEIGRIHMS, SHILLONG.
3	Duly signed Mandatory PM reports have to be submitted periodically, falling which necessary action will be initiated as per term& condition of the tender.

4K Laproscopic system with related Instruments &acessories		
Sl.No.	**Specifications**	
		Quantity
1	**4K UHD Medical Grade Monitor Screen size of 32 inch or more :-1 no**	**1**
	The monitors should have following Specification :-	
a	Facility to be connected to 4K UHD and FHD video sourcre.	
b	Color Space – BT.2020 emulation	
c	Aspect ratio: 16:9 or better	
d	Effective Resolution: 3840 X 2160 Pixels	
e	Inputs: 1 x DP 1.2 , 2XDVI-D ,2 x 3G-SDI / 1X 12G SDI	
f	Outputs: 1 x DVI-D ,2 x 3G-SDI/1X 12GSDI	
2	**4K UHD Camera Control Unit (CCU)**	**1**
a	The system should be Digital endoscopic video camera with maximum Resolution of 3840 X 2160 pixels and progressive scan to guarantee genuine 4K.	
b	The system should have facility of 3x Digital Zoom Lens or more	
c	System should have facility to offer various visualization modes for surgery and diagnosis by shifting the color spectrum likeNIR/ BLUE & GREEN light for recognition of the finest tissue structures and their differentiation.	
d	The CCU should be complete with all accessories so as to connect 4K UHD , FHD, process and display the signals in their native resolution	
e	Picture in Picture of visualization modes.	
f	Automatic adjustment of light intensity of light source.	
g	Pixels: 3840 X 2160 Pixels	
h	Video output: 1 Display Port 1.2 ,1 x DVI-D output, 1 x 12G-SDI output, LAN connection, 4 x USB connection	
i	Should have compatibility for selecting 4K and Full-HD output	
j	**System should be ready to be use with flexible video choledochoscope/ flexible video choledochoscope with chip on tip and necessaey CCU ,Camera Head with adoptor must be included in the offer**	
3	**4K UHD Camera Head**	**1**
1	Pixels: 3840 X 2160 Pixels	
2	Microprocessor controlled	
3	Lens: Integrated Zoom Lens, f = 18mm	
4	Color Space: BT.2020 emulation	
5	Must have different Control buttons to control the camera functions/presets from sterile zone (at least one of them freely programmable).	
6	The surgen should not feel any heatoutput from the Camera head during long procedures.	
4	**Light Source 300W LED with Fiber optic cable -1no**	
1	Cold Light Fountain LED	
2	Lumens: 2000 and above	

3	Color Temperature: approximately 6000K	
4	Should have touch display which provides an intuitive & user-friendly interface that directly displays relevant data	
5	Lamp life of approx. 30,000 hrs (or more)(if xenon light source the bidder will supply equivalent life hours no of xenon bulb along with the light source)	
6	4.8 mm Fiber Optic Cable and 300 cm long (2 nos)	
7	Certified To: IEC 601-1 & UL 544 CE According to MDD, protection class 1/CF	
5	**Endoscopic Trolley (from the same OEM)**	
1	Endoscopic Trolley comaptible with the above system from the same manufacturer should be provided having the following:	
2	Epoxy Coated	
3	all necessary electrical connections incorporated in the trolley	
4	Must have ergonomically desiged space to arrange all the laproscopic systems as well as proper handles for easy movements	
5	Good size locable dual castors having controls for straight movement.	
6	Must have adequate no of Power points with Switch with safety features	
7	Must have a power cord of minimum 3 meter length.	
6	**ELECTRONIC INSUFFLATOR**	
1	Fully automaticelectronically microprocessor controlled gas filling sytem .	
2	Flow rate should be more than 45 litres per minute.	
3	Audio visual signals in case of malfunction or excessive pressure.	
4	Connectible to CO2 from medical gas pipeline/ cyliders	
5	Easylyacessable Control keys on front /top panel.	
6	Side by side display of actual and preset parameters: flow rate, pressure and gas consumed.	
7	Should have feature like pre heating of gas to body temperature.	
8	Should have feature easy evacuation of smoke and mist.	
9	Memory for retention of previous pressure settings.	
10	Should include pin-index connection to small / big gas cylinder with regulator, high pressure hose, mains cord, silicone tubing set-2 nos , universal wrench and gas filter-5 nos	
7	**IRRIGATION UNIT**	**1**
1	Pump for irrigation and suction.	
2	Maximum irrigation pressure 400 mm Hg.	
3	Suction pressure 0.75 bar.	
4	Control from control panel and / or foot pedal.	
5	Overflow protection on suction bottles.	
6	Accessories should include silicone tubings-2nos , bacterial filter -5 nos and bottles with cap	
8	**4K TELESCOPES**	**1**
1	Compatible Telescopes with the 4K system should be quoted with dimensions as below:	
2	10mm, 0 Degree 29 cm or more working Length – 1 each	
3	10mm, 30 Degree of 29 cm or more working Length – 1 each	
4	5mm ,0 Degree of 29 cm or more working Length – 1 each	

5	5mm , 30 Degree of 29 cm or more working Length – 1 each	
9	**Instruments :**	
1	**Reusable Veress 10 & 13 cm Pneumoperitoneum Needle**:-Spring loaded blunt stylet luer lock length 10 / 15 cm.	**3**
2	**Reusable Trocar : 5 mm**.:-Multifunctional valve, insufflation stopcock and threaded sleeves, pyramidal tip, length (10.5 cm).	**3**
3	**Reusable Trocar : 10 / 11mm :-**Multifunctional valve, insufflation stopcock and threaded sleeves, pyramidal tip, length (10.5 cm).	**3**
4	**Reusable Trocar : 12 mm:-**Multifunctional valve, insufflation stopcock and threaded sleeves, pyramidal tip, length (10.5 cm).	**3**
5	**Safety Trocar with Port.:-**10 mm length approx 10.5 mm.	**4**
6	**Spare Sealing Trocar Caps for Trocar. :-**5 – 6 mm.	**4**
7	**Spare Sealing Trocar Caps for Trocar. :-**10 – 11 mm.	**10**
8	**Reusable Reducer Sleeve. :-**10 / 11 mm to 5 / 4 mm.	**2**
9	**Reusable Reducer Sleeve.:-**12 mm to 6 / 5 mm.	**2**
10	**Suction and Irrigation Cannula. :-**Size 5 mm, length 36 cm, used with suction and irrigation handle.	**3**
11	**Grasping Forceps – Toothed 2 x 4 Teeth.:-**Double action jaws, rotating with connector pin for unipolar coagulation, size 5 mm, length 33 – 36 cm, dismantling facility. With rachet	**3**
12	**Grasping Forceps – Toothed 2 x 3 Teeth. :-**Double action jaws, rotating with connector pin for unipolar coagulation, size 5 mm, length 33 – 36 cm, dismantling facility,withrachet	**3**
13	**Maryland Forceps.:-**Double action jaws , rotating with connector pin for unipolar coagulation, size 5mm, length 33-36cm, dismantling facility.	**4**
14	**Grasping Forceps – Atraumatic. :-**Double action jaws, rotating with connector pin for unipolar coagulation, size 5 mm, length 33 – 36 cm, dismantling facility.	**2**
15	**Grasping Forceps – Mixter.:-**Double action jaws, rotating with connector pin for unipolar coagulation, size 5 mm, length 33 – 36 cm, dismantling facility.	**2**
16	**Grasping Forceps – Plain Dissection & Grasping.:-**Double action jaws, rotating with connector pin for unipolar coagulation, size 5 mm, length 33 – 36 cm, dismantling	**3**
17	**Grasping Forceps –** Babcock.Double action jaws, rotating with connector pin for unipolar coagulation, size 5 mm, length 33 – 36 cm, dismantling facility.	**3**
18	nathalson Retractor:-78 mm ,Sand blasted to eliminate light reflection with table attachment for holding retractor	**1**
19	**Hook Scissors.:-**Double action jaws, rotating with connector pin for unipolar coagulation, size 5 mm, length 33 – 36 cm, dismantling facility.	**3**
20	**Micro Scissors.:-**Single / Double action jaws, size 5 mm, length 33 – 36 cm.	**2**
21	**Rotating Metzenbaum Scissors.:-**Double action jaws, rotating with connector pin for unipolar coagulation, size 5 mm, length 33 – 36 cm, dismantling facility.	**3**
22	**Bipolar Coagulating Forceps.:-**Size 5 mm, length 33 – 36 cm fenestrated.	**2**

23	**Maryland Bipolar.:-**Double action jaws, rotating with connector pin for bipolar coagulation, size 5 mm, length 33 – 36 cm, dismantling facility.	**3**
24	**CO2 Connector.:-**Compatible with CO2 "B" type cylinder.	**1**
25	**High Frequency Cord.:-**For 5 mm & 10 mm hand instruments with monopolar electrodes, spatula tip.	**2**
26	**High Frequency Cord:-**For 5 mm & 10 mm hand instruments with monopolar electrodes, hook tip.	**2**
27	**Knot Pushers.:-**Eye type, length 33 – 36 cm.	**2**
28	**Suction Irrigation Cannula.:-**10mm	**2**
29	**Stone Extractor.:-**10 mm single / double action Jaws.	**2**
30	**Hassan Cone.:-**Adaptable to 10 mm trocar.	**2**
31	**Bowel Grasper.:-**10 mm fenestrated, rotatable.	**2**
32	**Blunt Obturator. :-**For 11 mm port.	**2**
33	**L – Hook.:-**Size 5 mm, length 33 – 36 cm with pin for cautery. Well insulated hook with small un- insulated working part.	**6**
34	**Fascia Closure Instrument:-**Size 2.8 mm, length 17 cm.	**3**
35	**Washers:-**For 5 & 10 mm cannula and reducers.	**10**
10	**Additional terms and Condition**	
1	All the Imaging Equipments& instruments are from same manufactures /OEM to avoid compatibility issues an to get better service support through out the warranty & CMC	
2	Prices of all equipments/Instruments/Consumables/Acessories must be quoted and consider as Rate contract through out the CMC & Warranty period of the tender)	
3	Price of all itmes mentioned in the BOQ must be consider for price evaluation	
11	**Standards, Safety and Training**	
1	Should be FDA/CE/UL/ BIS /CDSCO approved product.	
2	Manufacturer should have ISO certification for quality standards.	
3	Comprehensive training for users and support services till familiarity with the system.	
4	Electrical safety conforms to standards for electrical safety IEC 60601-1 (Or equivalent International / National standard) general requirement for Electrical safety of Medical equipment.	
5	The equipment complies with the requirement of the Medical Device Directive of class I equipment and Electromagnetic compatibility; all supporting documents must be provided.	
12	**Documentation:**	
1	User / Technical / Maintenance manuals to be supplied in English.	
2	Log book with instructions for daily, weekly, monthly and quarterly maintenance checklist. The job description of the hospital technician and company service engineer should be clearly spelt out.	
3	Cost of spare parts, consumables and accessoriesand not mentioned in the BOQ and which are not covered under warranty & CMC period has to quote in schedule XI as percentage value in the Technical BidList of consumables with price frozen for 10 years , or else will be consider to be cover throughout the warranty & CMC period.	

4	Calibration and routine Preventive Maintenance Support as per manufacturer documentation in service / technical manual has to be done throughout the warranty & CMC period.	
5	Compliance report to be submitted in a tabulated and point wise manner clearly mentioning the page / Para number of original catalogue / data sheet and the offer details has to submit in the technical bid. Any point, if not substantiated with authenticated catalogue / manual, will not be considered.	
6	Certificate of inspection and quality control indicating the S / N for all non-consumable items with date at the time of installation.	
7	All the technical specifications accepted in the compliance statement must be supported by Original Literature from the firm/O.E.M with Highlighting, Numbering & flagging in the compliance statement.	
13	**Environmental factors:**	
1	Shall meet IEC-60601-1-2:2001 (Or Equivalent BIS) General Requirements of safety for Electromagnetic Compatibility or should comply with 89/366/ECC; EMC-Directive.	
2	The unit shall be capable of operating continuously in ambient temperature of 30-40 deg C and relative humidity of 15- 90 % .	
3	The unit shall be capable of being stored continuously in ambient temperature of 10-40 deg C and relative humidity of 15 – 90 %	
14	**Warranty and Maintenance**	
1	Warranty for 5 years followed by CMC for 5 years including Spares &service.	
2	Mandatory 2 PMs / Year with unlimited breakdown calls has to be attended by the bidder/manufacturer throughout the warranty & CMC period at site.i.e. NEIGRIHMS, SHILLONG	
3	Duly signed Mandatory PM reports has to be submitted periodically, falling which necessary action will be initiated as per term& condition of the tender .	

4K UHD & 3D Laparoscopic system		
Sl.No	**Technical Specification**	**QTY**
1	4K UHD Medical Grade Monitor Screen size of 32 inch or more	1
	The monitors should have following Specification :-	
a	Facility to be connected to 4K UHD and FHD and 4K 3D video source.	
b	Color Space – BT.2020 emulation	
c	Aspect ratio: 16:9 or better	
d	Effective Resolution: 3840 X 2160 Pixels	
e	Inputs: 1 x DP 1.2 , 2XDVI-D ,2 x 3G-SDI / 1X 12G SDI	
f	Outputs: 1 x DVI-D ,2 x 3G-SDI/1X 12GSDI	
2	4K UHD Camera Control Unit (CCU)	1
a	The system should be Digital endoscopic video camera with maximum Resolution of 3840 X 2160 pixels and progressive scan to guarantee genuine 4K UHD and 4K 3D	
b	The system should have facility of 3x Digital Zoom Lens or more	
c	System should be capable of Near infra red fluorescence Imaging (ICG application) with below feature:	
	1) Overlay: white light image with superimposed display of NIR/ICG fluorescence. Possible to select the preferred color for NIR/ICG imaging. Either blue or green.	
	2) Monochromatic: NIR/ICG signal display will appear in different colors depending on the strength of the detected NIR signal.	
	3) Intensity Map: White light image with superimposed display of NIR/ICG fluorescence.NIR/ICG signal display will appear in different colors depending on the strength of the detected NIR signal.	
d	The CCU should be complete with all accessories so as to connect 4K UHD , FHD, process and display the signals in their native resolution.	
e	Picture in Picture of visualization modes.	
f	Automatic adjustment of light intensity of light source.	
g	Pixels: 3840 X 2160 Pixels	
h	Video output: 1 Display Port 1.2 ,1 x DVI-D output, 1 x 12G-SDI output, LAN connection, 4 x USB connection	
i	Should have compatibility for selecting 4K UHD & 4K 3D output	
3	4K UHD Camera Head	1

	Pixels: 3840 X 2160 Pixels	
	Microprocessor controlled	
	Lens: Integrated Zoom Lens, f = 18mm	
	Color Space: BT.2020 emulation	
	Must have different Control buttons to control the camera functions/presets from sterile zone (at least one of them freely programmable).	
	The surgeon should not feel any heat output from the Camera head during long procedures.	
4	Light Source 300W LED with Fiber optic cable -1no	1
	Cold Light Fountain LED	
	Lumens: 2000 and above	
	Color Temperature: approximately 6000K	
	Should have touch display which provides an intuitive & user-friendly interface that directly displays relevant data	
	Lamp life of approx. 30,000 hrs (or more)	
	4.8 mm Fibre Optic Cable and 300 cm long (2 nos)	
	Certified To: IEC 601-1 & UL 544 CE According to MDD, protection class 1/CF	
	Endoscopic Trolley compatible with the above system from the same manufacturer should be provided having the following:	
	Epoxy Coated	
	all necessary electrical connections incorporated in the trolley	
	Must have ergonomically designed space to arrange all the laparoscopic systems as well as proper handles for easy movements	
	Good size locable dual castors having controls for straight movement.	
	Must have adequate no of Power points with Switch with safety features	
	Must have a power cord of minimum 3 meter length.	
6	ELECTRONIC INSUFFLATOR	1
	Fully automatic electronically microprocessor controlled gas filling sytem .	
	Flow rate should be more than 50 litres per minute.	
	Audio visual signals in case of malfunction or excessive pressure.	
	Connectible to CO2 from medical gas pipeline/ cyliders	
	Easyly accessible Control keys on front /top panel.	
	Side by side display of actual and preset parameters: flow rate, pressure and gas consumed.	
	Should have feature like pre heating of gas to body temperature.	
	Should have feature easy evacuation of smoke and mist.	

	Memory for retention of previous pressure settings.	
	Should include pin-index connection to small / big gas cylinder with regulator, high pressure hose, mains cord, silicone tubing set-2 nos , universal wrench and gas filter-5 nos	
	Pump for irrigation and suction.	
	Maximum irrigation pressure 400 mm Hg.	
	Suction pressure 0.75 bar.	
	Control from control panel and / or foot pedal.	
	Overflow protection on suction bottles.	
	Accessories should include silicone tubings-2nos , bacterial filter -5 nos and bottles with cap	
7	Smoke Evacuation System and accessories	1
8	4K UHD IMAGE/VIDEO RECORDING AND DATA ARCHIVING SYSTEM	1
9	Endoscopic Trolley (from the same OEM)	1
10	TELESCOPES	
	Compatible Hopkins autoclavable Telescopes compatible to ICG with the 4K system should be quoted with dimensions as below:	
i	Telescopes with the 4K UHD system 10mm, 0 Degree 29 cm or more working Length – 1 each	1
ii	Telescopes with the 4K UHDsystem 5mm ,0 Degree of 29 cm or more working Length – 1 each	1
iii	Telescopes with the 4K UHD system 5mm 30 Degree of 29 cm or more working Length – 1 each	1
iv	Telescopes with the 4K 3D system with 3D to 2D sitchin option 10 mm 30 Degree of 29 cm or more working Length	1
11	IRRIGATION UNIT & accessories	1

4K Ultra High Definition Arthroscopic System with Shaver & Coblation Device	
Sl. No	**Tender Description**
1	**4K 3chip CMOS Camera -qty-1**
A	**Option a)Camera Control Unit with integrated light source :**
	· System must have inbuilt 4K UHD Camera Console, LED Light source & wifi enabled image management system with recording via USB port along with recording in APP through in built wifi.
	· Camera resolution must be 3840*2160 (native) 4K
	· Shutter speed should be 1/60 second through 1/10,000 second shutter speed (60 Hz)
	· It should have 4K Series digital interface (4K-SDI) & HD Series digital interface (HD-SDI)
	· USB Storage must accommodate 8 GB or more sized storage device (32 GB recommended)
	· USB Output Two USB Type A connectors; provides USB-compatible connection to flash or hard drives.
	· Standby button option – should have button which will Turns the control unit on and off.
	· Standby Illumination option – should haven Standby Illumination button to put light source is in standby mode and the light source is off.
	White balance can be done by console head
	· LED Light Source with life span of 30K hours
	· LED Light Source with control options on Camera head
	· Video Accessory Controls Two mini-phono connectors (3.5 mm)
	Option-b)Camera Control Unit with Separate light source :1 nos
	CCU-The Console should combine the latest technology, 4K vision (2160p), 4K 3-Chip CMOS camera with 10- bit for 1 billion colorizations. · Built in Wi-Fi router for wireless connectivity · Console / Tablet Interface should simplify use, and programmable individual surgeon preferences. · Rear Panel should have numerous input & Display Port/DVI Outputs/3G SDI Outputs. · Camera should have resolution of 3840X2160 lines with Progressive scan Technology. · It should have intuitive tablet controller/ touch panel that can be draped sterile to control features of imaging system. LED/XE Light Source – · LED light source should have 30,000-hour Life span · Powerful 300 Watt Xenon Lamp with emergency lamp facility · Should have 7 Year warranty against LED · Compatible with Light Cables of Different Manufactures
B	**Camera Head:**
	· Camera head should have 4K, 3 chip MOS video sensor technology
	· Camera head should provide5different custom button setting on 2 camera head button or better

	· Should have Ergonomic camera head design to help in reducing hand fatigue
	· Camera Head should be autoclavable and soakable
	· Camera Control Function – should be able to change camera setting by console, Camera Head & App
	· Camera head cable should be 12 feet (366 cm) long
	· Camera head weight shpuld not more than 1.5 lbs (0.7 Kg)
	· Must have transport shock and vibration compliance with ISTA 3A
	· Video Field Rate 60 Hz
C	**Fiber Optic Light Cable - 2 No**
	· Must be Autoclavable:
	· Reduced diameter with high fiber density.
	· Small bending radius for comfortable use.
	· 3 Meter in length.
	· Should be ROHS compliant.
2	**4K Monitor:1 no**
	· Monitor should have resolution 4096 x 2160 pixels
	· Monitor should support picture size 32 inches or more
	· Monitor should have aspect ratio of 16:09 or better
	· Monitor should have Pixel Efficiency of 0.9999
	· Monitor should have LED backlight; LCD with IPS Panel Technology
	· Monitor should have Luminnance (Panel Specification) of 770 cd/m2 (typical)
	· Monitor should have Contrast Ratio of 1450 : 1
	· Monitor should support Approx.1.073 billion colors
	· Monitor should have Viewing Angle (Panel Specification) of 89°/89°/89°/89° (typical)
	· Monitor should have Gamma 1.8, 2.0, 2.2, 2.4, 2.6, DICOM, Highlight
	· Monitor should have HDMI (x1) (HDCP 1.4 correspondence) Input
	· Monitor should have Input DVI-D (x1) (HDCP 1.4 correspondence) TMDS single link
	· Monitor should have SDI Input: 3G/HD/SD-SDI and BNC (x5)
	· Picture-in-Picture and Side-by-Side Display Modes
3	**Arthroscope - 2 scopes**
	30deg 4KO Direct View Autoclavable, arthroscope, dia 4.0mm – qty 1
	70deg 4KO Direct View Autoclavable, arthroscope, dia 4.0mm – qty 1
	field of view not less than 115deg, light post on opposite side of the direction of view with a locking fixation
	Working length should not be more than 160mm.
	Should have sapphire distal lenses and rear ocular windows for much greater scratch resistance than conventional glass.
	Sheath - qty - 1
	5.95 to 6.0mm, high flow diagnostic cannula, double valve, fully rotatable cannula with fenestrated tip.
	Trocar-qty- 1

	4.5mm conical obturator to fit with cannula.
4	**Hand Held Instruments**
	All Hand Held Instruments should - have one piece outer shaft and pinless hinge design for distal tip, ensuring unsurpassed strength and cutting efficiency.
	· **BASKET PUNCH with (Tip Profile – 2.52mm, Bite Width-3.17mm, Tip Width- 5.05mm)**
	o Straight- 1
	o Upbiter- 1
	o Curved left-1
	o Curved right-1
	· **BASKET PUNCH with (Tip Profile – 1.93mm, Bite Width-3.17mm, Tip Width- 5.00mm)**
	o Straight- 1
	o Upbiter- 1
	o Curved left-1
	o Curved right-1
	o Upswept-1
	o Elevator- 1
	· **BASKET PUNCH BACKBITER with (Tip profile – 3.93mm, Bite width- 2.38mm, Tip width- 5.58mm)**
	o Stingray left -1
	o Stingray right- 1
	· **BASKET PUNCH 90DEG ROTARY with(Tip profile – 3.86mm, Bite width- 3.17mm, Tip width- 6.79mm)**
	o 90deg rotary left – 1
	o 90deg rotary right- 1
	· GRASPER
	o Pitbull loose body grasper- 1
	o 3.4mm Aligator max grasper-1
	· ROTARY SCISSORS-
	o 20deg hooked left- 1
	o 20deg hooked right- 1
	· PROBE-
	§ 3mm heavy hook probe- 1
5	**Arthroscopic Shaver System with-**
	(a).Control unit -1
	(b).Handpiece Unit- 1 for shaver blades & burrs of sizes 3.5mm to 5.5mm
	(c).Mini shaver Handpiece Unit- 1 for shaver blades & burrs of sizes 2 mm to 3.5mm
	(d) Foot control- 1
	• Input voltage of 100 to 240V, 50/60 Hz power consumption not more than 350VA.
	• On-line LCD display for speed and direction referral. Touch screen console should be two oscillating modes
	• Three separate receptacles for motor drive, powered instrumentation and foot switch.

	• Maximum speed of burrs should not be less than 10000 RPM and 5000 RPM for blades. Minimum speed should be 100RPM .
	• Autoclavable light weight hand piece with two directional shaver blades placement with suction facility and replaceable cable long 10ft (3 m).
	• Variable speed footswitch with window locking facility and 3 operating modes i.e. forward, reverse and oscillation and should be flush lavas modes,
	• Option should be for Power drill and saw attachment on control unit
	• Should be supplied with atleast 6 pieces of shaver blades of each of the following diameter Shaver blades & Burrs.
	a. 4.5mm Full radius electrobades , (pack of 3)
	b. 5.5mm Incisor Blade (pack of 6)
	c. 3.5mm Incisor balde (Pack of 6)
	d. 4.0mm round Burr (pack of 6)
6	**Arthroscopic Coblation System – qty-1**
	· Technical Specifications for controlled tissue ablator for Arthroscopy
	· Controlled ablation based on low temperature bi-polar radio frequency technology. Should not have any need for the secondary patient grounding pad.
	· Should have real time flow regulation with console.
	· Should have tube temperature sensing and over temperature algorithm
	· The output voltage settings should be controlled by regulation on the generator by simple setting from Low to high. Output voltage of the RF current should vary from 0-320Vrms @ 100 kHZ frequency depending on the above settings
	· The generator should have a feature of Automatic scope saver detection, i.e. when the probe comes too close to endoscope the controller pauses radiofrequency output and resumes radiofrequency output when the probe is returned to safe distance.
	· The generator should have ability to use a foot control, wired or wireless.
	· The generator should also have the ability to use a finger switch controlled probes.
	· There should be ability to adjust ablation as well as coagulation with different settings
	· There should be compatibility for probes that are used for minimally invasive treatments of Tendons and Fascia as well as probes used for sculpting articular cartilage
	· The generator should be able to take different types of probes for open and minimally invasive arthroscopic procedures
	· The controller should be have the ability to tell the ambient temperature of the arthroscopic fluid (in the range of 20ºC to 60ºC) when connected with probes that have a thermocouple present near their tip.
	· The controller has facility to control temperature of joint without compromising time laps.
	· The Controller should have ability to adopt 2 different wands at a time.
	· The controller should have suction, no additional suction machine needed.
	· The Controller should have ability to store customised surgeon settings.
	· The controller should have vac facility to clear joint in one touch.

	· **Technical Specifications of 50º probe**
	· The probes should be a bipolar radiofrequency probe capable of producing plasma in presence of a saline conductive medium
	· They should have multi-electrode technology for even and continuous plasma formation for volumetric tissue removal
	· The probes should have capability for volumetric tissue ablation as well as coagulation
	· They should be able to operate at different settings to increase and decrease both the ablation and coagulation effects
	· They should be recognised by the RF generator and default settings should be applied automatically on detecting the probe
	· The probes should have suction capability and should have long suction tube to minimize use of additional suction.
	· The probes should automatically stop ablating if it gets too close to the arthroscope and start ablating again when a safe distance is attained (intelligent scope saver feature)
	· The probes should have a tip angle of 50º, maximum tip diameter of up to 3mm and a shaft diameter of 3.76mm
	· They should be capable of ablating at 1.5g/minute
	· It should have slim tip design to access on targeted tissue only
	· Probe should have vac option.
	· Probe should have multiple applications in knee like ACL debridement, Meniscal Debridement, Synovectomy, Chondroplasty and shoulder decompression, subacromial decompression, Frozen
	shoulder release, Rotator cuff, Glenoid labrum resection
	· It should have longer outflow tubing to prevent of thermal burn and no need of extra suction tubing.
	· It should have Settings that can be customized per surgeon preference and saved into profiles
	· It should have wand information and wand time usage per mode information
	· It should have System error and wand error and malfunctions info on screen
	Probes-
	· 90deg ablation probe with suction– 02
	· 60 deg ablation probe without suction– 02
	· articular cartilage probe- 02
7	**Arthroscopy Pump (Fluid Management System) – qty-1**
	• Maximum flow rate of not less than 2.5 ltr/min for procedural speed and efficiency
	• Should be LCD touch/Display screen are describe in the preoperative setup and operations.
	• Automatic Joint pressure maintenance upto 10-150 mmHg
	• Flow rate should be change & minimizes saline usage with control fluid outflow

	• Wireless remote control for full system control from the sterile field. Should be stop, start, lavage start/Stop, increase & decrease flow limit, increase & decrease pressure.
	• Advanced Flow Regulation for optimal flow performance and pressure maintenance
	• Disposable tube sets for inflow/outflow (box of 3pcs).
8	**ACL / PCL Drill Guide Systems:**
	Drill guide, aimers, and bullets for single hand operation –
	· ACL Drill Guide Handle-1
	· ACL Elbow Aimer ranging from 40 to 65 deg -1
	· ACL Tip Aimer ranging from 40 to 65 deg -1
	· PCL Tibial Aimer -1
	· PCL Femoral Aimer -1
	· 4-Point Bullet with four sharp points for secure engagement of the guide at any angle-1
	• Femoral endoscopic cannulated drill bit 5mm -1
	• Femoral Endoscopic cannulated drill bit 5.5mm -1
	• Femoral Endoscopic cannulated drill bit 6mm -1
	• Femoral Endoscopic cannulated drill bit 6.5mm -1
	• Femoral Endoscopic cannulated drill bit 7mm -1
	• Femoral Endoscopioc cannulated drill bit 7.5mm-1
	• Femoral Endoscopic cannulated drill bit 8mm -1
	• Femoral Endoscopic cannulated drill bit 8.5mm -1
	• Femoral Endoscopic cannulated drill bit 9mm -1
	• Femoral Endoscopic cannulated drill bit 10mm -1
	• Femoral Endoscopic cannulated drill bit 11mm -1
	• Femoral Endoscopic cannulated drill bit 12mm -1
	• Cannulated drill bit 5mm -1
	• tibial Cannulated drill bit 5.5mm- 1
	• tibial Cannulated drill bit 6m-1
	• tibial Cannulated drill bit 6.5m-1
	• tibial Cannulated drill bit 7mm -1
	• tibial Cannulated drill bit 7.5mm -1
	• tibial Cannulated drill bit 8mm -1
	• tibial Cannulated drill bit 8.5mm -1
	• tibial Cannulated drill bit 9mm -1
	• tibial Cannulated drill bit 10mm-1
	• tibial Cannulated drill bit 11mm -1
	• tibial Cannulated drill bit 12mm -1
	• Slotted sizing block from 5mm to12mm -1
	• Universal EndoFemoral Guide Handle -1
	• 5mm Offset Endofemoral aimer -1
	• 6mm Offset Endofemoral aimer-1
	• 7mm Offset Endofemoral aimer-1
	• Offset guide for precision tibial tunnel drilling, 2mm - 5mm -1
	• Notchmaster Currette 8.0mm -1
	• Tendon Stripper Slotted-1

	• Tendon Stripper closed-1
	• Depth Probe -1
	• Chondral Pick, large 20 deg-1
	• Chondral Pick, small 40 deg-1
	• ACL Instruments Sterilisation tray-1
	• PCL Safty Stop-1
	• PCL Elevator with Wire Catcher-1
	• PCL Tibial Rasp-1
	• 90 degree Diamond Rasp-1
	• 45 degree Diamond Rasp-1
	• Mensical Depth probe-1
	• 4.5mm Endoscopic Cannulated Drill Bit -1
	• 2.7mm Graft Passing Pin wire -(Box of 6).
	• 2.4mm Tibial Guide Wire for Tibial Tunnel- (Box of 6).
	• Cannuflex Guide wire 1.5mm Cannulation -(Box of 6).
9	**Arthroscopic Limb Positioner: 1**
	· Should be battery operated limb positioner for knee ,hip, shoulder, wrist & ankle arthroscopies
	· Should offer instantaneous limb repositioning with in sterile zone itself
	· Should deliver exceptional control of abduction, rotation & forward flexion in beach chair as well as lateral decubitus position in shoulder surgeries
	· Should come with a distal activation switch which can be attached to the sterile drape of the patient and can be used to reposition the shoulder by applying small pressure
	· Should come with square rail clamps to connect it to the OT table
	· Should have the provision for additional battery back up
	· Should come with the battery charger
	· Should come with traction accessory for the limb positioner & traction requirements
	· Should come with a cart to make it comfortable to move from one place to another
10	**Digital High Definition Recording System -1**
	· The Full High-Definition Digital Documentation System should be a high-end computer system based on Windows embedded platform (for security purposes) designed specifically for recording, managing, editing and archiving surgical images and video in HD (1920x1080) resolution.
	· The captured full high definition images & videos can be accessed from the hard drive for printing or saving onto multiple forms of external media which includes CD/DVD, USB Flash Drive or Hard Disk Drive(HDD)
	· It should have a touch screen display with 1TB Memory inclusive of External Hard Disk Drive (HDD)
	· Video Formats compatible MPEG-1,MPEG – 2 and MPEG-4 (Minimum)and Still Image formats like JPEG(.jpg) and BMP(.bmp)
	· Should offer multiple video signals like S Video, DVI, C-Video in both NTSC and PAL Formats.
	· Video Signals available : DVI, S- Video, C-Video(Minimum)

	· Functionality for Editing of Surgical Videos and Report Generation with Surgical Images
	· Should be compatible to 100-240V 50/60 Hz Power requirements
11	**A.Small Joint/Ankle Arthroscopy Set Arthroscope 2.7mm & 30deg: 1**
	· Direct View Arthroscope
	· Field of view: 80 deg
	· Angle of view: 30 deg
	· Diameter: 2.7mm
	· Working length: 120mm
	· Incorporated fibre optic light transmission
	· Sapphire lens for improve scratch resistance
	· Light post on opposite side of the direction of view with a j-lock fixation & stopcock
	· 2.9mm short cannula, with flow port -1
	· 2.9mm short obturator, conical tip -1
b	**Small Joint Arthroscopy Instruments**
	· **Microvector Drill guide system**
	o Micro vector drill guide -1
	o Offset drill guide -1
	o K-wire guide, .045”(1.1mm) -1
	o K-wire guide, .062”(1.6mm) -1
	o K-wire guide, .125”(3.2mm) -1
	· **Microfracture Picks**
	o Microfracture Pick 90 deg, small -1
	o Microfracture Pick 65 deg, small -1
	o Microfracture Pick 40 deg, small -1
	· **Small Joint Hand Instrument Set**
	o Micro Grasper, Straight - 1
	o Micro Grasper, Up 10 deg -1
	o Micro Punch, Straight -1
	o Teardrop punch, right -1
	o Teardrop punch, left -1
12	**Ergonomicaly designed Equipment Cart-1 nos**
	· Shockproof powder-coating
	· Anti-Static roller set with cable guards Ø 125mm
	· Detachable cable guards
	· 4 lockable castors
	· Isolating transformer 2000VA with earth leakage guard
	· 5 storage shelves
	· 1 extendable storage shelf approx. 150mm
	· 1 storage shelf with handle
	· Drawer
	· Mounting position for central-monitor-mount
	· Mounting position for articulation-monitor-arm
	· Cable winding aid
	· Foot pedal holder, Camera holder
	· Fluid bag holder

	· Tubing clamp
	· Power column with 10x power cables and equipotential bonding cables
13	**One egonomically designed over swivel type SS tray with preferably table mount attachment to place over the patient to keep sterile instruments/for intraoperative use -1 no**
14	Important Additional Points:-
	The item should have BIS/IS/ISO13485/DCGI approved
	The manufacturer should have direct presence or Exclusive Distributor in India with Service back up.
	The System should have capability for upgradation and connectivity to future Hospital Information System.
	Warranty – 5 year & CMC- 5 year after warranty period.
	Additional points
	System & Software should be HL7 & DICOM Compliant
	All electrical, Plumbing required to install the system must be in the scope of bidder
	System must be Complied to run with the domestic electrical supply i.e.230v AC -50 Hz
	The bidder must quote all items as per BOQ & compliance report must indicate the quoted Item with model /catalogue no & the bidder has to clearly submit the scope of supply items with detail description in the technical bid with quantity, failing which the technical bid not be considered for evaluation.
15	Standards, Safety and Training
	System Should be FDA/CE/UL/ BIS /CDSCO /DCFI/ISO 13485 approved product.
	Comprehensive training for users and support services till familiarity with the system.
	Electrical safety conforms to standards for electrical safety IEC standards (Or equivalent International / National standard) general requirement for Electrical safety of Medical equipment.
	The equipment complies with the requirement of the Medical Device Directive of class I equipment and Electromagnetic compatibility; all supporting documents must be provided.
16	Documentation:
	User / Technical / Maintenance manuals to be supplied in English.
	Log book with instructions for daily, weekly, monthly and quarterly maintenance checklist. The job description of the hospital technician and company service engineer should be clearly spelt out
	Cost of spare parts, consumables and accessories (Electrodes,Battery,Filters) which are not covered under warranty & CMC period has to quote in schedule XI as percentage value in the Technical BidList of consumables with price frozen for 10 years , or else will be consider to be cover throughout the warranty & CMC period.
	Calibration and routine Preventive Maintenance Support as per manufacturer documentation in service / technical manual has to be done throughout the warranty & CMC period.

	Compliance report to be submitted in a tabulated and point wise manner clearly mentioning the page / Para number of original catalogue / data sheet and the offer details has to submit in the technical bid. Any point, if not substantiated with authenticated catalogue / manual, will not be considered.
	All the technical specifications accepted in the compliance statement must be supported by Original Literature from the firm/O.E.M with Highlighting, Numbering & flagging in the compliance statement.
17	Environmental factors:
	Shall meet IEC-60601-1-2:2001 (Or Equivalent BIS) General Requirements of safety for Electromagnetic Compatibility or should comply with 89/366/ECC; EMC-Directive
	The unit shall be capable of operating continuously in ambient temperature of 30-40 deg C and relative humidity of 15- 90 % ,altitude upto 2500 mtrs
	The unit shall be capable of being stored continuously in ambient temperature of 10-40 deg C and relative humidity of 15 – 90 %,altitude upto 2500 mtrs
18	Warranty and Maintenance
	Warranty for 5 years followed by CMC for 5 years including Spares & service.
	Mandatory 2 PMs / Year with unlimited breakdown calls has to be attended by the bidder/ manufacturer throughout the warranty & CMC period at site.i.e. NEIGRIHMS, SHILLONG.
	Duly signed Mandatory PM reports has to be submitted periodically, falling which necessary action will be initiated as per term& condition of the tender.

	18 -channel ECG Machine
Sl No.	**Specifications**
	ECG Machine is a primary equipment to record ECG Signal in various configurations, 18 channels with interpretation is required for recording and analyzing the waveforms. This interpretation software should have the facility to derive and display 6 more ECG waveforms of posterior and right chest region.
1	Machine should be able to acquire all 12 Leads simultaneously and interpret them.
2	Machine should have bright color backlit LCD with minimum 7 inch display which enables the user to view all 18 lead ECG and other data on main screen.
3	Should have adjustable display for more smooth operation
4	Should display all 18 lead ECG and other data on bright color backlit TFT with minimum 7 inch display.
5	Should be easy to operate, 12 and 18 lead ECG must be measured with same machine
6	Should display waveforms, patient information, operation mode, heart rate, QRS sync mark, error messages.
7	Should be easy-to-operate, compact and lightweight, with weight not exceeding 5 kg including battery.
8	Should be portable and have handle to carry easily
9	Should have alphanumeric keyboard for patient data entry.
10	Machine should have inbuilt thermal recorder to print 18 lead ECG with analysis results on 210mm wide thermal ECG paper.
11	Machine should have option of recording ECG in different formats like 3, 4, 6 and 12 & 18 channels ECG.
12	Should have 1 minute rhythm recording (cascaded ECG) for 1 or 3 channel ECG lead.
13	Should have extended recording in case of arrhythmia detection, recording of rhythm and effected lead group should be automatically extended.
14	Should have both manual and automatic recording.
15	Should have AC, EMG suppression and high pass frequency filters.
16	Should display waveform status in case of any electrode detachment and noise.
17	Should have Signal processing with acquisition sampling rate of 6000 sample/s.
18	Should have large memory capacity: up to 300 ECG files in internal memory and 2000 ECG files in SD memory card/USB.
19	Should have inbuilt battery for at least 30 min of continuous recording.
20	Should have capability to transfer data to PC by SD memory, LAN or by WLAN card.
21	ECG Data can be reviewed and managed on a Windows® PC with optional ECG Viewer software.
22	Machine should have facility to connect to Hospital network (HIS) through LAN.

23	Should comply with IEC standard IEC60601-2-51 international standard for digital electrocardiographs specifying accuracy of signal processing, ECG measurement and analysis
24	Warranty: system must be quote with comprehensive warranty of 5 years including accessories
25	Scope of supply should include
a	ECG Machine 12 Leads with Interpretation - 01 No.
b	Patient ECG Cable - 01 No
c	Chest Electrodes Adult (set of six) - 01 No
d	Chest Electrodes Paediatric (set of six) - 01 No.
e	Limb Electrodes (set of 4) - 01 No.
f	Thermal Paper A4 Size (210mm x 100m) - 10 Nos.

	CT SCANNER UNIT with Detailed Turnkey Works
Sl.No.	**Specifications**
	The system should be latest State-of-the-art, USFDA/CE/BIS/CDSCO or equivalent approved, independent 64 or more rows of detectors with capable of generating at least 128 slices per rotation with capability of coronary CTA. CT scanner should have dual energy capability. The system should be DICOM -ready with true isotopic volume acquisition and sub millimetre resolution. Quoted model must have AERB type approval/NOC. Radiation safety requirements must be followed in during installation and subsequently during lifetime of the equipment. Vendor should assist in site approval, registration and licensing of the facility with AERB (ELORA).
1	**X-Ray Generator:**
a	High frequency generator
b	Power output: 70 kW or higher. The generator with the higher power output would be preferred. Also, the bidder should mention whether the system would be capable of tackling the dual energy application.
e	mA Range: should be 30mA to 600mA or better.
f	KV Range: 80-130KV or more
2	**X-Ray Tube:**
a	Tube voltage: 80-130 kV or more
b	Anode heat storage capacity of 7.0MHU or higher or the tube with direct cooling technology
c	Tube cooling rate of 1300 kHU per minute or more
d	Tube voltage 80k V to 130k V or better.
3	**Detector and Data Acquisition System:**
a	Solid state detector: specify the detector material. Should have at least 64 or more rows of detectors. State number of elements in each row.
b	The detector should generate 128 or more slices per rotation with slice thickness of 0.625mm or lower for all types of scans and applications.
c	The detector should have 700 or more effective elements / channels per slice (this number should not include the reference elements / channels and channels required for calibration)
4	**Gantry**
a	The gantry should be provided with user friendly control panels on both sides
b	Gantry Aperture should be 75 cm or more in diameter
c	Maximum scan field of view should be 50cm or more
d	The scan time for a 360 Degree rotation should be 0.35 second or lower.
e	The gantry tilt of minimum 25 degree which can be operated both from gantry and console room
5	**Patient Table:**
a	Carbon fibre (or equivalent Radiolucent material) table top with a metal free scanable range of 160 cm or more.
b	Patient load capacity of 200 kg or more

c	Minimum horizontal table speed at least 100 mm/sec
d	The vertical table travel range should be 35cm or more
6	**Operator Console:**
a	The latest computer should be offered with 64 Bit processor with minimum RAM of 32 gb or better
b	Main Console should include a high resolution, TFT/LCD color monitor of 19" or more.
c	The display matrix should be 1024 x1024.
d	TThe Hard Disk capacity for both image and raw data should be 0.90 TB or more.
e	It should have facility to store at least 4,00,000 images.
f	DICOM complaint to Sent, Store, Print, Receive.
g	The console should support Filming in user defined formats.
h	Ready to seamlessly integrate with RIS/PACS.
i	OEM/Reputed make Computer desk and cabinet should be provided.
7	**Spiral Scan**
a	Should generate 128 or more slices per rotation with slice thickness of 0.625mm or lower for all types of applications
b	The scan time for a 360 Degree rotation should be 0.35 second or lower
c	Bolus Triggered or bolus chase Spiral acquisition should be possible
d	Slice increment - specify scan and selectable slice thickness
e	Single Continuous spiral scan time should be at least 100 sce or more
8	**Dose Reduction:**
a	In built mechanism for adapting the tube current during each scan. This should enable radiation dose reduction where body part thickness is less. Specify mechanism used in the offered system.
b	The scanner should have inbuilt paediatric protocols
c	Latest Iterative Reconstruction Technique to be quoted as standard (please specify the technology).Certified document showing extent of dose reduction by these techniques should be attached.
9	**Image Reconstruction:**
a	Real Time reconstruction speed should be 12 images/sec or more
b	Display Matrix: 512 x 512
c	Reconstructed slice thickness should be up to 10mm and should be selectable.
d	Server Hardware: Dell/HP/IBM dual CPU; RAM- 64 GB minimum; Data Disc: RAID level 5; Graphical processing unit: NVIDIA GPU or equivalent: Image storage minimum 3TB (as PACS will be there)
e	Client hardware specification - Suitable 3 clients hardware with power backup should be supplied
10	**Basic Post Processing applications (3 concurrent users for all applications)**
a	The clients should be capable of simultaneously viewing and performing all post
b	processing functions as well as filming independently without the help of the Mainconsole

c	Two way data transfer between operator console and the server should be possible Standard evaluation applications: Distance, Angle, Marker, Region of Interest, Arrow, Pixel lens, Anatomical Registration, Synchronized Scrolling, Correlated Cursors.
d	Statistical Evaluation: Area/ volume, Standard deviation, Mean value, Image annotation and labelling, Histogram, Time-intensity curves, Peak-enhancement image, Time-to-peak images.
e	ROI evaluation: Parallel evaluation of multiple ROI in circle, irregular and polygonal forms.
f	2D: 2-D, including image zoom, pan and window; image manipulation, including averaging, reversal of grey-scale values, and mirroring; image filter functions, including advanced smoothing algorithm and advanced bone correction.
g	Image presentation: 2D, MPR, MPR thick, MP/MPR fusion, MIP, MIP thin, MinIP, VRT.
h	Real-time Multi-Planar Reconstruction (MPR) of secondary views, with viewing perspectives in all planes including curved and orthogonal MPR
i	3D Volume Rendering (VRT), Volume measurements.
j	Volume Calculation.
k	Interactive & Automatic Cine display should be available.
l	Bone removal, Table removal.
11	**Advanced applications (three or more concurrent user license for all application).**
a	Cardiac scan attachment with ECG Gated Segmented Recon, Calcium score, Vessel Flythrough of the Coronaries should be available with software package.
b	CT Angio: Automatic table and bone subtraction in CT angiography, Single click bone removal, manual vessel tracking, ability for a bone free visualization of vessels, Stenosis measurement.
c	Lung CT: low dose lung CT protocols for advanced lung nodule detection.segmentation and analysis, computer aided detection (CAD)
d	Dental CT: high-resolution evaluation of teeth and jaws with automatic panoramic and paraxial reconstruction, evaluation of mandibular canal and life size filming.
e	Tumour Comparison: Four time point comparison with previous imaging studies using CHOi & RECIST criteria, PET CT cross time point evaluation, quantification of tumour growth rates.
f	Multimodality Image fusion: between PET-CT, PET-MR, CTMR,MR-SPECT, MR-MR etc.
g	Colonography: Non-invasive evaluation of the entire colon including external and endoscopic SSD views, 3D VR views and virtual dissection views.
h	CT Brain Perfusion and CT Body Perfusion.
i	Bronchoscopy-Non-invasive evaluation of Bronchial, Endoscopic and SSD View, 3DVR& visual Dissection views.
j	Segmentation of lungs, Liver,Lymph nodes and general lesions- 3D mapping of vascular supply areas onto liver tissue, Virtual dissection planes and volumetric calculation

k	Advanced HU Statistics with color coding of hypodermic areas(Potential Indicator of Necrosis)
12	Dual Energy CT Scanner: The system must have dual energy capabilities and wide range of applications should be available. Dual Energy / Spectral CT/ Sequential Dual Energy in 128 slice acquisition and automatic post-processing should be offered as standard.
13	Dual Energy non-contrast applications
a	Kidney Stone Characterization
b	Gout Identification
14	Dual Energy contrast applications
a	Contrast augmentation & tissue visualization
b	Compare and quantify lesions and tissues
15	Standard Accessories
a	Multi size Film Dry Laser/ Thermal Imager of any reputed make. (500 dpi or more)
b	DICOM Colour Printer of any reputed make
c	Lead glass should be as per CT Lead glass (2mm lead has to be
	included in glass wooden frame) L= 1.4 m ,W= 1.2 m
d	Online UPS with Maintenance free batteries capable of 15 minutes back up to run the entire CT, Computers, Work Stations etc.
e	Dual Head Pressure Injector Specification
i	Reputed make 350 PSI dual head pressure injector compatible with 100ml / 200ml syringe size with built in heat maintainer.
ii	Should have function of variable flow rate injection and dual flow / three phase simultaneous injection feature for cardiac CTA studies.
iii	Console should be touch screen with facility of pressure graph view and option to save minimum 100 protocols with different names.
iv	Should have Needle placement test function facility on console to confirm venous catheter placement for patient safety.
v	Should have Body based protocol software for easy operations.
vi	Ceiling Mount
f	Patient Positioning Accessories: Head Rest, Head and Arm Support, Knee and Leg Support. Paediatric Immobilizer
16	**Patient Communication System**: An integrated intercom and Automated Patient Instruction System (API) should be provided
17	**Installation**
a	The unit will be installed on site-modification basis. The vendor should inspect the site before quoting and ensure that the unit can be installed in the available space without any functional compromise. Complete layout site map and details of work (BOQ) should be part of technical bid. Provisions should be made for console room, changing room, wash basin, work-station and printer locations. It should also include Lead lined
	door with lead glass peeping window, radiation warning indicators and signage's, Aluminium false ceiling, GVT floor tiles and full height wall tiles. All turnkey work should comply with specified standards of the hospital.

b	Necessary furniture and fixtures for comfortable working conditions, storage of system components and consumable stand for protective aprons and gonad shields. etc. should be provided.
c	Power and Air-conditioning requirement must be mentioned. AC of adequate capacity should be provided. Power supply by the institute will be terminated at existing point. All electrical provisions including earthling etc. will be vendor's responsibility
18	**Warranty/After Sale Service**
a	The comprehensive onsite warranty of entire system shall include X-ray tube, detector, all accessories, all hardware and software including licenses and third party items, UPS and batteries, items supplied civil, electrical and air conditioning works. If vendor is not a direct subsidiary of OEM (Principal), then such warranty must be vetted by OEM.
b	Regular preventive maintenance and QA checks as per AERB norms will be part of the warranty and CMC.
c	Free software update for 10 years.
d	Suppliers must ensure the availability of 'expertise service' and maintenance in Shillong.
19	**Instructions**
	All information in the tender document must be supported by original product data sheets or should be certified by the principals. Computer generated data sheets, photocopies or email printouts shall not be accepted.
20	**Turnkey Works:**
	The CT scan gantry room & Console rooms will be provided in raw state. The vendor should inspect the rooms and provide the necessary turnkey work including plastering, tiles, tables, furniture for computers, monitors, printers and connecting electrical/network cables/wires and sockets, painting, doors, Air Conditioner (for temperature and Humidity control). The material used should be a standard make and model as shown in the table below. The scope of work for turnkey will include the following rooms:
a	CTScanner gantry Room.
b	CT-Console Room
c	UPS area
A	**Walls:**
A	All walls should be cement plastered 15 mm thickness including two coats of plastic emulsion paint for interior walls over two coats of wall putty and weather shield paint for exterior walls over cement primer. Tiles to be provided in areas as specified.
i	Construction/modification work including construction of brick wall if any, plastering, flooring as per the approved plan and equipment layout plan.

ii	Construction renovation/ modification demolition, exaction, filling work including construction of full or half brick wall if required, plastering, flooring as per the approved plan and equipment layout plan. Necessary openings/niches/cutouts, wherever required as per drawings and asked for by the Engineer-In-Charge, shall be provided by the contractor without any extra cost.
iii	Making surface good for floor modification for installing the CT-Simulator Unit
iv	Cable tray, trench & channel – necessary trenches, cable tray and channels at required locations.
v	**Addition to the tender specification:- Full wall tiling for CT Gantry & Console room With Matching colours**
vi	**Storage Work: Ply Storage with matched mica/Glass finished cabinets to be fixed in wall in gantry & console room .**
B	**Flooring:**
	50 mm thick cement concrete flooring with antistatic Vinyl flooring of minimum thickness of 2mm in all the rooms including equipment room.
	Antistatic Conductive flooring with copper plating & conductive adhesive with coving
	Note: Providing and laying approved quality, colour, design and shade fully homogeneous 600 x 600mm (thickness to be specified by the manufacturer) Vitrified tile flooring (Maronite or Granitite, confirming to IS code 15622 with water absorption less than 0. 08%) flooring in pattern as detailed in drawing or as directed by the EIC and grouted with matching colour approved quality readymade grout, curing, cleaning, etc. to required line level etc. all complete at all leads, lifts and heights to the entire satisfaction of the EIC. Providing and fixing 2-3mm thick POP protection over polythene covering sheet to flooring areas till handed over and cleaning, etc. all complete as per drawings & specification and as directed by EIC with 100mm tile skirting to match in Brachytherapy room, control room, and all relevant rooms. Mode of measurement (finished surface area of the tiles shall be measured and paid. Rate shall be inclusive of providing and laying levelling course, PVC spacers, providing and applying epoxy grout and no additional payment shall be made for wastage. 50 mm thick cement concrete flooring at all heights and locations including scaffolding, preparing the surfaces, neat cement finishing to correct line or as required to receive architectural finish, level and plumb, curing wherever required complete as per specifications
	and drawings, with Vinyl flooring in CT-Simulator equipment and all relevant rooms. It should be made rodent/pest proof as in conjunction to the entire complex.
C	**Painting:**
i	Two coats Plastic Emulsion Paint over 2 coats of wall putty including primer in areas other than tiles.

ii	Coats of wall putty including primer in all areas, of approved brand and manufacture and approved shade finished with roller to wall & ceilings surfaces, in 2 coats over a coat of approved quality primer on the plastered/POP surface, POP board/Gypsum board surfaces including scaffolding, preparation of surface, sanding, light sanding, work platform, painting equipment/apparatus etc. required to complete interior grade finish etc. at all heights & levels complete as per drawings & Specifications.
iii	CT-Scanner Room/console room Walls – High quality High density Vitrified Tiles clad on the side walls up to false ceiling.
D	**False Ceiling: Metal Grid Celling 600mmX600 mm**
i	Acoustical tile for ceiling with light weight insulating material of high quality supported on grid or finished seamless with support above ceiling. Finished with white paint or powder coated with white paint, if metallic. Ceiling height to suit the equipment mounts and clearances.
ii	All materials to be used in works shall conform to Indian Standards specification as published by ISI from time to time/as approved by the Department. All works are to be carried out as per the applicable IS code of practice.
E	**Electrical Works:**
i	Internal Electrical Wiring: All interior electrical wiring with main distribution panel board, necessary MCBs, DB, joint box, switch box etc. the wires shall be of copper of different capacity as per the load and should be renowned make as listed below.
ii	Only FRLS wires of copper conductor of different capacity as per the load should be used.
iii	All necessary cabling like LAN, DICOM for data interface should be provided with adequate number of terminals.
iv	All the internal wiring including that of telephone, LAN, DICOM & PACS etc) will be concealed variety.
v	**Earthing**: Double-Earthing shall be provided with copper plate for the CT scanner and all accessories like UPS. The earthing for the AC should also be done by the suppliers. The earthing cable/wire shall be routed end-to-end through an insulated conduit.
vi	Switches, light and power points should be of modular type and of standard make as listed below.
	General Lightings: General Lightings: LED lighting of 6-22 W. Light dimming
	facility should be provided wherever necessary. And sky light of 6" x 4" must be install over the gantry
	Note: All electrical items such as switches, plug sockets, etc. should be of modular type make of reputed manufacturer as listed in the table below.
F	**Air Conditioning Works:**

i	The area marked for Site Modification work needs to be air-conditioned. Cassette AC 3 ton -2 nos in gantry room, 2 no's Split Air -1.5 ton Conditioners . Humidity control should be provided to effectively eliminate moisture condensation on the equipment. The Air conditioning system should be designed with standby unit(s) to provide uniform air-conditioning 24 x 7.
ii	The outdoor units of AC should have grill coverings to prevent theft and damage.
iii	Stand-alone Room Dehumidifiers of adequate capacity for CT gantry Room, Console Room to be provided to ensure condensation-free
	atmosphere for the high value equipment.
G	**Environment specifications:**
i	Humidity range: Relative humidity 60% and 80% in all areas except equipment room which shall be as per requirement of the equipment.
ii	Temperature ranges: 22 ± 2° C in all areas throughout the year, except equipment room which shall be as per requirement of the equipment.
iii	Air conditioning load: The heat load calculations and maintaining the desired temperature and humidity shall be the responsibility of the supplier.
H	**List Of Items And Suggested Manufacturers/Brands:**
a	Executive revolving chair with arm rest:4 Nos. (Godrej or equivalent)
b	Steel Almirah with Rack: 1 Nos. (Godrej)
c	Console Table 1200 x 700 x 800 mm (L X D X H): Inos
d	Additional Table for workstation size of (1200 x 800) mm- 1
e	LED view box for 4 films - 2 Nos
f	Lead apron Hanger with trolly.
g	Roller blinds in console window
h	Temperature Humidity meter- 2 nos.
	Earthing:4(Four) nos. Copper plate earthing
I	The CT gantry and control console will be provided in raw state by NEIGRIHMS in RCC block The vendor should inspect the area at his own expenses and assess the turn key requirement as mentioned above.
J	Necessary Electrical Cabling & electrical panel must include in the cost .
	Lead Doors
1	1.4 m (Double leaf), 2mm lead has to be sandwiched in the door and in the frame overlapping
2	1.4 m (Double leaf), 2mm lead must sandwiched the door and in the frame overlapping
3	0.88 m (Single leaf), 2mm lead must sandwiched in the door and in the frame overlapping

Modular UPS		
Specification	**Title**	**Bid Requirement (Allowed Values)**
GENERIC	**Output power capacity including redudancy/Expandable (Rack facility) upto/Minimum backuptime (including redudancy) /Minimum VAH (VAH shall be calculate Battery voltage x Battery Ah x No. of batteries = Total VAH)**	160 KVA/240KVA/15 Minutes/65600 VAH
	Country of origin for Inverter	India
	Noise level	
INPUT	**In put Voltage Range**	340 V to AC to 470 V AC 3 Phase
	Input frequency range	50 +/-10% Hz
	Distortion (current)	< / = 3%
OUTPUT	**Output powr factor**	>/=0.99
CONSTRUCTION	**Minimum thickness (in mm) of Rack Enclosure for Modular UPS duly powder coated**	1.2
	UPS enclosure's degree of protection as per IS:13947 (Part 1)/1993 latest	IP20
	Total Harmonic Distrotion (THD) for 100% linear load	< 3%
	Total Harmonic Distrotion (THD) for 100% non-linear load	< 4%
	Over all efficiency on rated full load of 0.8 PF (min.) AC output	>/=96%
	Inverter efficiency on rated full load of 0.8 PF (min.) AC output	>/=96%
	UPS shall withstand Over load capacity - 125% (Output with mains AC-AC)	for 10 Minutes (Minimum)
	UPS shall withstand Over load capacity - 125% (Output in battery run DC-AC)	for 2 Minutes (Minimum)
BATTERY	**Battery type**	SMF VRLA
	Country of origin for Battery	India
	Battery recharge time (after complete discharge to 90% charge) and charge rating: Battery recharge time to 90% charge after 100% DoD	8 to 10 hours
	Batteries shall supply with	With metal rack
	Warranty for Modular UPS (on site comprehensive warranty) (in years)	5

WARRANTY AND SERVICES	**Warranty for battery (replacement warranty) (in years)**	2
	After sales and complaint service	within 24 hours
	PAN India service support on 24 x 7 basis	Yes
	AMC support available after 3 year warranty	Yes
	Quarterly preventive maintenance	Yes
	Manufacturer shall provide and support for installation, commissioning, spares, technical support all over India	Yes
	Availability of spares in close proximity (Spares should be easily available close to the site)	Yes
CERTIFICATIONS	**CE Certification and marking**	Yes
	Damp Heat Test : in accordance with IS:9000(part 5/sec.2)1981 at Temperature of 40 degree C,two cycles of (12+12) hours each 2007)	Yes
	Dry Heat Test : in accordance with IS:9000 (part 3/sec.5)1977 (reaffirmed 2007) at 55 degree C for 16 hrs	Yes
	Cold Test : in accordance with IS:9000 (Part 2/Sec.4)1977 (Reaffirmed 2007) at -10 degree C for 4 hrs.	Yes

	1000mA Digital Radiography Unit
Sl.No.	**Specification**
	State of art flat panel digital radiography system with two detectors should be Quoted model should have approval from European CE /USA FDA /or Equivalent Indian Standards
	The unit should have AERB Type approval /NOC for installation and use in India
1	**Generator**
a	Microprocessor controlled high frequency X-ray generator with power output of at least 80 K W. should be able to deliver 1000mA at 80 kV or more
b	KV range should be 40-150 KV.
c	The minimum exposure time should be 1 ms or less.
d	There should have automatic exposure control facility with provision of manual override.
e	The System must be quoted with Automatic exposure control (AEC).
f	Should have a digital display for KV and mAs
2	**X-Ray Tube**
a	Ceiling suspended telescopic column and motorised tube movement in all direction.
b	Dual focus tube, small focal spot should be 0.6 mm or less and large focal spot could be 1.3 mm or less
c	Anode heat storage capacity should be 600 KHU or more
d	All the movements of the overheat tube suspension (3D column stand) should be motorized. It should be possible to override it manually.
e	Tube rotation at vertical axis +/- 135 degree and horizontal axis +/- 120 degree. Mention range of tube movement in vertical, longitudinal and horizontal planes
f	Built in collision protection system
g	Collimator section should have automated image shuttering , cropping ,rotation of +45 deg.facility.
h	There should be synchronous movement with auto tracking, auto centering, auto collimation & minimum 99 auto positions of the overhead tube suspension against both the vertical detector and the table detector.
i	Horizontal and vertical tube rotation should be +/-90°
j	Integrated DAP meter to monitor radiation dose with facility to transfer dose information to RIS-PACS

3	**Horizontal Bucky Table**
a	Motor driven, adjustable height floating table top of carbon fibre or equivalent scratch resistant material.
b	Compact bucky table with table to length 200cm or more with digital flat panel detector.
c	Mention range of vertical, horizontal and longitudinal movement of the table
d	Foot switches for adjusting height, longitudinal/ side to side movement locking.
e	Detector movement should be synchronized with movement of the X-Ray tube.
f	Removable grid with source to image distance (SID) of 100cms for horizontal table applications.
g	Grid ratio must be 10:1
4	**Vertical Bucky (wall stand)**
a	Motorized, counter balanced, motorized tiltable, adjustable height vertical Bucky with digital flat panel detector.
b	Vertical detector system should be tilt able and should travel from minimum 1.3 to 6.2 feet above floor level. Should be capable to take images in horizontal, vertical and oblique positions with suitable movements for all skeletal body including spine and chest
c	Detector movement should be motorised , synchronized with movement of the X-Ray tube.
d	Removable grid with source to image distance (SID) of 180 cms for vertical Bucky application.
e	The detector should be capable of rotating on its axis across +90 to -15 degrees
5	**Detector system(wireless)**
a	Detector material should be made of amorphous silicon with Cs scintillator
b	Two Digital flat panel detector systems with detector integrated into the Bucky table as well as wall stand.
c	Size of detector must be 43cm X 43 cm or more.
d	Image matrix size 2k x 2k pixels or more.
e	Pixel Size should be 150 μm or less.
f	Image resolution should be 2.5 lp / mm or more.
g	Detector Quantum Efficiency (DQE) of detector system should be 65% or more at 0 line pairs DQE at Olp / mm or 0.5|p / mm should be at least 65%.
h	Grey scale resolution should be 14bit per pixel or higher.
i	Motorised tilting detector -20 to 90 deg /maximum floor to centre of detector must be 172 cm or more

j	Assembling should be monolithic panel/tiles.
k	Charge read out should be thin film transistor Array (TFT Array).
6	**Integrated Single console Operating (acquisition) Workstation**
a	Should have a Medical grade at least 2 MP LCP or LED monitor of minimum size 19" or more:
b	Image acquisition matrix should be minimum of 2k x 2k.
c	System should have auto protocol select
d	Operation console should have facility for patient identity entry, viewing and processing images, film printing and documentation
e	Image should be ready in 10 sec or less after exposure.
f	Post-acquisition software should be from the principal manufacturer. Image processing, viewing, reprocessing, hard copy documentation and onward transmission should be possible.
g	Auto imaging and stitching software and necessary hardware on vertical and horizontal bucky, for complete spinal column, extra-long leg image & other long body parts, should be a standard feature in the mechanism
h	It should be possible to create alphabetical, date wise and exam based, work list.
i	DICOM modality work list (DMWL) and modality pre procedure setup (MPPS)
j	should be provided with ready to use configuration.
k	Hard Disc storage capacity should be of 10000 or more images.
l	The system should be support storage of images on compact discs /DVD and solid state USB drive
m	The system should be DICOM 3.0 (or higher version) ready (like send, receive. Query, print, acknowledge etc.). Multi-format film printing should be possible with user selectable layouts.
n	The unit should be fully network ready and connected with hospital RIS and PACS and configured in ready to use state.
	The system must be mouse control & touch screen display
7	**Post processing & reporting workstation**
a	Medical grade 2MP monitor or more
b	Storage I TB
c	Post processing software should be from the principal manufacturer /Third party
d	Fully automated image stitching on table & vertical bucky. Necessary hardware & software to be provided.

e	Any two out off three components (Tube /Detector /Acquisition software) should be from the same manufacturer/OEM.Detail data sheet with proof must be submitted in the technical Bid
8	**Accessories**
a	Dry chemistry film camera of at least 500 DPI for documentation .The camera should accept standard size films upto 14 x 17 size (three film size trays should be active).
b	Lead glass of minimum 100 x 150 cm and minimum 2 mm lead equivalent size at operator console, as per AERB guidelines
c	UPS along with batteries of appropriate rating to give 15 min back up to operate console/workstation. And must be covered under warranty & CMC including battery
d	Light weight Radiation protection lead Apron with thyroid guard of 0.5 mm lead equivalence, AERB approved. (Rate taken for evaluation)with hangers and stand:5
e	Radio protective gonad shields zero lead (adult and paediatric): one each
f	Paediatric immobilizer (restraining device): TWO
g	Wall mounted hanger for radio-protective aprons: one
h	Aluminium Footsteps for patient: TWO
i	X-Ray view box (LED Type) Double -2 nos
	Should have double film size(14” x 17”) capacities.
	The equipment should have high level of control luminance, without flicker, from a unit that is easy to clean and maintain.
	The X-Ray viewing screen illumination should dimmable LED of minimum 60000 hours life and shall works on single phase power supply
	Should have minimum 10000 Lux output adjustable.
	Should have individual brightness & ON/OFF controls.
	The front panel diffuser should be of a glare free type.
	Should have clipless mechanism to hold & secure the X-Ray negative film when in use.
	LED Lamps should provide a uniform level of illumination across the entire front panel diffuser and should be controlled by electronic step-less dimming controls to provide flicker free dimming from maximum brightness to off.
	Individual light controls for each plates.
	Equipment shall be elegant & compact.
	Body should be made up of mild steel powder coated
	Should be grounded properly.
j	Mic in Console Room: For communication to the X-Ray Room with sound system in X-Ray

k	Workstation: 3 nos
	1.Post-processing Workstation with a high resolution monitor should be provided with the System. The GUI and post processing must be identical to the inbuilt console
	The workstation should have a graphics card built in and support all common DICOM functions
	The monitor should have minimum 2.0 Mega Pixel resolution and have capability of portrait and landscape arrangements.
	The processor should be of Dual Core Technology or better.
	RAM should be of minimum 2GB.
	The HDD should be of minimum 2x500 GB or better with RAID 5 configuration or better.
	The workstation should have a DVD writer(inbuilt/external) for burning images.
8	The workstation software should support the following:
a	Patient list with capability to query/ search based on various criterion such as name, id number, date of examination etc.
b	Features such as DICOM Viewing, Windowing, Zoom, Pan, Magnify, Annotate, Mark, Measure, Reporting.
9	Connectivity to DICOM printers with multi format to be provided.
a	The workstation should have to connect to external storage devices and DICOM Servers ,and the responsibility to connect to the any existing dicom servers /PACS /any other available Dry imager lies with the bidder/OEM.
b	Furniture
c	Chair; Console: 2 (Reclining with arm rest with wheels)
d	Double shelves cabinets for file storage above the workstation table highest point touching ceiling with hydraulic opening door with one fold and hinge in top shelf opening upwards
e	Workstation and Console Room: System Computer/Workstation Table according to Room Size
f	Temperature Humidity meter- 1nos.
9	**Warranty / after sales service**
a	The comprehensive onsite warranty of entire system shall include X ray tube. detector, all accessories and items supplied along with maintenance and servicing of civil, electrical and air conditioning works. If vendor is not a direct subsidiary of OEM(principles), then such warranty must be vetted by OEM
b	This will be followed by CMC covering everything as warranty

c	Regular preventive maintenance and QA checks as per ARB norms will also be part of the warranty and CMC.
d	Free software update (compatible with the supplied platform) guarantee from OEM for 10 years.
e	Warranty for 5 years followed by CMC for 5 years including Spares &service.
f	Mandatory 2 PMs / Year with unlimited breakdown calls has to be attended by the bidder/manufacturer throughout the warranty & CMC period at site .ie. NEIGRIHMS SHILLONG
g	Duly signed Mandatory PM reports has to be submitted periodically, falling which necessary action will be initiated as per term& condition of the tender
10	**Instructions**
a	There should be at least three installations of the quoted model in India. Satisfactory performance certificate by users on their letterhead must be attached.
b	All information asked for must be provided in the compliance statement under the headings given above.
c	All information in the tender document must be supported by original product data sheets or should be certified by the principals. Computer generated data sheets. photocopies or email printouts shall not be accepted.
d	If the unit is being quoted by Indian agency which is not a direct subsidiary of the principals; an undertaking from the principals must be provided that in case of discontinuation or change of the agency, merger, acquisition or any corporate rearrangement, the principal will arrange for onsite maintenance of the unit and abide by all terms and conditions of the tender.
11	**Documentation**
a	User / Technical / Maintenance manuals to be supplied in English.
b	Log book with instructions for daily, weekly, monthly and quarterly maintenance checklist. The job description of the hospital technician and company service engineer should be clearly spelt out.
c	Cost of spare parts, consumables and accessories which are not covered under warranty & CMC period has to quote in schedule Xl as percentage value in the Technical BidList of consumables with price frozen for 10 years, or else will be consider to be cover throughout the warranty & CMC period.

d	Calibration and routine Preventive Maintenance Support as per manufacturer documentation in service / technical manual has to be done throughout the warranty & CMC period.
e	Compliance report to be submitted in a tabulated and point wise manner clearly mentioning the page / Para number of original catalogue / data sheet and the offer details has to submit in the technical bid. Any point, if not substantiated with authenticated catalogue / manual, will not be considered.
f	All the technical specifications accepted in the compliance statement must be supported by Original Literature from the firm/O.E.M with Highlighting, Numbering & flagging in the compliance statement.

	Ultrasonic Bio Microscopy with A -Scan B -Scan Biometer
Sl.No.	**Specifications**
A	**Ultrasound Bio Microscopy (UBM) with B-Scan & A-Scan UBM**
1	Probe frequency 50MHz
2	13 frames or more per second image acquisition rate
3	Fully Adjustable time varied gain
4	Adial resolution: 15-25 µm
5	20 sec or more movie loop capacity
B	**USG - B Scan**
	Probe Frequency:
1	Probe1: 15 MHz
2	Probe1: 15 MHz
3	Fully Adjustable time varied gain
4	20 - 30 frames per second or more image acquisition rate
5	Axial resolution: 50 - 100 µm
6	10 sec or more movie loop capacity
7	Image: B Scan with simultaneous selectable vector A Scan
8	Freeze: Foot pedal or touch screen activated
C	**A Scan**
1	Immersion and contact method
2	Probe frequency: 8 - 10 MHz
3	Automatic or manual image capturing
4	Built-in pattern recognition with automatic scieral echo detection
5	50 frames per second or more image acquisition rate
6	IOL power calculation with all standard formulas: Holladay-I, Holladay-II, BINKHORST-II, HOFFER-Q, HAIGIS, SRK/T, SRK-II, Barett Universal-II
D	**System Configuration**
1	Wide screen (12inch) or more with 1920 x 1200 high-resolution monitor
2	Wireless-wired Controls, Foot pedal, (Scan start, Scan stop, Scan save)
3	Hard Drives - 1 TB enterprise class drives for data storage, Separate SATA solid-state drive for operating system
4	Built-in DVD burner
5	DICOM Connectivity
6	Electronic Medical Records (EMR)
7	Printers Windows 11(latest)-compatible printer
8	Real-time image viewing
9	Movie editing capability
10	Four sets of electronic distance measurement callipers with variable velocity
11	Two sets of electronic angle measurement calipers with variable velocity
E	**Accessories**

1	Prager shells for A - scan biometry (Adult - 2, Paediatric -2)
2	Immersion Scleral shells for UBM (Adult - 1, Paediatric - 1)
3	Extra storage hard drive: 5 TB
4	Standard cart for the machine
5	Ultrasonic gel
6	5 years warranty of system as well as all the probes (UBM, B-Scan and A-Scan)

	Aneasthesia Workstation
Sl.No.	**Technical Specification**
1	Should be advanced, reliable, compact and mobile with integrated ventilator.
2	Should be based on microprocessor and suitable for low flow as well as minimal flow anesthesia for adults, pediatrics and neonatal use.
3	Machine should be suitable for premature babies, neonates, pediatric and adults.
4	Should have a facility to connect to the central supply (oxygen, nitrous oxide and air) pin index cylinder one each of oxygen and nitrous oxide with on screen digital display of pressure gauges for central supply and cylinder.
5	Machine should have working surface and illumination with the storage space for keeping accessories. Should have central brake to lock the machine.
6	Should have electronic gas mixing with FiO2 & total flow setting along with virtual flow meter displays
7	Should have integrated safety feature like electronic hypoxic guard, N2O cut off in case of O2 low pressure/failure, alarm and O2 flush etc.
8	Should have onscreen virtual flow meter display of O2, N2O and air.
9	Should have compact autoclavable breathing system and soda lime chamber maximum capacity of 1.5L. The soda lime canister should be compatible with the devices in all the operating rooms.
10	Should have electronically controlled and electrically driven anesthesia ventilator, should not require driving gas.
11	The machine should be suitable for low & minimal flow Anesthesia application
12	Should able to log all alarms, self-tests, messages and other events.
13	Should have integrated touch screen color display with minimum15” screen size.
14	The machine should have automatic calculations and presetting of patient specific ventilation settings via ideal body weight, Age and height.
15	The machine should calculate agent consumption and agent uptake by patient on a case-by-case basis and display of fresh gas consumption in the unit logbook
16	Anesthesia ventilator should have the following settings:
a	Automatic breathing circuit Compliance correction
b	Spont. Breathing
c	Manual Ventilation

d	Volume controlled mode
e	Pressure controlled ventilation
f	SIMV in VCV & PCV
g	Pressure Support, PS with CPAP, PS with SIMV in VCV/PCV
h	Should be upgradeable to Autoflow or PCV-VG or similar mode – delivering set tidal volume at minimum airway pressure. and in combination with SIMV
i	High peak inspiratory flow upto 120 LPM,
j	Tidal volume adjustment range 10 ml (in VCV) to 1500 ml and upgradeable to 5 ml in VCV
k	Adjustable PEEP: Off, 2 to 35 hPa (or cmH2O); and CPAP: 0, 2 to 35 mbar
l	Resp frequency from 3 to 100 per min.
m	I:E : max 1:50 to 50:1
n	Should be able to ventilate with atmospheric air, in case of total fresh gas failure including Oxygen.
17	Should have tidal volume compensation or fresh gas decoupling valve
18	Should have external fresh gas outlet for connecting the open circuits.
19	Integrated breathing system warmer for breathing gas conditioning and avoidance of condensation.
20	Should have dual flow sensing technology with flow sensor at inspiratory and expiratory side.
21	Should have simultaneous display of 3 or 4 real time wave forms for concentration of CO2, O2, and anesthetic agents, airway pressure, inspiratory and expiratory flows and loops for P-V and F-V loops.
22	Anesthesia machine should monitor and display the measure value of minute volume, tidal volume, peak airway pressure, mean pressure, plateau, PEEP, dynamic compliance and resistance.
23	Should have pause mode for short term interruptions of ventilation.
24	Should have alarms for high/low volume for expired tidal volume, minute volume frequency and airway pressure.
25	Should be supplied with Sevoflurane and Desflurane vaporizer; All the vaporizers should be manufactured from same company as anaesthesia machine.
	- Fast and instant agent delivery with no warming time.
	- Vaporizer must be isolated from the gas flow in the off position.
	- Agent specific, maintenance free.
	- No warm up time
	- Built in Overfill protection with locking mechanism.
	- Prismatic liquid level indicator
	- Low agent level” Alarm for all Anesthetic agent.

	- Total Agent consumption in ml, used during surgery to be measured and displayed on the display screen of the anesthesia system.
	- Vaporizers for Isoflurane, Sevoflurane and Desflurane, one each
26	Should have dual detection of anesthetic agent in case of change of anesthetic agent.
27	Should have RS232 port /USB /LAN to interface monitor to transfer the expired parameters on monitor and in-built data output port / USB for data retrieval.
28	Should have battery back up to at least 60-90minute including that for ventilator.
29	System should have backup oxygen control in case of complete power failure and auxiliary oxygen supply source.
30	Should have auxiliary Oxygen supply system.
31	Should have anytime facility for manual ventilation possible at least with fresh gas O2 delivery and dosage of volatile agents with airway pressure monitoring in case of system failure / system “off”.
32	Should have the indicator or decision support to show the efficiency of fresh gas setting while used in Low flow and minimal flow
33	Machine should be with integrated anesthesia gas monitoring with automatic identification of anesthetic agent (MAC and end tidal concentration) as well as O2, N2O, FiO2 and ET CO2;
34	Should have sample gas return into the breathing system for better gas efficiency in low flow and minimal flow usage.
35	Should have heated breathing system for optimized minimal flow anesthesia usage and ventilation quality.
36	Should be possible to deliver oxygen and anesthetic agents in Manual/spontaneous mode even when the machine is in switched off mode as an emergency back up
37	The machine should have adjustable alarm limits for all the parameters with auto set alarm function
a	The machine should have automatic display of MAC values
b	Should have automatic activation of low agent alarm
c	Should have alarm logbook for displaying and saving alarm history
d	System leak and fresh-gas deficiency alarm
e	Should have cardiac bypass mode
38	Should have fully automated self-test including calibration of all sensors without any user action necessary after start to test.
39	Should have backup manual mode to allow the direct change to manual ventilation while maintaining gas and ventilation monitoring; O2 and anesthetic agents from the vaporizers can be continuously delivered

40	Should have facility for data storage on USB storage device like self-test results, alarm history, screen shots, trends and machine configurations
41	Should have integrated active AGS system
B	**Specification for Patient Monitor**
	Should be suitable for adult, pediatric, neonatal patients monitoring in fixed environment.
1	Should have 17” and above touchscreen display with large fonts and provide access to minimum 12 or more waveforms with ergonomic representation of multi-functionality
2	Monitor should be IT enabled for single point access to web-based applications (like HIS, PACS, PDMS, LIS and more) without requiring extra server, hardware and software.
3	Should have minimum ECG, NIBP, SpO2, 2 -temperature and 2-Invasive pressures as standard and all other parameters should be through upgrades as pods/modules and software.
4	Should have basic arrhythmia detection for life-threatening alarms that include asystole, ventricular fibrillation, ventricular tachycardia, and bradycardia and more.
5	Should have non-volatile graphic and tabular trending of all monitored parameters as standard for minimum 96 hrs.
6	Should have manual as well as automatic setting of screen format .
7	Should have integrated transport monitor with battery backup of 180 min and one-button disconnect and without additional modules or batteries and shall allow transport with all currently monitored parameters remaining active.
8	The transport display shall automatically adjust its orientation using a gravitational sensor when it is rotated to a different view.
9	The transport monitor should have minimum 6 inches of touch screen and 3 or more waveforms
10	Should have Defibrillator and ESU protection, ECG Sync, IABP interface (ECG and Arterial for triggering and deflation with a device delay of <20 millisec)
11	Ready for wired/wireless networking.
12	Automatic electronic charting and data management solution with data archival facility for patient monitor and ventilator data. It should be single centralized server based for multiple bed’s upgrade. Charts should be seen on patient monitor screen itself.
13	Monitoring solution shall support at least sixteen (16) different display layouts, and at least five (5) for the transport component.
14	While using another application, the monitor configuration will always allow for continuous viewing of the real-time parameter data

15	Touchscreen, Rotary knob & keyboard
16	Monitor when interfaced with Anesthesia Machine, the monitor shall provide capabilities for display of multiparameter sets to be used in lung recruitment procedures through an analysis tool.
17	Monitor shall provide the option to connect a secondary display that can be configured independent display without the need for additional hardware and users the ability to configure the location, speed and color of the parameters and their associated waveforms separately to the monitoring workstation
18	Monitor should able to connect to anesthesia machine and should be able to display ventilator waveforms, parameters and loops.
	Should have following parameters
19	ECG
	- 5 lead ECG monitoring with three leads of ECG waveform simultaneously monitoring
	- Should display 12 leads of ECG monitoring
	- Range 15 to 300bpm
	- Should display 12 leads of ECG by connecting 6/5 ECG lead wires (Reduced lead set algorithm) as standard feature with max. lead positions as per standard lead placemen
20	RESPIRATION
	- Through impedance pneumography/ Capnography method
21	SpO2
	- Should be supplied with Masimo SET/Nellcor technology with respective sensors
	- Should display digital value and Plethysmograph
22	NIBP
	- By oscillometric principle of measurement with step wise - deflation
	- Suitable for adult, paediatric, neonatal patients
	- Should display Systolic, diastolic, mean pressure in large easy to read display
	- Should have manual/ stat mode or automatic mode with adjustable time intervals from 2 – 240 minutes and adjustable alarm limits
	- Monitor should have capability for continuous arterial pressure monitoring through non-invasive technique – preferred
23	IBPs - Simultaneous monitoring of 2 Invasive Pressures should be standard
24	Temperature - two temperature one core and second skin simultaneous monitoring
25	NMT Neuro muscular transmission / EEG should be offered as standard

26	Depth of Anesthesia Monitoring- either BIS or Entropy module with 50 sensors with each monitor.
C	**Specifications for Charting System / Documentation System**
1	The Software should be able to integrate Patient monitor, Anesthesia machine and Syringe pumps and other thirdparty devices.
2	Should display all OR Patient information like Name, Room Number, Patient ID, Ventilator status and attending physician names in single screen.
3	Should enable OR workflows such as ADT (Admission Discharge and Transfer), flowsheet, Anesthesia documentation, Infusion Management, Medication, notes, scoring and other workflows.
4	Should have electronic patient charts (flowsheets) which are populated with data acquired electronically via medical interface to other devices/information systems. Flowsheet data can be edited, validated, and annotated.
5	Should have automatic/manual fluid Input/output sheets which allow the tracking of a patient's total fluid intake and output.
6	Should have medication scheduling to create care-unit-based medication schedules which alert the staff to upcoming/past-due medication needs
7	Should have special data screens for OR care units, such as customized data forms, outcomes documentation, staffing documentation and OR scheduling and Data annotation (notes/event, notes/OR event capture).
8	Should have data protection Data and System Protection and Security like all users should be given an individual password that only they or admin can change. Personal data (name, DOB, etc. of patients and staff) should protected in the database under special password protection.
9	Should have staff documentation during the case and should provide a configurable list of staff members like Name (first, middle, and last), Role, Group, Supervisor/Supervisor level, Time in/Time Out
10	Should have data protection Data and System Protection and Security like all users should be given an individual password that only they or admin can change. Personal data (name, DOB, etc. of patients and staff) should protected in the database under special password protection.
11	Should have post-op prescription and should be able to generate final anesthesia report in pdf format
D	**Scope of Supply:**
1	Anaesthesia workstation with integrated ventilator, integrated anaesthesia gas analyzer and monitor with End tidal control / Target control anaesthesia
2	Electronic Gas mixing with Pneumatic back up of 100% O2.

3	Auxiliary Oxygen Flowmeter.
4	Integrated, fully autoclavable Advanced Breathing System with absorber. Additional reusable canister to be included
5	Colour coded Pipeline Hoses and Inlets for Oxygen, N2O and Air.
6	Oxygen Cylinder Yoke.
7	N2O Cylinder Yoke.
8	Auxiliary Common Gas Outlet (ACGO) to connect open/semi circuits.
9	Integrated Anaesthesia Gas Scavenging System (AGSS).
10	AC Power inlet with additional outlets.
11	Integrated High End Electronic Ventilator.
12	CO2 Bypass mechanism with condenser to take care of moisture.
13	Adult reusable patient circuit – 1 No.
14	Pead. Reusable Patient circuit – 1 No.
15	Reusable Face mask of all sizes 0,1,2,3,4,5. Additional reusable masks of size 3, 4 and 5 each.
16	Extra flow sensors – 10 Nos.
17	Anaesthesia Monitor, 17-inch color touch-screen with 8 waveforms
18	5 lead wire ECG with electro-cautery filter and trunk cable – 2 Sets.
19	SPO2 probe adult – 2 Nos.
20	NIBP hose – 2 Nos.
21	Adult cuffs size – XL, L, M, and child and infant and cuffs – 2 Sets.
22	Sample lines (pack of 10).
23	Water traps- (pack of 10 Nos.).
24	BIS / Entropy cable – 2 Sets.
25	BIS / Entropy sensors (pack of 50).
26	NMT cable and NMT adult mechanic sensor.
27	Skin Temperature Probe and central probe.
28	2X IBP cable and Disposable IBP transducer (Pack of 5 Nos.).
29	Recorder paper – 20 Rolls.
30	Isoflurane electronic vaporizer.
31	Sevoflurane electronic vaporizer.
32	Desflurane electronic vaporizer.
33	Main stream ETCO2 module-1no with sensor cable and adopter-2nos..
34	Flow sensor :-5 nos.
35	Oxygen sensor must be cover under warranty & CMC
36	PM kit :-2 nos
37	HARDWARE REQUIREMENTS (for e-charting System) :
a	Server :
	- Total Hard Disk : 2 TB.
	- V CPU core requirements: 32 V CPU

	- Memory (RAM) requirement): 64 GB (With associated OS, SQL and VM Permanent licenses).
b	Client Inside OT (4 Sets)
	- Touch PC can be deployed :
	Description & Requirement
	- RAM-> 4 GB (minimum)
	- Display Properties ->
	- Resolution : 1280 x 1024 (1920 x 1080 recommended).
	- 24–Bit or higher Color Depth Graphics Adapter.
	- Display size a minimum of 22” or more.
	- Hard Disk Capacity : The client system shall have 100 GB of free space on the hard disk
	- Network Interface Cards : Client systems shall have a wired network interface card (NIC) at 100 Mbit/s (recommended 1 Gbit/s)
	- Keyboard : Multifunctional Keyboard country-dependent
	- Mouse : Microsoft Mouse or compatible
	- Display Properties :
	- Resolution: 1280 x 1024 (1920 x 1080 recommended)
	- Color depth (graphics adaptor): 24-bit or higher
	- Display size a minimum of 22” or more
	- MS-OS License : With latest OS (Windows/Mac)
	- Touch Screen (Medical Grade) : Technology: Medical grade Capacitive Touch (or Projected Capacitive Touch if latex gloves are routinely used).
	- Touch PC Mounting Arms with Anaesthesia Machines.
c	Device Connection Units :
	- 2 or 4 Port per OT for device integration.
	- 4 (3 mtr. standard CAT 6 cable) per OT.
d	Network Printer (One Number)
	- All software should have license not less than 10years.
	All updates should to be done free of cost.
D	**Standards, Safety and Training**
1	Should be FDA/CE/UL /BIS /CDSCO/ISO13485 approved product
2	Comprehensive training for lab staff and support services till familiarity with the system. Electrical safety conforms to standards for electrical safety IEC 60601- 1 (Or equivalent International
3	National standard) general requirement for Electrical safety of Medical equipment
E	**Documentation:**
1	User / Technical / Maintenance manuals to be supplied in English.
2	Log book with instructions for daily, weekly, monthly and quarterly maintenance checklist. The job description of the hospital technician and company service engineer should be clearly spelt out.

3	Cost of spare parts, consumables and accessories which are not covered under warranty & CMC period has to quote in schedule XI as percentage value in the Technical Bid, or else will be consider to be cover throughout the warranty & CMC period. Throughout the warranty & CMC period.
4	Calibration and routine Preventive Maintenance Support as per manufacturer documentation in service / technical manual has to be done throughout the warranty & CMC period.
5	Compliance report to be submitted in a tabulated and point wise manner clearly mentioning the page / Para number of original catalogue / data sheet and the offer details has to submit in the technical bid. Any point, if not substantiated with authenticated catalogue / manual, will not be considered.
6	Certificate of inspection and quality control indicating the S / N for all non-consumable items with date at the time of installation.
F	**Environmental factors:**
1	Shall meet IEC-60601-1-2:2001 (Or Equivalent BIS) General Requirements of safety for Electromagnetic Compatibility or should comply with 89/366/ECC; EMC-Directive.
2	The unit shall be capable of operating continuously in ambient temperature of 30-40 deg C and relative humidity of 15- 90 % .
3	The unit shall be capable of being stored continuously in ambient temperature of 10-50 deg C and relative humidity of 15 – 90 %
	Warranty and Maintenance
a	Warranty for the whole systems including software and hardware's including server and Desktops and network printer minimum: 5 years. including Spares &service.
b	Mandatory PM with unlimited breakdown calls has to be attended by the bidder/manufacturer throughout the warranty & CMC period at site.i.e. NEIGRIHMS,Shillong
c	Duly signed Mandatory PM reports has to be submitted periodically, falling which necessary action will be initiated as per term& condition of the tender.

	Aneasthesia Workstation mid end RCC
Sl.No.	**Specifications**
A	**Specification for Anesthesia Workstation**
1	**General Requirement**
a	Compact and modular, three gas anesthesia workstation with an integrated ventilator for adult to infants and integrated airway monitor for airway pressures and volume.
b	The machine should be suitable for low and minimal flow anesthesia application with compliance compensation of breathing ckt, fresh gas flow compensation/ decoupling.
c	The machine should have 1 or more drawers
d	The anesthesia machine, inbuilt ventilator and vaporizer should be manufactured by same /different company with authorization /service agreement .
e	Dual Cascade/Electronic type flow meter tubes for Oxygen & N2O.Range 20 ml / min to 10 Lit/min. Calibrated in multiple scales. Single tube for air 100 ml to 14 L/ min.
f	The system should have upto 2 Hrs. battery backup
g	System should confirm to European CE and EN 60601-2-13 (Requirement for safety and essential performance of anesthesia system)
2	**Gas delivery system**
a	Should have pin index yokes for Oxygen & Nitrous Oxide besides separate connection for Central gas supply for Oxygen, Nitrous Oxide and Air.
b	The machine should have pressure gauges for cylinders & central supply lines mounted on front of Anaesthesia machine for better visibility. The gas connections should be non-interchangeable
c	The system should be suitable to use at minimal flow upto 700ml fresh gas setting.
d	Automatic cutoff of N2O by Oxygen pressure failure.
e	Hypoxic guard for linear regulation of minimum oxygen concentration at 23% volume
f	To ensure patient safety minimum Oxygen flow of 200 ml at low fresh gas flow settings even below total 500 ml fresh gas flow.
g	Audible visual oxygen failure alarm.
h	Emergency Oxygen flush at 30 – 70 L/min bypassing the vaporizer.
i	In the event of complete power loss and battery failure it shall be possible to manually ventilate and deliver anaesthetic agent.
3	**Vaporizer**
a	Machine should have possibility to mount two quick mount type vaporizer for easy interchangeability, and safety with interlock facility.
b	Should be provided with a Temperature / pressure compensated and flow independent Vaporizer Isoflourane & Sevoflourane. Desoflourane (Optional)
c	Vaporizer should have extended delivery range from 0 to 6 Vol. %
d	The vaporizer should require no calibration in its lifetime.
4	**Breathing System**
a	Should have fresh gas de-coupled semi closed circle absorber system.
b	Should have adjustable pressure relief valve from 5 to 75 mbar.

c	Should have change over from Spontaneous to Bag ventilation with single step.
d	The system should have leak and compliance test (including patient hoses upto the Y piece).
e	Should have compact breathing system with approx 1.7 Ltr. Volume capacity.
f	Should have an external fresh gas outlet for connecting Magill or Bain's circuit
g	The device should have port for anaesthesia gas scavenging system.
5	**Anaesthesis Ventilator**
a	The system should have inbuilt ventilator with electronically controlled and electrically driven technology. Should not require driving gas.
b	Should not require changing of bellows for adult & infants.
c	Should have colour screen size of 10.4".
d	Modes: Manual/Spont, Volume controlled, Pressure controlled, SIMV/PS,
e	The same ventilator should be capable to be upgrade to pressure support.
f	Tidal Volume : 20 ~ 1400 ml
g	PEEP : 0 ~ 20 mbar
h	Breathing Frequency : 4 to 60 BPM
i	I:E Ratio : 4:1 to 1:4
j	Inspiratory pause : 0 – 50% of Ti
k	Should have Desflurane compensation(Optional).
l	Should be able to ventilate with atmospheric air, in case of total gas supply failure.
6	**Integrated Airway monitoring and display of following parameters:**
a	Expiratory Tidal Volume
b	Expiratory Minute volume
c	PEEP, Peak & Mean and Plaetau airway pressure
d	Frequency
e	Waveform display for Airway pressure.
7	**Adjustable high/low alarm limits with audio and visual alarms for the following:**
a	Minute volume,
b	Airway pressure (incl stenosis and disconnect),
c	Insp oxygen concentration,
d	Audio power supply fail alarm,
e	Fail to cycle warning.
8	**Machine should have RS 232 connectivity port**
B	**Specifications for Advanced Multipara monitor**
1	Should be suitable for adult, paediatric neonatal patients monitoring.
2	Should monitor ECG, Respiration, NIBP, SpO2, Dual Temperature, Three IBP as standard
3	Should have ST analysis, Arrhythmia detection, pacer spike detection, Drug Dose Calculation and OxyCRG as standard in every monitor
4	Should have integrated 15'' TFT-LCD colour touch screen display (resolution min 1024*768) with nimum 8 channels of waveforms.
5	Defib and ESU protection should be present
6	Should have monitoring, surgery and diagnostic mode of monitoring
7	Should have Advance Arrhythmia monitoring for Asystole, Vfib/Vtac, VT>2, Couplet, Bigeminy, Trigeminy, R on T, PVC, Tachy, Brady, Missed Beats, IRR, PNC, Vbrady.

8	Monitor access should be with Touch screen, rotary knob and fast access key for quick function.
9	150 hrs of trend and 200 alarm events with waveform as standard in all monitors.
10	PPV Supported
11	96 hours of full disclosure
12	Color or position of waveforms or parameters should be able to be adjusted based on users preferences. Big font on screen format should be present.
13	Nurse call, VGA output port should be standard in every monitor.
14	Monitor should have USB port for software upgrade
15	Should have inbuilt three channel recorder.
16	Should have min of 300mins of battery backup as standard in every monitor
17	Upgradeable to export the Vitals as HL7 messages to the HIS
18	Monitor should be ready for interface with select model of equipment like Anaesthesia machine/ventilators for displaying ventilation parameters, waveforms & loops.
19	Anaesthesia gas monitoring (N2O, CO2, MAC) with Autogas identification.
20	Connectivity to the central station both via wired and wireless network.
21	Should be European CE complying to European Directive 93/42/EEC for both Monitor and software to control physiologic monitoring systems.
22	Bed to Bed monitoring as standard
23	Upgradable to Cardiac Output Monitoring
24	Monitor should support Bar Code admit for the patient.
25	Anesthesia Machine Ventilator Data can be seen with Monitor.
26	Anti-left lock facility should be possible for better hospital asset management
	Should have following parameters
	ECG
	Monitor should have capability for display upto 7 Lead.
	ST Analysis
	Waveform Freeze option with review of 120 sec
	Range: 15 to 350bpm
	RESPIRATION
	Through impedance pneumography method or EtCO2
	SpO2
	Should provide value for arterial oxygen saturation as well as plethysmographic pulse waveform
	NIBP
	By oscillometric principle of measurement.
	Should display Systolic, diastolic, mean pressure in large easy to read display
	Range: 10 to 270mmHg
	Dual Temperature – core & skin. Range: 0 to 50 Deg C
	Three IBP - Should include Starter kit and simultaneous monitoring of three temp and three IBP should be possible. Range: -50 to 300mmHg
C	**Specifications for Charting System / Documentation System**
1	The Software should be able to integrate Patient monitor, Anaesthesia machine and Syringe pumps and other third-party devices.
2	Should display all OR Patient information like Name, Room Number, Patient ID, Ventilator status and attending physician names in single screen.

3	Should enable OR workflows such as ADT (Admission Discharge and Transfer), flowsheet, Anesthesia documentation, Infusion Management, Medication, notes, scoring and other workflows.
4	Should have electronic patient charts (flowsheets) which are populated with data acquired electronically via medical interface to other devices/information systems. Flowsheet data can be edited, validated, and annotated.
5	Should have automatic/manual fluid Input/output sheets which allow the tracking of a patient's total fluid intake and output.
6	Should have medication scheduling to create care-unit-based medication schedules which alert the staff to upcoming/past-due medication needs
7	Should have special data screens for OR care units, such as customized data forms, outcomes documentation, staffing documentation and OR scheduling and Data annotation (notes/event, notes/OR event capture).
8	Should have data protection Data and System Protection and Security like all users should be given an individual password that only they or admin can change. Personal data (name, DOB, etc. of patients and staff) should protected in the database under special password protection.
9	Should have staff documentation during the case and should provide a configurable list of staff members like Name (first, middle, and last), Role, Group, Supervisor/Supervisor level, Time in/Time Out
10	Should have data protection Data and System Protection and Security like all users should be given an individual password that only they or admin can change. Personal data (name, DOB, etc. of patients and staff) should protected in the database under special password protection.
11	Should have post-op prescription and should be able to generate final anesthesia report n pdf format
D	**Standards, Safety and Training**
1	Should be FDA/CE/UL /BIS /CDSCO/ISO13485 approved product
2	Comprehensive training for lab staff and support services till familiarity with the system.lectrical safety conforms to standards for electrical safety IEC 60601- 1 (Or equivalent International
3	National standard) general requirement for Electrical safety of Medical equipment
E	**Documentation:**
1	User / Technical / Maintenance manuals to be supplied in English.
2	Log book with instructions for daily, weekly, monthly and quarterly maintenance checklist. The job description of the hospital technician and company service engineer should be clearly spelt out.
3	Cost of spare parts, consumables and accessories which are not covered under warranty & CMC period has to quote in schedule XI as percentage value in the Technical Bid, or else will be consider to be cover throughout the warranty & CMC period. Throughout the warranty & CMC period.
4	Calibration and routine Preventive Maintenance Support as per manufacturer documentation in service /technical manual has to be done throughout the warranty & CMC period.
5	Compliance report to be submitted in a tabulated and point wise manner clearly mentioning the page / Para number of original catalogue / data sheet and the offer details has to submit in the technical bid. Any point, if not substantiated with authenticated catalogue /manual, will not be considered.

6	Certificate of inspection and quality control indicating the S / N for all non-consumable items with date at the time of installation.
F	**Environmental factors:**
1	Shall meet IEC-60601-1-2:2001 (Or Equivalent BIS) General Requirements of safety for ectromagnetic Compatibility or should comply with 89/366/ECC; EMC-Directive.
2	The unit shall be capable of operating continuously in ambient temperature of 30-40 deg C and relative humidity of 15- 90 % .
3	The unit shall be capable of being stored continuously in ambient temperature of 10-50 eg C and relative humidity of 15 – 90 %
G	**Warranty and Maintenance**
a	Warranty for the whole systems including software and hardware's including server and esktops and network printer minimum: 5 years. including Spares &service.
b	Mandatory PM with unlimited breakdown calls has to be attended by the bidder/manufacturer throughout the warranty & CMC period at site.i.e. NEIGRIHMS,Shillong
c	Duly signed Mandatory PM reports has to be submitted periodically, falling which necessary action will be initiated as per term& condition of the tender.
H	**Scope of supply**
a	3 gas Anaesthesia machine
b	Trolley with 3 drawers
c	Writing surface
d	Pin Index yokes for O2 & N2O
e	Pipeline connections for all three gases
f	Anaesthesia ventilator
g	Patient monitor
h	Semi closed breathing system
i	Adult & Pediatric autoclavable patient tubing
j	Anesthetic mask size – Adult & child
k	Vaporizers for Isoflurane & Sevoflurane.
l	Central gas supply hoses (Color coded)
m	Monitor basic unit ECG, Resp, SpO2, Dual Temp, NIBP, Three IBP, inbuilt battery.
n	5 lead ECG Cable – 1 no each per monitor
o	SpO2 finger sensor – 1 no per monitor
p	Skin temperature probe – 1 no per monitor
q	NIBP Hose - 1no per monitor
r	Adult & Paediatric cuff – 1no each per monitor
s	Should be supplied with intermediate IBP cable– 2 no per monitor
t	Disposable transducers – 5 nos
u	Soda Lime – 1 Jar (From same OEM)
v	Instruction for Use

	Automated Tissue Processor
Sl.No.	**Specifications**
1	Tissue processor should be floor standing type.
2	Machine should be able to process simultaneously up to/minimum 200 cassettes
3	Software should be smart and user friendly to minimize the human intervention.
4	Machine should have smart-start function for one touch start of pre-saved programs.
5	Machine should have large color touch screen
6	Machine should have advanced safety features
7	Machine should have fully automatic reagent management system
8	All machine operations should be microprocessor based.
9	Machine should have automatic/manual functioning mode
10	Machine should have auto cleaning cycle
11	Machine should have comprehensive monitoring and full process control
12	Machine should have auto memorization and recovery
13	Machine should have low reagent alarm system
14	Processing retort volume should not be more than 5/6 liters.
15	Temperature (paraffin) should be ambient to 70°c.
16	Reagent temperature should be ambient or 35°c.
17	Temperature Accuracy Should be +/- 1°C
18	Paraffin baths should be minimum 3 in numbers
19	Volume of paraffin bath should be minimum 3 liters each
20	Paraffin Wax average melting time should not be more than 3 hrs.
21	Reagent bottles should be minimum 10 in numbers
22	Volume of reagent bottle should be minimum 3 liters each
23	Cleaning/Condensate bottles should be minimum 3 in numbers
24	Volume of cleaning bottle should be minimum 3 liters each
25	Machine should have at least 12 programs that consists of upto/minimum 11 reagents and minimum 3 paraffin wax steps
26	Agitation inside the retort for better tissue processing
27	Triple Fume Protection must be present: extraction at the retort, an external exhaust adapter and an acti vated carbon filter to provide added safety for lab staff
28	Easy-to-Clean Paraffin and Reagent Exchanges: having Drawer style design for paraffin baths for easy filling and draining & Trays under the paraffin baths and reagent bottles for effectively collecting spilled liquids/chemicals
29	Power should be 1000VA/1200W
30	Voltage should be 220V @50-60Hz
31	Overall dimension should be approx 620×680x1280 mm
32	Weight should not be more than 140 kg
33	Tissue processor should be USFDA/ CE /CDSCO approved .

34	The firm must have Manufacturer/Original OEM's dedicated Service Centre (not of distributor's) with adequate number of dedicated Company's service engineers: minimum 3-4 nos. based only to cover the North Eastern Part of India

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6 Power Supply	
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Bi- Phasic Defibrillator with cardiac monitor
Specification
Requirements
Defibrillator should be Bi- Phasic, light weight (< 8kg) and latest model
Should monitor vital parameters (ECG, NIBP, HR, SPO2 and EtCO2[optional] and display them
Should print the ECG on thermal recorders.
Should work on Manual and Automated external defibrillation (AED) mode. Manual selection maximum up to 200 J.
Should be capable of doing synchronised & a synchronised cardio version
Can be operated from mains as well as battery
Should have defibrillator testing facility .
Demonstration of the equipment is essential.
ecifications
Should be a Low Energy Biphasic defibrillator monitor with Recorder, within a maximum energy of 200 Joules
Should monitor ECG through paddles, pads and monitoring electrodes and Defibrillate through pads and paddles. Should have Automatic Lead switching to see patient ECG through paddles or leads
Should measure and compensate for chest impedance for a range of 25 to 150 Ohms or better
Should have a built in 50mm strip printer/ thermal recorder recorder with 3 wave forms
Should have charging time of less than8 seconds for maximum energy. Charging indicator should be there
Should have Display- TFT coloured LCD at least 8" diagonal for viewing messages and ECG waveform of 5 seconds and with 4 waveforms.
Should have external paddles with paddles contact indicator(may be in paddles / in the screen) – for good paddle contact. Both Adult and paediatric paddles should be available. The paddles should be placed on the Top or side of the system, not on the front side .
Should have event summary facility for recording and printing at least 200 events and 50 waveforms.
Should have a battery capable of usage for at least 240 minutes and/or 100 discharges.
Should be capable of printing Reports on Event summary, configuration, self test, battery capacity etc
Should have facility for self test/check before usage and set up function
Should have SP02 and NIBP integrated facility.
Should be capable of delivering energy in increments of 1-2 joules up to 10J and increments 5-10 J till 50 and up to a maximum of 50J thereafter.
Should have user friendly 1, 2, 3 color coded operation.
Must be supply with the well ergonomically designed trolley with storage basket and lockable casters ,on which the defibrillators can be fixed with any screw .
Must have facility for Internal defibrillation with Internal spoons
iguration Accessories, spares and consumables
Defibrillator -01
Paddles Adult (pair) -01
Paddles –Paediatrics(pair) -01/Internal Padel -01
ECG Patient cable -02 nos
ECG Rolls -50
Disposable pads-10 nos.
NIBP Cuff Adult - 02 NIBP Cuff Paediatrics- 02 NIBP Cuff Infants- 02
SPO2 Finger Probe-Adult -02
al factors
The unit shall be capable of operating continuously in ambient temperature of 0 – 50 °C and relative humidity of 15-90%

The unit shall be capable of being stored continuously in ambient temperature of -20 – 60 °C and relative humidity of 15- 90%
Shall meet IEC-60601-1-2:2001(Or Equivalent BIS) General Requirements of Safety for Electromagnetic Compatibility.
y
Power input to be 220-240VAC, 50Hz
Resettable over current breaker shall be fitted for protection
afety and Training
Should be FDA /CE/CDSCO/ICMED/ISO/BIS approved product
Electrical safety conforms to standards for electrical safety IEC-60601-1 General Requirements and IEC-60601-2-25 Safety of Electrocardiograms (OR EQUIVALENT BIS Standard)
Drop Test-Withstands 0.75meter drop to any edge, corner or surface. Certificate copy must be submitted in the technical bid
Should conform to international test protocols on exposure to shock forces and to vibration forces. The standard should be documented.
Should meet IEC 529 Level-2 (IP2X) for enclosure protection solid foreign object ingress.
Should meet IEC 529 Level 3 (IP3X)(spraying water) for enclosure protection , water ingress.
Should have local service facility .The service provider should have the necessary equipments recommended by the manufacturer to carry out preventive maintenance test as per guidelines provided in the service/maintenance manual.
Comprehensive warranty for 5 years and provision of CMC for next 5 years.
on
User Manual in English
Service manual in English
List of important spare parts and accessories with their part number and costing
Certificate of calibration and inspection from factory.
Log book with instruction for daily, weekly, monthly and quarterly maintenance checklist.
The job description of the hospital technician and company service engineer should be clearly spelt out
List of Equipments available for providing calibration and routine maintenance support as per manufacturer documentation in service / technical manual.
Compliance Report to be submitted in a tabulated and point wise manner clearly mentioning the page/Para number of original catalogue/data sheet. Any point, if not substantiated with authenticated catalogue/manual, will not be considered.
Must submit user list and performance report within last 5 years from major hospitals.

	Biplane DSA lab for Intervention Neuro Radiology
Sl. No.	**Technical Specification / QRs :**
1	**Technical Specification for Biplane DSA Lab for Intervention Neuro Radiology :-**
	State of the art, Biplane ceiling/floor mounted C-arm/G-arm system for diagnostic and interventional Neurovascular procedures including 3D-rotational angiography and Digital Subtraction Angiography (DSA).
1	**MULTI DIRECTIONAL C–ARM / G – ARM POSITIONER**
1.1	The system should have two gantries: One floor mounted and one ceiling suspended providing full body coverage. The lateral plane should have motorized longitudinal C-arm movement.
1.2	It should be possible to pre-program the gantries for multiple examinations positions.
1.3.	All movements of the gantry should be controlled from the controller on the table side.
1.4	The system should have adequate collision protection for safety of the patient.
1.5	The floor mounted C-arm should be able to provide head to toe imaging without re-positioning of the adult patient.
1.6	Both gantries should have fast speed for angulation and positioning. The frontal plane should have a speed of at least 20 degrees / sec for LAO and RAO and 15 degrees / sec for Cranial and Caudal and the lateral plane should have a speed 10 degrees / sec or more for LAO / RAO and Cranial / Caudal rotation in single plane mode. Both the gantries should have minimum 10 degrees / sec speed in bi-plane mode.
1.7	Frontal Plane Angulation: RAO/LAO shoud be at least 100/110 degrees and Cranial/caudal should be 30/30 degrees or more. Lateral plane rotation should be 0 to 90 degrees LAO/RAO and cranial and caudal should be 35 degrees or more.
1.8	Gantry angulations in both planes frontal and lateral should be freely user selectable to satisfy clinical imaging needs.
1.9	Both the gantries including table should have an automatic positioning capability dependent on the reference image being selected.
2	**PATIENT TABLE**
2.1	The table should have motorized vertical and longitudinal and free floating with head tilt facility and lateral tilt facility of ±15˚.
2.2	Table should bear minimum patient weight 200 kg or more with additional weight for at least 50 kg during resuscitation.
2.3	Table length should be 270 cm or more, width 45 cm or more
2.4	The table should have the facility of automatic bolus chase for peripheral angiography.
2.5	It should be possible to swivel the table in case of emergencies. Accessories should include head fixing aids, narrow head tabletop with mattress, Radiolucent Carbon fiber arm supports, drip stand and Catheterization arm support. Radial arm board. And head holder clamp device.
3	**X RAY GENERATOR**

3.1	Generator should be multi pulse / high frequency for constant output.
3.2	Output should be 100 KW or more
3.3	Radiography KVP range should be 50 KV -125 KV or more.
3.4	Output at 100 KV should be 1000 mA or more.
3.5	It should have automatic exposure control device for radiographic fluoroscopic and angio mode.
3.6	It should have digital display of KVP and mAs.
3.7	Anatomical programming radiography should be possible.
3.8	It should have overloading protection.
3.9	It should have the facility for pulse fluoroscopy at variable rates for reducing the X-ray dose to the patient during intervention procedure.
4	**X RAY TUBE**
4.1	Powerful and noise free rotating anode x-ray tube with spiral groove bearing **/ liquid metal bearing** technology and fluid lubricant for faster cooling must be provided. It should be with a minimum of two or more focal spots (small & large). Large focal spot atleast 80 KW output for extended runs.
4.2	X-Ray tube should have Primary/secondary grid switch and automatic Copper filteration to reduce radiation leakage to patient and automatic exposure control system.
4.3	Anode heat storage capacity of at least 3.0 MHU (actual value) or more to run continuously for 6 – 8 hrs. without shutting off without deteriorating image quality.
4.4	Cooling system- oil/water cooling to ensure continuous operation.
4.5	Anode heat cooling rate should be 2900W or more.
5	**RADIATION PROTECTION**
5.1	The system should meet all National/International Safety Standards and comply with BARC & AERB guidelines.
5.2	Should have integrated computer controlled automatic X-Ray Beam filtering with copper filters.
5.3	Display and recording of Radiation dose for each procedure (per fluoroscopy/cine time) should be continuously available.
5.4	The system should have a facility to remove the anti-scatter grid on the detector for ensuring lower dose in pediatric imaging.
5.6	Lead glass Window partition, minimum (200 x 120cm) (as per international radiation protection standard) – can be customized as per requirement.
5.7	Radiation shield ceiling and table mounted/suspended. (as per international radiation protection standard).
5.8	Mobile height adjustable X ray protection shield with contour cut out for optimizing shield both sides of the patient.
5.9	Vendor should provide the following
a.	Radiation protective apron) of high quality with hangers: (Total quantity 20: Front type - 10, Wrap around – 6, Two-piece type - 4 and Lead Cap - 4). It should be state of art light weight with a lead equivalent of 0.5mm.
b.	Thyroid guards 20 in number with lead equivalent of 0.5 mm
c.	Two hanger stands to hold 5 apron each and two wall mounted hangers to hold 5 aprons each.
d.	Lead spectacles 5 in numbers.

e.	Lead lined gloves: Two pairs
6	**DYNAMIC FLAT DETECTOR SYSTEM**
6.1	Both planes should have flat panel detectors with diagonal size of atleast 48 cm or more in one plane and 42 cm or more for other plane. The pixel size should have 200 microns or less for both frontal and lateral planes.
6.2	Should have acquisition and display in at least 1536 x 1536 pixels. Any other additional feature / design / technology towards image quality improvement and dose reduction will be preferred.
6.3	Flat detector should have 16 bit acquisition with at least 3 levels of acquisition and at least 3 levels of zoom for both planes.
6.4	The DQE of detector should be 75% or more for best acquisition efficiency and to minimize loss of radiation energy.
6.5	The system should have capability to acquire the images @ minimum 3.75 to 30 frames per second for fluoro and cine. For DSA frames rate range should be 0.5 to 6.0 fps.
7	**MONITORS**
7.1	System should be supplied single integrated large display of 52 inches or more medical grade TFT / LCD high resolution monitors with 2 nos. of back up monitors in the Procedure Room for Live, Reference and image of required plane can be viewed without changing any hardware, If not then the system should be supplied with 4 nos of back up monitor".
7.2	System should be supplied with atleast 05 Medical Grade TFT/LCD high resolution monitors of 19 inches or more each display monitor in the Console Room for display of Live, Reference, Hemodynamics, Stent enhancement, 3D workstation and for each planes.
7.3	The monitors inside the lab should be suspended from ceiling with railings so that they can be easily moved to either side of the table.
8	**WORKSTATIONS**
8.1	DICOM workstation to be provided in Console Room with provision to review, post processing and quantifications for coronary and ventricular functions. It should be possible to perform post processing in console room even while online acquisition is being performed.
8.2	The Workstations should be equipped with latest generation computer with 19"TFT monitor with storage capacity of at least 1 TB Hard disk, 16 GB RAM, intel i7(latest generation- 10th) and original licensed version compatible operating system along with latest CD/DVD recorder and Colour laser printer.
9	**DIGITAL IMAGE SYSTEM**
9.1	DSA imaging for acquisition storage and retrieval in high matrix of 1024 x 1024 or more acquisition/ display and storage of image application to give excellent resolution with latest image processing software.
9.2	Gray scale depth of at least 12-bit pixel should be possible at all frame speeds.
9.3	Image storage capacity of 1,00,000 image at 1024 x 1024 matrix at a minimum of at least 8 bits/pixel on main system hard disk.

9.4	Cath lab should be supplied with state of art complete vascular online & off-line quantifications software which are clinically validated with operation from Procedure room and Console room with facility to operate from procedure room and console room. Auto calibration should be possible.
9.5	On line acquisition & display of DSA images in 1024 x 1024 matrix with DSA post processing from table side control in Procedure room and Console room. All 2D and 3D road mapping / remodeling features should be offered.
9.6	Two-way intercom facility between Console room and Procedure room.
9.7	Cine loop replay facility and last image hold/grab facility during fluoroscope (Fluoro save)
9.8	3D workstation with Fusion capabilities from Rotation angiography, Pre acquired CT, MR datasets and 3D Roadmap guidance package with facility to perform CT like imaging in the Cath lab.
9.9	With uncompromised registration in real time 2D fluoroscopy with 3D anatomy from CT, MR data sets
9.10	Advanced image processing technique for
	Real time edge enhancement
	Real time harmonisation
	Real time noise reduction and dose correction algorhythms.
	Real time pixel shift to reduce the motion artifcats
10	**ARCHIVAL SYSTEM**
10.1	Digital Archival System capable to review, post-processing and quantifications of coronary and ventricular functions in the Console room. It should be possible to perform simultaneous off-line post processing in Console room.
10.2	Direct digital archival on compact disk (CD /DVD-recordable) in latest DICOM format preferably in loss less compression.
10.3	Ability to view CD and post process with clinically validated quantification software.
10.4	Ability to export DICOM cardiovascular images onto CD/DVD/another image recording medium.
10.5	Archival System should have one Review workstation with DVD/ combo devices of latest specification with printers.
10.6	The systems should be fully DICOM ready and fully compliant for connection to PACS system with that being offered by the OEM for Cath lab
10.7	Ability to convert the DICOM loops to BMP/JPEG and AVI format
11	**HEMODYNAMICS**
	Hemodynamic recording and documentation system
11.1	Hemodynamic recording and documentation system with signal input /Amplifier (fanless design)unit at the table side in side the Procedure room fulfills the hygienicrequirements of a surgical environment
11.2	The signal Input Module Must have follwing inputs
a.	12 Lead ECG Amplifier with floating input with signal input unit at the table side
b.	At least 4 IBP pressures with floating inputs with Zeroing options from Aplifier box / Signal input unit ,Range from – 50 to 360 mmHg or better

c.	Respiration rate
d.	$etCO_2$ concentration
e.	Body temperature
f.	Time measurement
g.	SPO2, Pressure gradient facility with 0 % – 100 % for heart rates 40 – 200 beats/min,Accuracy:- $\leq$ 2 %
h.	NIBP measurement For heart rate 40 – 200 beats/min: Adult Systolic: 40 – 260 mmHgAdult MAP: 26 – 220 mmHg Adult Diastolic: 20 – 200 mmHg Neonatal Systolic: 40 – 130 mmHg Neonatal MAP: 26 – 110 mmHg Neonatal Diastolic: 20 – 100 mmHg
i.	Cardiac OutPut
11.3	Must have flexible Mount option on cath table
11.4	Must be connect through a single cable to the contraol unit with proper cable management
11.5	Storage of patient specific data , procedure details, event log, and haemodynamic calculations on hard disk and retrieval can be done from Console room as and when required.
11.6	entered data can be exported for statistical purposes from the Console room as and when required.
11.7	ECG cable and pressure transducers with facility for superimposition of pressure tracings with printing supports inside the operating room. 10 Nos (each to be supplied free of cost one time consumable).
11.8	Must be HL7 and DICOM compatible
11.9	Must supply with Control room monitors of size 19 inch or more :- One for real-time waveforms, one for operator
11.11	Computer for Hemodynamic monitor:- CPU Intel Core i5 or equiv alent RAM 8 GB Disk drive Main drive: 256 GB SSD Service drive& 5 00GB or more HDD Disk drive Network Ethernet ports Wifi ,Operati ng System Microsoft Windows /Linux/Mac
11.12	High power contrast injector of latest technology with 50 compatible syringes & tubing to be provided
11.13	Ceiling suspended operation lamp to be provided.
	wired Foot switch for fluoroscopy and acquisition.
12	UPS with 30 minutes battery backup for complete Cath lab. Emergency lighting both should be on the UPS.
13	**WARRANTY & CMC**
13.1	The Model offered should be the latest High-end model under current production. Refurbished Units will not be accepted. The model offered should have BIS/US FDA /European CE approval
13.2	Warranty : Warranty for 5 years for the complete Cath Lab in toto including items covered in Turnkey project and all items listed within inter-alia.
13.3	The equipment should be software and platform protected in the warranty period.

13.4	Comprehensive Maintenance Contract for additional 5 years after the completion of 05 years of warranty for the Cath lab in toto including items covered in turnkey project.
13.5	Confirmation of availability of required spares, X-ray tube, UPS and other essential items for Cath Lab in toto including items covered in turnkey project for 10 years from completion of installation to be provided.
13.6	Downtime penalty: The equipment must have 95% uptime. The OEM shall extend the CMC by five times the number of days that the equipment has been non-functional/in downtime (beyond 95% uptime)
	Cost of spare parts, consumables and accessories which are not covered under warranty & CMC period has to quote as percentage value in the Technical Bid (Additional Doc 1 (Requested in ATC)) List of consumables with price frozen for 10 years, or else will be consider to be cover throughout the warranty & CMC period.
	Buyer added Bid Specific Additional Scope of Work :
	The Site Modification Work & accessories :
H.	**Essential accessories:**
	The following essential accessories to be provided with the unit:-
	High power contrast injector of latest technology with 50 compatible syringes & tubing to be provided. DSA Pressure Injector Specification Reputed make 1200 PSI single head pressure injector compatible with 150ml syringe size. For patient safety from under and over infusion, injector should have Automatic mechanical stop function. For patient safety from accidental air risk injection, injector should have air sensor control function. System should have built in heat maintainer for easy operation. Console should be touch screen with option to save minimum 80 protocols with different names Variable flow rate software with hand controller.
2	Dry Chemistry Laser Imager with resolution of 500 DPI or more. DICOM ready and online for film size of 14x17 with 500 Nos of films
3	Ceiling suspended radiation protection system and table side protection system.
4	Focused ceiling mounted light with a handle for positioning the light.
5	Ultra light weight ,double sided Lead Gown with lead equivalent of 0.5 mm. 8 Nos.
6	Thyroid Guard – 8 Nos.
7	Lead spectacles – 8 Nos.
8	Lead protected viewing glass as per AERB norms
9	Lead Apron Hanger -4 nos
10	Lead Apron Stand -1 No
11	Gonadal Shield -2 nos
12	Dehumidifier of 60 Litre -2 Nos.
I.	**The Site Modification Work -Biplane D.S.A**
1	The scope of work includes complete Civil work, Electrical, Plumbing, Furnishing, Air-conditioning and Fire fighting for the construction of DSA centre.
2	While preparing the plan, the following aspects have to be addressed:

a)	Care should be taken to provide easy negotiation of the patient stretchers/ trolleys through corridors and doors.
b)	Radiation shielding for doors, walls, windows etc.
c)	Furniture like desk, chairs, shelves etc.
d)	Patient stretcher and other furniture/ accessory to make the DR centre functional.
3	The Site Modification Work -Biplane D.S.A :
	The cost of Site Modification Work for the area of 1500sq.ft and Air-conditioning of Tonnage 25 TR (including standby unit) will be considered for Ranking / Evaluation purpose
4	Moreover Bidders will have to quote the Unit Rates of the following components of Site Modification Work.
a)	Civil works
b)	Electrical work
c)	Public health (plumbing and sanitary fittings).
d)	Air Conditioning (HVAC)
e)	Interior Furnishing & Furniture
f)	Miscellaneous like scrub, catheter wash station, etc
	Scope of work for Site Modification Work Biplane D.S.A system :
	The scope of work includes complete Civil work, Electrical, Plumbing, Furnishing, Air- conditioning and Fire fighting for the installation of DSA system
	The Biplane D.S.A site shall consist of the following rooms:
a.	Biplane D.S.A Room
b.	Console room
c.	Equipment room
d.	d. Patient preparation cum change room
e.	Change room
f.	Scrub area, catheter wash area
g.	Patient waiting area
h.	Radiologist room
	The actual area of site modification work works done will be considered for payment, based on the unit rates and site measurements
	Civil work
a)	Civil construction work including construction of brick wall if any, plastering, flooring as per the approved plan and equipment layout plan.
b)	Concrete bed at Biplane DSA equipment area.
c)	Platform for unloading and shifting the Biplane DSA should be provided if necessary.
d)	Cable tray, trench & channel – necessary trenches, cable tray and channels at required location would be provided.
e)	All the construction work to be done as per the final plan approved by the Consignee.
(a)	**Flooring**
1	600 x 600 mm vitrified tiles with 100mm tile skirting to match in DSA Examination Room, console room, lobby and patient preparation areas, Radiologist room etc.
2	50 mm thick cement concrete flooring with Vinyl flooring in Biplane DSA equipment / UPS room.

(b)	**Painting**
1	Two coats Plastic Emulsion Paint over 2 coats of wall putty including primer in patient preparation area, Lobby area, console room, & Equipment room etc.
	Added Para : Full height wall tiles should be provided in the Biplane DSA room.
(c)	**False Ceiling**
1	Acoustical tile for ceiling with light weight insulating material of high quality supported on grid or finished seamless with support above ceiling. Finished with white paint or powder coated with white paint, if metallic. Ceiling height to suit the equipment mount and clearances.
	Plumbing work
3	All water pipes and fittings (for Scrub etc) shall be of high density polythene of approved and standard make. The gratings shall be brass chrome plated. All plumbing accessories should be of standard make.
	Electrical work
4	The supplier shall be required to specify the total load requirements for the Biplane DSA centre including the load of air conditioning , room lighting and for the accessories if any. The supply line will be provided by the Institute up to one point within the Biplane DSA centre . The distribution panel shall be provided by the vendor. Few lights in each room shall be connected to the UPS to provide emergency lighting.
	Furniture:
a)	Revolving chairs height adjustable, medium-back with hand-rest in the Control room, Radiologist room and viewing area. – 4 NO.S
b)	Chairs for patient waiting area – Three seater (chrome plated). - 10 NO.S
c)	Wall mounted shelves for catheter and other procedural hardware – 4 Nos.
d)	Cupboard with laminate door shutters for storage of spare parts and accessories and records as per requirement. – 3 NO.S
e)	Drug trolleys 1 numbers for patient preparation area.
f)	Patient trolley with rubber foam mattress to be kept in the patient preparation room.
g)	Name boards for all rooms
h)	Tables for Workstation and Radiologist in reporting room.- 2 NO.S
i)	Changing rooms should have change lockers and dressing table.
j)	Dustbins (plastic with lid) to be provided as required.
k)	Any other furniture item as per requirement.
l)	**Crash Cart - 1 No.**
	All furniture items should be of standard make as mentioned in the table below.
	Miscellaneous:
i.	Knee controlled hand free two station scrub unit with disinfectant/ soap dispenser suitable for simultaneos usage of two persons.
ii.	Reporting room should have LED X-ray Film viewer with adjustable brightness; capable of holding 3 films of 14”x17” size. – 2 no.s
iii.	Cabling of Network (LAN) connectivity for camera system, console system, workstation and computers etc

	Bubble CPAP
Sl.No.	**Specifications**
1	CPAP generator with pressure range from 3 to 10cm water
2	Capable of giving nasal/Nasopharyngeal CPAP
3	Integrated pneumatic Air and O2 blender calibrated with flow from 0-15 lit/min
4	Safety mechanism for relief of excessive pressure through pressure relief valve/regulator.
5	Soft nasal prongs
6	Alarm for device
a	Low/high temperature
b	Flow increase/decrease alarm
c	O2 pressure low alarm
d	Air pressure low alarm
7	Flow meters:- 2 with each piece
8	Power 220-230 volts 50 Hz
9	System should be quoted with pole assembly to incorporate the whole CPAP machine
10	Standard accessories with each equipment
a	Heated wire servo controlled humidifier
b	5 ml test 1 mg
c	Disposable patient circuits
d	Disposable nasal prongs

	Single plane Cathlab with DSA
Sl. No.	**Specifications**
	Latest state of the art single panel floor mounted flat detector technology cardiovascular angiography and digital imaging system for diagnostic and intervention cardiovascular procedures with digital subtraction angiography (DSA)
A	**Multi Directional C ARM positioned**
1	The C /G arm should travel both side (right and left) of the patient and it should be possible to park the C/G arm away from table for patient shifting
2	The C arm/G arm should travel both side (right and left) of the patient and It should be possible to have head to toe imaging
3	The C or G arm movement control should be possible from any side of the table
4	The C or G arm rotation minimum 24 degrees/second in RAO/LAO and 12 degree/second in cranio/caudal
5	Angulations LAO/RAO= at least 120/120 degrees Cranio/caudal 45 degrees or more
6	Patient collision prevention and protection is necessary. The system should have an in built collision protection
7	Arm design should allow sufficient space around the table during resuscitation and defibrillation
B	**Patient Table**
1	Table shall be floor mounted with carbon fiber table top.
2	Should have table rotation facility from base
3	Maximum patient weight 200 kgs or higher with additional weight for at least 100kgs during resuscitation
4	The table should have floating longitudinal and horizontal movement and motorized vertical movement
5	Accessories for the table should include head fixing aids, mattress, four radiolucent carbon fiber arm supports, drip stand, peripheral filter set and catheterization Arm support
C	**X Ray Generator**
1	Generator should be latest technology with high frequency type with at least 100kW output at maximum factor
2	High frequency power unit that provides pulsed fluoroscopy capability should have automatic exposure control device for radiographic fluoroscopy and Angio mode.
3	Should have an overloading protection.
D	**X ray tube**

1	Should be with a minimum of two focal spots small and large the small focal spot should not be more then 0.6mm with power of at least 30kw large focal spot should not be more then 1mm with power of at least 80kw
2	Anode heat storage capacity at least 3.0 MHU or more
3	Cooling system high oil/water cooling to ensure continuous operation
4	Anode heat cooling rate should be 4000W/min or more
5	Automatic/programmable spectral filtration mechanism for eliminating soft radiation without any need for manual filter insertion in both flour and cine mode
6	X ray tube with noise less operation with high anode heat storage capacity to support long interventional procedures without interruption
E	**Dynamic flat detector system**
1	Dynamic flat detector system : Flat detector of current generation for cardiovascular application with excellent spatial and contrast resolutionwith pixel size smaller than 200µm. Detector size should be 20cm (at least) x 20 cm / 25 cm diagonally .
2	Smaller pixel size of FD is preferred for smallest detail visualization
3	Should have acquisition and display in at least 1k x 1K
4	System must be offered with latest image processing software /algorithm to reduce quantum noise in image to have excellent image quality
5	A minimum of 16 bit acquisition with at least 3 level acquisition with at least 3 level of zoom.
6	The DQE of detector should be> 75%
7	The system should have capability to acquire the images @ minimum 30 fps.
F	**Digital Image system**
1	Digital cardiac imaging for acquisition storage and retrieval in high matrix of 1K x 1K or more acquisition/ display and storage of image application to give excellent resolution with latest image processing software/algorithm
2	Gray scale depth of at least 8 bit pixel should be possible at all farm speed
3	Image storage capacity of 1,00,000 image at 1K x 1K matrix at a minimum of 8 bits/pixel on main system hard disk
4	Medical grade large high definition display (minimum 55”) or multiple display to display live, reference, DSA, Roadmap, Stent view and patient parameters with PIP function for minimum 6 inputs
5	Monitor should have high refresh rate / flicker free viewing of images
6	In control room there should be data entry monitor, live monitor, hemodynamic monitor and one DICOM based or equivalent suitable work station capable of all review reconstruction, post processing and quantification of coronary and ventricular function in the control room.

7	Cath lab should be supplied with state of art complete coronary ventricular and vascular off line quantifications software programs which are clinically validated with operation from exam room and control room
8	Auto calibration should be possible
9	All recall of stored images in fast slow still modes to select images at table side itself
10	Cine loop replay facility & last image hold facility during fluoroscope
11	Integrated intercom facility between control room and Examination room
12	On line acquisition & display of DSA images in 1024 x 1024 matrix with DSA post processing from table side control in exam room and control room. All 2D roadmapping/remodellingfeatures should be offered
13	Should have facility for stent enhancement operable from table side and control room
G	**Archival System**
1	Direct digital archival on compact disk (CD /DVD-recordable) in latest DICOM format preferably in loss less compression
2	Ability to view CD and post process with clinically validated quantification software
3	Ability to export DICOM vascular images onto CD/other image recording medium
4	One additional fully loaded PC (latest generation & or above, min 16 GB RAM, 2 TB Hard Disk, Min. 21”display) based CD review station with DVD combo devices of latest specification with two nos. of latest specifications laser printers
5	The system should be fully DICOM ready and fully compliant for connection to PACS system of any make including currently available PACS system for the cath lab.
6	Ability to convert the DICOM loops to BMP/JPEG and AVI format to CDR.
7	The system should supply with DICOM CD recorder for storing DSA runs photo images and it should be possible to review in other PC.
H	A central hemodynamic 12-channel monitor for ECG, 2 channel IBP, Blood pressure, respiration, Sp02, and NIBP pulse oximeter. (Adult & Pediatric B.P cuffs) in the cathlab room and must be integrated with the central display unit. One additional display unit should be available in the central console room for reviewing of all the vitals without entering the cathlab room
	Essential accessories:
1	Foot switch for fluoroscopy and acquisition.
2	Ceiling suspended operation lamp.
3	Lead glass (120 x 100cm) (as per international radiation protection standard)

4	Radiation shield ceiling and table mounted/suspended. (as per international radiation protection standard)
5	High power contrast injector (floor/ceiling mounted) with 200 syringes.
6	Radiation protective apron (Lead-Free, light weight) of high quality with hangers: (Total quantity 10: Front type - 5, Wrap around – 3, Two-piece type - 2 and Lead Cap - 4). It should be state of art light weight with a lead equivalent of 0.5mm.
7	Two hanger stands to hold 5 apron each and two wall mounted hangers to hold 5 aprons each.
8	Thyroid guards 5 in number with lead equivalent of 0.5mm
9	Lead spectacles 5 in numbers.
10	Lead lined gloves: Two pairs
11	Intercom between exam room and control room.
12	One Laser Network Printer of high resolution with minimum 500MB memory and 2400 dpi should also be offered for high quality image printing.
13	On line UPS for completed cath lab with back up of at least 30 minutes. Emergency lighting should also be on UPS.
14	Should meet all national and international safety standard and comply with BARC and AERB guidelines
15	**Radiation Protection**
15.1	The system should have integrated computer controlled (preferably automatic) X-Ray Beam filtering with copper filters of various size from 0.2 mm to 0.9 mm to reduce soft radiation for fluoroscopy and acquisition mode. Please list the special filters available.
15.2	The system must have latest generation software/hardware packages for radiation safety of operator and patient with documentation of radiation dose per fluoroscopy/cine time
J	**Installation**
	Installation to be done on turn key basis lab and attached patient waiting area needs to be renovated with high quality false ceiling floor and wall tiles up to roof level high quality adequate modular storage racks and necessary furniture like table chair also need to be provide
20	**Turnkey**
1	**INTERIOR FINISHES:**
1.1	**Walls:**
	All the walls should be mentioned as per machine requirement
	Outer walls of Angio CT room should be constructed with 9" thick brick work.
	All walls should be finished with construction of brick wall if any, plastering with antimicrobial paints . & finished with POP and Paintwo coats Plastic Emulsion Paint over 2 coats of wall putty including primer in patient preparation area, Lobby area, console room, Cath Lab room & Equipment room etc

	Flush mounted wardrobe with glass doors (2 nos) must be supplied to keep the stents & catheters etc materials inside the lab
	Electrical work should consist of point wiring in all rooms, using copper wiring, sockets & switches Electrical Panel (renowned make like Finolex, Havells, V-Guard etc. or equivalent) Cable trench and trays should be provided
1.2	**Flooring**
	Flooring in console room and Inside the lab area should be. The flooring inside the OT should seam less be done with medical grade vinyl tiles/rolls/high class epoxy flooring having conductive properties conforming to standards DIN EN 1081, DIN EN 1815, EN 12466, EN 425, EN 423 & EN 433
	It should display excellent resistance to chemical products such as detergents, acids and alkaline products
	It should be carrying characteristics of fire resistant, scratch resistant, chemical resistant & resistance to fungi – bacterial growth.
	It should be non-absorbent, impervious and non-porous
1.3	**False Ceiling:**
	Power coated Light weight Aluminum False Ceiling acoustically treated, Armstrong Modular Grid Ceiling of size 600x600 suspended on inter locking metal grid should be done in all rooms
	Gypsum false ceiling with sky panel should be provided in Angio CT Exam room.
	Picture light should be provided at the centre of ceiling.
2	**DOORS & WINDOWS**
	Doors:
	ISI marked commercial flush door (35 mm thick) with laminate on both side and 2mm thick lead sheet finish should be installed, hold fasts and accessories as per the proposed layout design for the facility. (2 no. Lead Lined Door including the main entry door). The doors should be provided with minimum 7-lever pad locks, rest all other doors would be of commercial flush door with laminate on both side
	Windows:
.	Wooden framed window with 2mm thick lead on all edges of the frame with lead glass (150x150cm) should be installed in the console room.
.	Flush mounted full length wardrobe with glass doors (3 nos) must be supplied to keep the stents & catheters etc materials inside the lab.
.	The Doors (D6 & D2) mentioned in the drawing must be sliding type (SS/HPL) with lead lining& viewing window as per the AERB guideline ,W1 will be lead glass viewing window .
3	**FURNITURE:**
	Furniture of Hermen Miller, Godrej, Featherlite, Geeken equivalent make:

	Description Qty
	1200mm x 900mm work station Tables to be customized at site - 2 qty
	Revolving chairs with user-adjustable height, medium backrest height, with hand-rest - 8 qty
	Chairs for patient waiting area- three-seater (chrome plated) - 4 qty.
	Providing and placing Cupboard with laminate door shutters for storage of spare parts, accessories and records, as per requirement (2500x900x600) (customized at site) - 3 qty.
	Aluminum plated footrest - 1 qty,
	Name boards for all rooms - 5 qty.
	Dustbins (plastic with lid) - 4 qty
	A ergonomically designed prefabricated console table with facility to accommodate all monitors & systems must be install in the console/Control room
	All the Door, Windows, Viewing windows must be lead lining for radiation protection as per the guidelines of AERB
	All the turnkey work related to room layout and designing of the cathlab area along with the console room must be as per the guidelines of AERB .
	HVAC Works:
.	Ductable Split units, with appropriate HEPA filters amounting to a total tonnage of 22 TR, (16.5 TR Working + 5 TR Standby) of Bluestar or equivalent make. Make: Blue Star/LG/Carrier/Voltas/Equivalent
.	Temperature range considered for area under scope should be 20±2 degree Celsius
.	All the main AC units must be fitted outside of the LAB area for better accessible for service. Proper drainage has to be done
.	Dual bay wall mountable SS/SMS top automatic temp control scrub station withoptoelectronic thermostatic control taps & soap- and disinfectant dispenser must be supply along with the system . Installation & commissioning of this scrub station with all related accessories must be a part of the turnkey project.The scrub are must be fitted with full width of glass in the wall
	FIRE DETECTION WORKS:
.	Fire detection system should comprise of 'smoke cum heat' detectors installed at appropriate locations within the facility along with response indicator. Sounders/strobes and should be integrated with the nearest hospital fire system panel.
.	Supply & installation of dry CO2 type fire extinguisher five nos. of 5kg capacity should be provide at suitable locations to combat any accidental fire
	ELECTRICAL WORKS:

.	Total load of the equipment, accessories and other items to be mentioned by the supplier.
.	The supplier will provide load cable up to electrical room of angio suite. This should include cabling connection to the hospital generator facility
.	Electrical work should consist of point wiring in all rooms, using copper wiring, sockets & switches Electrical Panel (renowned make like Finolex, Havells, V-Guard etc. or equivalent) Cable trench and trays should be provided.
.	The cable length from DG Panel to UPS room (Ground Floor) to Cathlab(1st floor) will be 70 m +15% (approx.) .
.	The cable size must be 3.5 x 185 sq mm.
.	Switches: light and power point should be of modular type of standard make. (Legrand, L&T, Crabtree, Roma)
.	Providing and fixing Recessed type 1 x 36W LED down lighter fixture of approved make and brand without LED driver, all necessary lamps & mounting accessories complete as required, etc. (Make : Crompton Cat LCTLS-36- CDL) Philips / Crompton / Wipro / Syska or equivalent
.	Providing and fixing Recessed type 1 x 18W LED down lighter fixture of approved make and brand without LED driver, all necessary lamps & mounting accessories complete as required, etc. (Make : Crompton Cat LCTLS-36-CDL) Philips / Crompton / Wipro / Syska or equivalent.
.	Few lights in each room should be connected to the UPS to provide emergency lighting
.	Roof Light-Led Down lighter of Philips/Osram/Wipro
.	Furnish & install the main incomer MCCB along with power distribution panel for the complete facility including the machine, UPS input, AC, Power & lighting etc.
.	Main switchgears, fuse units shall be L&T / Siemens/ GE
.	Required Eight nos. of Earth pits considered, upto a depth of 3 mts including accessories and masonry enclosure with cover plate and filled with charcoal/coke and salt as required.
.	Telephone cables should be of Finolex& RR cables, Havells & Ecko brands
.	All the cables, Pipes and Manifold lines routed thought the proposed site to be shifted by the vendor before handing over the site for site modification works
	COMMUNICATION:
.	Cabling of Network (LAN) connectivity for all system including console system, workstation and computers along with connectivity to nearest point of hospital should be done. Vendor will be responsible for all networking and connection with existing network of hospital
	EXTERNAL WORKS:
.	Providing and fixing MS grill for AC outdoor unit should be in vendors scope

.	Platform for unloading and shifting of Angio equipment to be provided if required.
	Guarantee/Warranty
1	Five year comprehensive onsite warranty of entire system. This will be followed by 5 years comprehensive maintenance contract for all equipments including accessories.
2	All accessory equipment including cables , adaptor, connecters should be included in comprehensive warranty
3	X ray tube warranty should be covered under warranty & CMC
4	Post warranty on site annual comprehensive maintenance contract to cover, complete system including all components, accessories, should be quoted separately for additional five years with year wise break up.
5	Uptime guarantee of 95% must be agreed. Penalty clause will be applicable if the downtime of the unit exceeds 5% of the permissible downtime. The penalty will be in the form of extended warranty beyond 5 years, which will be equal to the period of double the number of days for which the unit is non-functional.Warranty & CMC must cover the main unit including all the third-party items.
	General Instructions for the Vendor
	Supplier should give a live demonstration of the quoted model and demonstrate all its features.
	Supplier must ensure availability of expertise service and maintenance at site of installation. Uninterrupted availability of spare parts and repair for next ten years must be assured
	Two bid system: vendor is required to make separate bids for technical and price components. These should be quoted in two separate sealed envelopes.
	Please note that all technical features, facilities and accessories mentioned in the tender documents are standard requirements and hence, these should be offered as the standard feature. None of these should be offered as optional items
	In price bid, cost of locally supplied items must be quoted separately in Indian currency
	Please respond to each specification in the same format and order as mentioned in the tender document and specify/indicate the page number and paragraph for verification from the product data sheet against each column
	Original product data sheets, complete manuals and other necessary documents should be provided. Photocopies of these documents or printouts of the email/web pages will not be accepted

	When required, information other than those in the data sheets should be provided as a separate document from the principals only and should refer to the specific sections being addressed. When standard vendor data sheet disagrees with the bid response (offer/compliance statement), clarification should accompany in the form of certificate from the principals only. In absence of this, the vendor data sheet will prevail for the purpose of evaluation and decision of the technical committee would be final and binding on the supplier.
	It will be the responsibility of the vendor to perform periodic QA examination and uploading the report on AERB website. Vendors will also be responsible for complying all the AERB guidelines during installation of equipment and the period of warranty and subsequent CMC/AMC
	Mention the number (with addresses and phone numbers) of installations of the quoted unit in India and abroad.
	Free upgrade(s) not involving any hardware as applicable should be provided during the period of warranty/CMC.
	Unit price of all consumables should be quoted at the time of purchase, for the whole life of machine
	Any representation regarding technical specification mentioned in the tender shall reach department two days prior to pre bid meeting & maybe discussed in prebid meeting for consideration.
	Documentation:
1	User / Technical / Maintenance manuals to be supplied in English.
2	Log book with instructions for daily, weekly, monthly and quarterly maintenance checklist. The job description of the hospital technician and company service engineer should be clearly spelt out.
3	Cost close consumables and accessories which are not covered under warranty (no spare parts will be considered) & CMC period has to quote in schedule XI as percentage value in the Technical Bid which will be freeze for entire warranty & CMC period ,Failing which bid will be treated as non-compliant
	Environmental factors:
1	Shall meet IEC-60601-1-2:2001 (Or Equivalent BIS) General Requirements of safety for Electromagnetic Compatibility or should comply with 89/366/ECC; EMC-Directive. Certificate must be submitted
2	The unit shall be capable of operating continuously in ambient temperature of 30-40 deg C and relative humidity of 15-90% .
3	The unit shall be capable of being stored continuously in ambient temperature of 10- 50 deg C and relative humidity of 15 – 90 % .
	Warranty and Maintenance

1	Warranty for 5 years followed by CMC for 5 years including Spares & service
2	Mandatory 2 PMs / Year with unlimited breakdown calls has to be attended by the bidder/manufacturer throughout the warranty & CMC period at site .i.e. NEIGRIHMS, SHILLONG.
3	Duly signed Mandatory PM reports have to be submitted periodically, falling which necessary action will be initiated as per term& condition of the tender.

	Fully automated coagulation analyser
Sl.No.	**Specifications**
1	Should be Fully Automated Stand alone Coagulometer
2	Should be able to perform Clotting, Chromogenic and Immunological tests.
3	The analyzer should have facility of High Throughput and rapid processing of samples.
4	The analyzer should be continuous and random access and have minimum 50 sample positions.
5	The throughput should be Minimum **140** PT tests/ Hr.
6	Should have the facility of Primary sample volume check to minimize collection errors.
7	Should have a STAT Facility for emergency samples.
8	Should have the facility to check interfering substances in the patient sample like bilirubin, hemolysis and lipemia with a visible notification in the patient results and printouts.
9	Should have the facility for Storage of Calibration and their curves.
10	The analyzer should have facility for keeping at least **40** reagents on board
11	**Should have barcode for Samples and reagents.**
12	The reagent rack should be cooled at 10° C or lower for maximum stability of on board reagents.
13	Should have the facility of placing at least 3 vials of the same reagent.
14	Should have the facility of **running inhibitor Studies.**
15	Should have the facility of running mixing tests.
16	Should have the facility of reviewing patient‟s reaction curves.
17	The Analyzer should have LIS Capability.
18	Should have at least 500 cuvettes onboard capacity
19	Should have a result storage capacity of at least 10000 sample results with their Reaction curves.
20	The analyzer should have capability of rerun, reanalysis and reflex tests.
21	Should have QC Analysis by L-J charts and Westgard rules.
22	Compatible UPS with a 01 hour supply backup to be supplied along with the Analyzer.
23	Should be a Brand New Analyzer and should have a facility for future upgradation.
24	Should have European CE or US FDA certification or BIS approved.
25	The calibration, IQ, OQ and PQ of the instrument should be performed at the time of installation and certificates should be provided.

26	To be supplied with Branded computer system with at least Core i7 processor, 8GB RAM, 1TB HDD, DVD R/R, 21" or better LED Monitor, Genuine Windows 10 or more, A4 size laser printer and appropriate bar code reader.**Or** Inbuilt system capable of integrating LIS and connecting printers
27	Start-up kit for at least 200 tests should be provided free of cost. **(PT and APTT) including all consumables, reagents, controls,calibrator, cleaning solutions, coolant and other related accessories for 200 test should be provided along with the system during supply**
28	Appropriate work bench/ stand should be provided for the instrument.
29	Document supporting track record and satisfactory performance from institutes of national importance (minimum one) should be provided.
30	Support for induction and follow up training of technical staff, on-site standardization and troubleshooting of procedures/ tests to be provided by the company.
31	Five (5) years warranty and Five (5) years CMC should be provided.
32	Additional compulsory conditions: Test throughput of the system should be minimum 150/ hours for PT and minimum 110 test / hour for PT/APTT simultaneously.
33	Counter Guarantee acknowledgement dully sealed and signed by the manufacturer / OEM authorised signatory that "supply of reagents, consumables and all other accessories related to the system including provision of service throughout the warranty and CMC Period, must be attached in the bidding process.
34	the system must be HL 7 compliant and have open architecture protocol to connect through hospital HIS/LIS
35	The total samples may be around 20,000 per year more or less. The cost of 5000 samples PT, APTT, fibrinogen ,TT (ratio 4:4:1:1) reagents including all the consumables, reagents, controls, calibrator, cleaning solution and coolant etc including all other accessories shall be offered with the system cost and the break up of the same should also be included in the financial document attached as PDF in the price bid for calculating life cycle cost of the system. The same shall be supplied with the system with long expires.

	Bubble CPAP
Sl.No.	**Specifications**
	CPAP Blender with Humidifier Machine
1	CPAP generator with pressure range from 3 to 10cm water.
2	Capable of giving nasal/Nasopharyngeal CPAP
3	Integrated pneumatic Air and O2 blender calibrated with flow from 0-15 lit/min
4	Safety mechanism for relief of excessive pressure through pressure relief valve/regulator.
5	Soft nasal prongs
6	Alarm for device
a	Low/high temperature
b	Flow increase/decrease alarm
c	O2 pressure low alarm
d	Air pressure low alarm
7	Flow meters:- 2 with each piece
8	Power 220-230 volts 50 Hz
9	System should be quoted with pole assembly to incorporate the whole CPAP machine
10	Standard accessories with each equipment
a	Heated wire servo controlled humidifier
b	5 ml test lung 1 mg
c	Disposable patient circuits
d	Disposable nasal prongs

	CSSD EQUIPMENTS
SL.NO	**SPECIFICATIONS**
	Technical Specification for Steam Sterilizer (12 Stu) - 1 unit
	Horizontal steam Sterilizer :
1	The Sterilizer should have the autoclaving chamber capacity of 850 lts or more
2	The Sterilizer should have minimum processing capacity of minimum 12 STU per cycle.
3	The Sterilizer should have double door openable from both sides.
4	It should be fully automatic Microprocessor controlled rectangular Horizontal High pressure Steam Sterilizer having double jacketed 316 L or 316 Ti grade Stainless Steel chamber. Sterilizer vessel assembly should be formed with two S.S. sheets one within another.
5	The Sterilizer should be equipped with 134 degree Celsius pre-vacuum, 121 degree Celsius Liquid cycle, 134˚C and 121˚C is regular cycle. Cycle time should be ≤ 40 minutes.. All these cycles should be pre feed into the software programmed control system and should be validated as per AAMI ST 8/EN 285 /US FDA/ BIS Pressure standards /CDSCO standards.
6	The autoclave should work on pre and post-vacuum treatment technology.
7	The Sterilizer should have adjustable cycle time which should be less than 60 minutes.
8	The both door of sterilizer should be Electrically/Pnemetically operated with fully automatic Horizontal /vertical movement along with international door safety features.
9	The Door Safety Systems should have Pressure sensor system available in the chamber to monitor the chamber pressure.
10	The Chamber should be completely depressurized before the door seal is retracted by vacuum pressure.
11	The Door chamber should not be opened when chamber is pressurized
12	The required mechanical safety edge should stop the door if it is obstructed while closing for protecting operator & loading equipment.
13	The cycle should not start if the door is open or not properly locked.
14	The front and rear both door seal should be durable, Non-lubricated Steam/Air activated door gasket made of silicon rubber.
15	Double door safety is implemented through interlocks which prevent both doors from being opened simultaneously.
16	The Sterilizer should be supplied with Automatic and Manual opening in case of automatic mechanism failure of vertical sliding door. Also manual operation of autoclave in case of electrical failure to complete the cycle(Air operated manual valve
17	The chamber and doors should be made of solid and high quality 316 L or 316Ti Stainless steel.
18	The chamber should be jacketed to ensure the temperature uniformity in chamber.

19	The chamber floor should be slightly sloped towards an internal drain to facilitate drainage.
20	A stainless steel mesh strainer should be provided to protect the drain port from blockage by debris.
21	The chamber should be mounted on a stainless steel framework.
22	The internal surface should be electro-chemically treated or sand blasted for high quality smooth finish to facilitate cleaning. The resultant surface should be polished less than 0.8 μm fineness to protect against corrosion. The internal corners should be rounded off to facilitate efficient cleaning.
23	The sterilizer jacket and door should be completely insulated to keep the autoclave cool on the outside. The insulation should be completely encased in rigid or flexible removable sheet housing.
24	The jacket should be made of 316 L quality stainless steel with pressure gauge.
25	The sterilizer should have inbuilt/Stand alone steam generator having adequate capacity to generate quality 97 % to 100 % clean, saturated, condensate free steam to deliver at 50 psi pressure to 80 psi pressure in the jacket & chamber by independent steam supply lines.
26	Steam generator should be made of 316 grade stainless steel material.The sterilizer chamber is completely insulated with a 30–80 mm chloride free mineral wool, encased in rigid sheet aluminium housing
27	The inbuilt Steam generator should have a built in thermostat, pressure safety valve, water level glass gauge.
28	The heating element should be of sufficient capacity to make the Sterilization process faster with maximum cycle time of < 40 minutes
29	The heating system should have the automatic blow down valve & degassing system for feeding water to steam generator.
30	The piping system should be made of stainless steel or brass material.
31	All the process valves should be stainless steel or Gun metal or brass & should be pneumatically or electrically operated valves or solenoid valves for longer trouble free operations.
32	All the hot pipes should be properly insulated wherever required.
33	The safety valves should be made of brass or stainless steel or gun metal.
34	Primary piping & fittings should be stainless steel threaded or stainless steel triclamp fittings.
35	The Primary components triclamps /threaded fitting components like Manual valve, non-return valve, pressure regulator, pneumatic valves, and steam trap etc. should be made by 316 quality stainless steel or brass or Gun metal.
36	The Electrical terminals, Components & contacts should be housed in a water tight cabinet while the other electrical component should be directly mounted on sterilizer.
37	The unit should provide disposable air filter filtering the atmospheric air before entering inside the chamber. The filter separation efficiency should be higher than 99.998 % for particle size less than 0.3 μm.

38	The control system should be microprocessor based PLC system specially designed for sterilization application.
39	The Sterilizer should have touch sensitive minimum 7-inch LCD colour display control system with battery back-up and digital thermal printer for online record.
40	Sterilizer supplied should have dual sensors for temperature in the Chamber and one sensor for pressure near drain point.
41	The sterilizer should have microprocessor base PLC system for monitoring & documentation which constantly cross checks the safety systems & time.
42	The specified multiple password access levels should be provided to control access / operation of the machine preventing unauthorized access.
43	These access levels should be user selectable.
44	The control system should have CPU processor with battery back-up & non-volatile memories, Digital input / output controls, analogue measuring inputs & COM ports for printer & PC connectivity with the standard factory configuration, calibration of the temperature circuits and calibration of the pressure circuits require a access code.
45	The sterilizer should have minimum two temperature sensors.
46	The chamber drain should have temperature or pressure sensors.
47	The Jacket should have pressure sensor.
48	The sensors should be PT 100 sensors to confirm Class A of the IEC 571 standard, with accuracy of ± 0.1˚C while the pressure sensor should have the accuracy 1% over the range of 0 bars to 5 bars.
49	Each sensor circuit should be calibrated with individual constants to correct the deviation in manufacturing and aging.
50	The automatic process checking & failure correction should be possible by the control system
51	The range of safety features alarm should be audio and visual include over temperature, pressure sensor failure, phase time-out, pressure relief safety valve, doors not properly closed, power failureif more than 10 seconds or immediately after power failure., Continuous self-checking of all the safety devices, low water level, water in chamber etc. should be possible after the completion of each cycle.
52	The sterilizer should supply with two rails for easy loading, shelf rack with shelves / carriage with one set of 304 Grade stainless steel loading and unloading trolley.
53	The autoclave should be equipped with an alpha-numeric Laser or thermal or Impact printer which prints each cycle parameter performed by the sterilizer.
54	The Sterilizer should have inbuilt liquid ring type high vacuum compressor pump for recycling facility for removal of air within the chamber and creating pre vacuum before sterilization phase as well as post sterilization drying phase. It should have low water level alarm to protect it from dry run.

55	The sterilizer should be designed to operate by authorized supervisor code programmed software for various programs from standard cycles to special cycle.
56	The sterilizer should have software programmed for various cycles:
	1.Wrapped Instruments, Porous load 134ºC,
	2. Heat Sensitive material, rubber, plastic, porous load 121ºC,
	3. Rapid cycle for single open instrument,
	4. Bowie & Dick test up to 7 Kg.,
	6. Leak test.
57	The sterilizer should pass a hollow load test or bowie dick test or Batch monitoring system.
58	The Steam Sterilizer should have provision for connecting to plant steam with a ¾" line terminating in the shutoff valve, non-return valve, pressure relief valve, steam riser, condensate drain and other essential accessories for future steam connection from the central boiler.
59	The sterilizer should be work on 415 Volts, 50 Hz, 3 phase electrical supply.
60(1)	The sterilizer should confirm the Europe EN 285:2006 standard / AAME ST 8 standard or BIS equivalent standards for Hospital Sterilizers.
2	The sterilizer should have ASME Pressure Vessel certification/Equivalent certification of Pressure vessels.
3	The sterilizer should bear the European CE certification or US FDA approved/BIS/CDSCO
4	The sterilizer should confirm the Medical Device Directive MDD 93/42/EEC amended by Directive 2007/47/EC.
5	The sterilizer should confirm the Pressure Equipment Directives 97/23/EEC-Pressure Equipment Directive
6	The sterilizer should confirm the IEC/UL/EN61010-1:2001, UL 61010-2-040:2005, Safety of Electrical Equipment, General requirement.
7	The manufacturing company should be bear the ISO 9001:2008.
8	The manufacturing company should be bear the Quality Management System, ISO13683:2003 or ISO 13485:2003 for Medical Devices
9	The manufacturing company should be bear the EN ISO 14001:2004.
61	The manufacturing firm should have direct operations in India with own trained service set up, engineers to ensure service backup, in time quality services, instant availability of spares or the dealer should have own trained service engineers / technicians to ensure service backup, in time quality services, instant availability of spares.
62	If the quoting Sterilizer don't have inbuilt/ standalone steam generator, then 72 Watts or suitable capacity as per International Standards standalone clean steam generator should be supplied along with unit for fast cycle.
63	Quality 97 % to 100 % clean, saturated, condensate free steam should be generated and deliverat 50 psi pressure to 80 psi pressure in the jacket & chamber by independent steam supply lines.

64	The Sterilizer should have electronic water saving control or heat exchanger or eco water recirculation system for external cooling condenser for condensing the exhaust chamber steam toacceptable temperature. Expendituretowards Installation of above systemand site preparedness must be included in the tender .Detail datasheet for water saving mechanism & necessary hardware details must be submitted inthe technical bid .
65	The supplier should complete onsite stainless steel panelling to all the sterilizers at both the sides
66	The Sterilizer should be supplied with Bowie Dick Test packs for 500 cycles, Batch indicators for 500 cycles, Chemical Indicators for 500 Cycles, Biological indicators for 500 cycles.
67	The supplier should provide all the fittings , Plumbing items , Pre Iron filter, Carbon Filter to the input water line ,electrical MCCB & cabling & other related materials required for installing the system as per the site requirement of the site .
68	Any other item like heater, Gasket, thermostat etc. not mentioned in the aforementioned list of consumables but required for optimal functioning of the CSSD equipment shall be covered under warranty and CAMC.
2	**Standards, Safety and Training**
1	Should be EN 285 + A2 Sterilization – Steam sterilizers – Large Sterilizers /AAME ST 8 standard / BIS /CDSCO equivalent standards
2	Manufacturer should have ISO certification for quality standards for pressure vessels/Sterilizers.
3	Comprehensive training for users and support services till familiarity with the system.
4	Electrical safety conforms to standards for electrical safety IEC 60601- 1 (Or equivalent International / National standard) general requirement for Electrical safety of Medical equipment.
5	The equipment complies with the requirement of the Medical Device Directive of class I equipment and Electromagnetic compatibility; all supporting documents must be provided.
2	**Technical Specification for Steam Sterilizer (8 Stu) -1 unit**
	Horizontal steam Sterilizer
1	The Sterilizer should have the autoclaving chamber capacity of550-600 litters ± 3 %
2	The Sterilizer should have minimum processing capacity of minimum 8 STU per cycle.
3	The Sterilizer should have double door openable from both sides.
4	It should be fully automatic Microprocessor controlled rectangular Horizontal High pressure Steam Sterilizer having double jacketed 316 L or 316 Ti grade Stainless Steel chamber. Sterilizer vessel assembly should be formed with two S.S. sheets one within another.

5	The Sterilizer should be equipped with 134-degree Celsius pre-vacuum, 121-degree Celsius Liquid cycle,134˚C and 121˚C is regular cycle. Cycle time should be ≤ 40 minutes. All these cycles should be pre feed into the software programmed control system and should be validated as per AAMI ST 8/EN 285 /US FDA/ BIS Pressure standards /CDSCO standards.
6	The autoclave should work on pre and post-vacuum treatment technology.
7	The Sterilizer should have adjustable cycle time which should be less than 60 minutes.
8	The both door of sterilizer should be Electrically/Pneumatically operated with fully automatic Horizontal /vertical movement along with international door safety features.
9	The Door Safety Systems should have Pressure sensor system available in the chamber to monitor the chamber pressure.
10	The Chamber should be completely depressurized before the door seal is retracted by vacuum pressure.
11	The Door chamber should not be opened when chamber is pressurized.
12	The required mechanical safety edge should stop the door if it is obstructed while closing for protecting operator & loading equipment
13	The cycle should not start if the door is open or not properly locked.
14	The front and rear both door seal should be durable, Non-lubricated Steam/Air activated door gasket made of silicon rubber.
15	Double door safety is implemented through interlocks which prevent both doors from being opened simultaneously.
16	The Sterilizer should be supplied with Automatic and Manual opening in case of automatic mechanism failure of vertical sliding door. Also manual operation of autoclave in case of electrical failure to complete the cycle(Air operated manual valve)
17	The chamber and doors should be made of solid and high quality 316 L or 316Ti Stainless steel.
18	The chamber should be jacketed to ensure the temperature uniformity in chamber.
19	The chamber floor should be slightly sloped towards an internal drain to facilitate drainage.
20	A stainless steel mesh strainer should be provided to protect the drain port from blockage by debris.
21	The chamber should be mounted on a stainless steel framework.
22	The internal surface should be electro-chemically treated or sand blasted for high quality smooth finish to facilitate cleaning. The resultant surface should be polished less than 0.8 µm fineness to protect against corrosion. The internal corners should be rounded off to facilitate efficient cleaning.
23	The sterilizer jacket and door should be completely insulated to keep the autoclave cool on the outside. The insulation should be completely encased in rigid or flexible removable sheet housing.
24	The jacket should be made of 316 L quality stainless steel with pressure gauge.

25	The sterilizer should have inbuilt/Standalone steam generator having adequate capacity to generate quality 97 % to 100 % clean, saturated, condensate free steam to deliver at 50 psi pressure to 80 psi pressure in the jacket & chamber by independent steam supply lines.
26	Steam generator should be made of 316 grade stainless steel material. The sterilizer chamber is completely insulated with a 30–80 mm chloride free mineral wool, encased in rigid sheet alu minium housing
27	The inbuilt Steam generator should have a built in thermostat, pressure safety valve, water level glass gauge.
28	The heating element should be of sufficient capacity to make the sterilization process faster with maximum cycle time of < 40 minutes.
29	The heating system should have the automatic blow down valve & degassing system for feeding water to steam generator.
30	The piping system should be made of stainless steel or brass material.
31	All the process valves should be stainless steel or Gun metal or brass & should be pneumatically or electrically operated valves or solenoid valves for longer trouble free operations.
32	All the hot pipes should be properly insulated wherever required.
33	The safety valves should be made of brass or stainless steel or gun metal.
34	Primary piping & fittings should be stainless steel threaded or stainless steel triclamp fittings.
35	The Primary components tri clamps /threaded fitting components like Manual valve, non-return valve, pressure regulator, pneumatic valves, and steam trap etc. should be made by 316 quality stainless steel or brass or Gun metal.
36	The Electrical terminals, Components & contacts should be housed in a water tight cabinet while the other electrical component should be directly mounted on sterilizer.
37	The unit should provide disposable air filter filtering the atmospheric air before entering inside the chamber. The filter separation efficiency should be higher than 99.998 % for particle size less than 0.3 µm.
38	The control system should be microprocessor based PLC system specially designed for sterilization application.
39	The Sterilizer should have touch sensitive 7-inch LCD colour display control system with battery back-up and digital thermal printer for online record.
40	Sterilizer supplied should have dual sensors for temperature in the Chamber and one sensor for pressure near drain point.
41	The sterilizer should have microprocessor base PLC system for monitoring & documentation which constantly cross checks the safety systems & time.
42	The specified multiple password access levels should be provided to control access / operation of the machine preventing unauthorized access.
43	These access levels should be user selectable.

44	The control system should have CPU processor with battery back-up & non-volatile memories, Digital input / output controls, analogue measuring inputs & COM ports for printer & PC connectivity with the standard factory configuration, calibration of the temperature circuits and calibration of the pressure circuits require a access code.
45	The sterilizer should have minimum two temperature sensors.
46	The chamber drain should have temperature or pressure sensors.
47	The Jacket should have pressure sensor.
48	The sensors should be PT 100 sensors to confirm Class A of the IEC 571 standard, with accuracy of ± 0.1˚C while the pressure sensor should have the accuracy 1% over the range of 0 bars to 5 bars.
49	Each sensor circuit should be calibrated with individual constants to correct the deviation in manufacturing and aging.
50	The automatic process checking & failure correction should be possible by the control system.
51	The range of safety features alarm should be audio and visual include over temperature, pressure sensor failure, phase time-out, pressure relief safety valve, doors not properly closed, power failure if more than 10 seconds o r immediately after power failure., Continuous self-checking of all the safety devices, low water level, water in chamber etc. should be possible after the completion of each cycle.
52	The sterilizer should supply with two rails for easy loading, shelf rack with shelves / carriage with one set of 304 Grade stainless steel loading and unloading trolley.
53	The autoclave should be equipped with an alpha-numeric Laser or thermal or Impact printer which prints each cycle parameter performed by the sterilizer.
54	The Sterilizer should have inbuilt liquid ring type high vacuum compressor pump for recycling facility for removal of air within the chamber and creating pre vacuum before sterilization phase as well as post sterilization drying phase. It should have low water level alarm to protect it from dry run.
55	The sterilizer should be designed to operate by authorized supervisor code programmed software for various programs from standard cycles to special cycle.
56	The sterilizer should have software programmed for various cycles:
	1.Wrapped Instruments, Porous load 134ºC,
	2. Heat Sensitive material, rubber, plastic, porous load 121ºC,
	3. Rapid cycle for single open instrument,
	4. Bowie & Dick test up to 7 Kg.,
	6. Leak test.
57	The sterilizer should pass a hollow load test or bowie dick test or Batch monitoring system.
58	The Steam Sterilizer should have provision for connecting to plant steam with a ¾” line terminating in the shutoff valve, non-return valve, pressure relief valve, steam riser, condensate drain and other essential accessories for future steam connection from the central boiler.

59	The sterilizer should be work on 415 Volts, 50 Hz, 3 phase electrical supply
60(1)	The sterilizer should confirm the Europe EN 285:2006 standard / AAME ST 8 standard or BIS equivalent standards for Hospital Sterilizers.
2	The sterilizer should have ASME Pressure Vessel certification/Equivalent certification of Pressure vessels.
3	The sterilizer should bear the European CE certification or US FDA approved/BIS/CDSCO
4	The sterilizer should confirm the Medical Device Directive MDD 93/42/EEC amended by Directive 2007/47/EC.
5	The sterilizer should confirm the Pressure Equipment Directives 97/23/EEC-Pressure Equipment Directive
6	The sterilizer should confirm the IEC/UL/EN61010-1:2001, UL 61010-2-040:2005, Safety of Electrical Equipment, General requirement.
7	The manufacturing company should be bear the ISO 9001:2008.
8	The manufacturing company should be bear the Quality Management System, ISO13683:2003 or ISO 13485:2003 for Medical Devices
9	The manufacturing company should be bear the EN ISO 14001:2004.
61	The manufacturing firm should have direct operations in India with own trained service set up, engineers to ensure service backup, in time quality services, instant availability of spares or the dealer should have own trained service engineers / technicians to ensure service backup, in time quality services, instant availability of spares.
62	If the quoting Sterilizer don't have inbuilt steam generator, then 45 Watts or suitable capacity as per International Standards standalone clean steam generator should be supplied along with unit for fast cycle.
63	Quality 97 % to 100 % clean, saturated, condensate free steam should be generated and deliver at 50 psi pressure to 80 psi pressure in the jacket & chamber by independent steam supply lines.
64	The Sterilizer should have electronic water saving control or heat exchanger or eco water recirculation system for ext ernal cooling condenser for condensing the exhaust chamber steam to acceptable temperature. Expenditure towards I nstallation of above system and site pr eparedness must be included in the ten der .Detail datasheet for water saving mechanism & necessary hardware details must be submitted in the technical bid .
65	The supplier should complete onsite stainless steel panelling to all the sterilizers at both the sides.
66	The Sterilizer should be supplied with Bowie Dick Test packs for 500 cycles, Batch indicators for 500 cycles, Chemical Indicators for 500 Cycles, Biological indicators for 500 cycles.

67	The supplier should provide all the fittings , Plumbing items , Pre Iron filter, Carbon Filter to the input water line ,electrical MCCB & cabling & other related materials required for installing the system as per the site requirement of the site .
68	Any other item like heater, Gasket, thermostat etc. not mentioned in the aforementioned list of consumables but required for optimal functioning of the CSSD equipment shall be covered under warranty and CAMC.
2	**Standards, Safety and Training**
1	Should be EN 285 + A2 Sterilization – Steam sterilizers – Large Sterilizers /AAME ST 8 standard / BIS /CDSCO equivalent standards
2	Manufacturer should have ISO certification for quality standards for pressure vessels/Sterilizers.
3	Comprehensive training for users and support services till familiarity with the system.
4	Electrical safety conforms to standards for electrical safety IEC 60601- 1 (Or equivalent International / National standard) general requirement for Electrical safety of Medical equipment.
5	The equipment complies with the requirement of the Medical Device Directive of class I equipment and Electromagnetic compatibility; all supporting documents must be provided
3	**Washer disinfector minimum 12DIN or more with accessories- 2units**
1	The washer disinfector shall be suitable for cleaning and disinfection of surgical instruments/goods. The process shall include pre wash, detergent wash and hot water disinfection, rinse and drying cycles.
2	The unit shall be suitable for electrical operation and would be complete with water circulation pump, necessary valves & fittings.
3	It should be microprocessor based so as to ensure correct program sequence and irregularities or deviations which are displayed immediately.
4	Chamber Capacity: Chamber capacity: Operational Volume should be able to process minimum 12 DIN in single cycle. Should supply 12 Nos of standard Stainless Steel DIN trays. The chamber should be made of S.S. 304 or S.S. 316 L quality with electro polished washed surfaces. The chamber edges should not have the pockets & folds so as to avoid bacterial growth. The wash chamber should also be fitted with bright light for clear visibility of the washing process.
5	Connection with MGPS system for compressed air(if required) shall be the responsibility of the bidder
6	**Washer should have following features:**
I	For shortest possible filling and draining phases, higher capacity quick opening valves should be used so that short total process time is achieved. The design should focus on saving the environment through reduced consumptions of all utilities.
II	Cleansable spray arms should be located at the top and bottom of the chamber.

III	Wash carts should be equipped with cleansable spray arms between each shelf so as to facilitate water to reach all the surfaces which needs to be cleaned.
IV	Injection wash carts should be automatically connected to water and drying air in order to clean and dry the inside of the tubular instrument.
V	The drying air should be pre-heated.
VI	The washer should be equipped with independent temperature monitoring.
VII	Data interface RS232 should be available.
VIII	All electrical components should be easily accessible for easy service - ergonomic design.
IX	Washer should be equipped with audible alarm that alerts if error code occurs.
X	Double door should be automatic made of toughened glass for see through & should facilitate the loading process. (Vertical sliding operating door)
XI	The washer should have 3 dosing pump (detergent, alkaline & lubrication) for process chemicals, instrument lubricants/ enzymatic cleaners.
7	**The washer should perform: .**
I	Pre-rinses with cold water.
II	Main washes with hot water (60C) and detergent
III	Final rinse with water (55C)
IV	Disinfection with hot water (90C)
V	Unit to have LCD display and operating console to have membrane key pad for durability or LCD touch screen display
8	**Unit should feature safety measures such as:**
I	Automatic door lock.
II	Automatic temperature regulation.
III	Electronic adjustment of water level.
IV	The unit should also have an interface as standard for an optional batch printer.
V	The washer disinfector shall be supplied with universal rack, minimum 6 level racks for instrument tray, full size instrument tray as well as stop valves, anti-suction device and plastic water trap.
VI	Should ensure essential washing accessories and must be Compatibility with Robo tic Instrument washing .
9	**Standards & Norms:**
	Manufacturer should be ISO 13485:2003 and EN ISO 15883 certified and copy of the certificates should be attached with the bid.
4	**Drying cabinet -1 unit**
	Drying Cabinet :

1	The Drying Cabinet is for fast, efficient and safe dry heat sterilization of surgical instruments and accessories in CSSD.
2	The Dying Cabinet should be ISO & European CE/US FDA certified.
3	Should have 5 years warranty and 5 years CMC.
4	Should be fully automatic single glass door for visual inspection and pass through version with LCD display.
5	Should have at least nr. 9 DIN 1 /1 trays capacity on removable shelves or up to nr. 3 AN cassette for a total capacity-, of 36 anaesthesia houses / up to nr. 18 anaesthesia bags capacity.
6	The unit should have mixed drying fa hanging house for anaesthesia bags, tubing and instruments
7	The inner chamber should be made of AISI 304 stainless steel with double wall insulation.
8	Should have inbuilt heating.
9	There should be provision for setting the drying temperature and drying time which should be password protected. The temperature setting should be from 1 up to 999 minutes or continuous.
10	The drying circuit should be equipped with double tan combined with fast connectors.
11	Should have protection with alarms and auto shut oft in case oi overheating.
12	Should have indirect UV air treatment during whole cycle.
13	The Drying Cabinet should have in built electric precipitator (electrostatic filter) for cleaning of the incoming air. and also should have monitoring of HEPA filters and indicators when replacement required.
14	Should be supplied with nr. 8 shelves and nr. 3 AN cassettes
15	Single door.
16	Approx 275 – 300 litres chamber capacity
5	**Gauze cutting machine-1 unit**
1	This Machine is needed for uniform and fast cutting of CSSD gauze, cotton pads and dressing items in CSSD.
2	Should be semi automatic with 8" STRAIGHT BLADE with high speed steel knife and carbide tipped.
3	The lower blades should give the finest and smoothest cut while using on Gauze, Cotton etc.
4	Should have high power motor with excellent cutting power and kept cool by its technologically advanced air guide system.
5	Blade can be sharpened by the automatic sharpening unit only when lever is pressed down, ensuring safety. The low prole base-plate drastically reduced fabric distortion and drag.
6	The close fitting wing of base-plate should be easily slips under the bottom ply without catching or snagging the cotton /clothes.
7	The roller should be placed under the base plate for easy manoeuvbility to cut straight or curves.
8	Blade size should be 200 mm (8") & cutting capacity - 165 mm.

9	The motor cooling fan dissipates heat build-up and directs the air flow away from the operator. Should have operating handle and lever are positioned for maximum convenience.
10	Power supply 220-240 V - 0.75 H. P.
11	Should be provided with 3 ball-bearings for smooth operation.
	Note
i	Necessary Turnkey work related to electrical connection from the main panel & plumbing line must be included in the Bid quoting price
ii	Necessary equipment's/filters/Iron removal system necessary for inlet water to prevent the inbuilt steam generator & Coils must be included in the Bid quoting price & all the spares and consumables for the filtering system must be covered under warranty & CMC
iii	All Heating coils, Gaskets must be coved under warranty and CMC
iv	All the side panels and the Partition wall between non sterile and sterile zone, dirty & clean area must be of SS .

	CT SCANNER UNIT with Detailed Turnkey Works
Sl.No.	**Specifications**
	The system should be latest State-of-the-art, USFDA/CE/BIS/CDSCO or equivalent approved, independent 64 or more rows of detectors with capable of generating at least 128 slices per rotation with capability of coronary CTA. CT scanner should have dual energy capability. The system should be DICOM -ready with true isotopic volume acquisition and sub millimeter resolution.Quoted model must have AERB type approval/NOC. Radiation safety requirements must be followed in during installation and subsequently during lifetime of the equipment. Vendor should assist in site approval, registration and licensing of the facility with AERB (ELORA).
1	**X-Ray Generator:**
a	High frequency generator
b	Power output: 70 kW or higher. The generator with the higher power output
c	would be preferred. Also, the bidder should mention whether the system would be
d	capable of tackling the dual energy application.
e	mA Range: should be 30mA to 600mA or better.
f	KV Range: 80-130KV or more
2	**X-Ray Tube:**
a	Tube voltage: 80-130 kV or more
b	Anode heat storage capacity of 7.0MHU or higher or the tube with direct cooling technology
c	Tube cooling rate of 1300 kHU per minute or more
d	Tube voltage 80k V to 130k V or better.
3	**Detector and Data Acquisition System:**
a	Solid state detector: specify the detector material. Should have at least 64 or more rows of detectors. State number of elements in each row.
b	The detector should generate 128 or more slices per rotation with slice thickness of 0.625mm or lower for all types of scans and applications.
c	The detector should have 700 or more effective elements / channels per slice (this number should not include the reference elements / channels and channels required for calibration)
4	**Gantry**
a	The gantry should be provided with user friendly control panels on both sides
b	Gantry Aperture should be 75 cm or more in diameter
c	Maximum scan field of view should be 50cm or more
d	The scan time for a 360 Degree rotation should be 0.35 second or lower.
e	The gantry tilt of minimum 25 degree which can be operated both from gantry and console room
5	**Patient Table:**
a	Carbon fibre (or equivalent Radiolucent material) table top with a metal free scanable range of 160 cm or more.

b	Patient load capacity of 200 kg or more
c	Minimum horizontal table speed at least 100 mm/sec
d	The vertical table travel range should be 35cm or more
6	**Operator Console:**
a	The latest computer should be offered with 64 Bit processor with minimum RAM of 32 gb or better
b	Main Console should include a high resolution, TFT/LCD color monitor of 19" or more.
c	The display matrix should be 1024 x1024.
d	TThe Hard Disk capacity for both image and raw data should be 0.90 TB or more.
e	It should have facility to store at least 4,00,000 images.
f	DICOM complaint to Sent, Store, Print, Receive.
g	The console should support Filming in user defined formats.
h	Ready to seamlessly integrate with RIS/PACS.
i	OEM/Reputed make Computer desk and cabinet should be provided.
7	**Spiral Scan**
a	Should generate 128 or more slices per rotation with slice thickness of 0.625mm or lower for all types of applications
b	The scan time for a 360 Degree rotation should be 0.35 second or lower
c	Bolus Triggered or bolus chase Spiral acquisition should be possible
d	Slice increment - specify scan and selectable slice thickness
e	Single Continuous spiral scan time should be at least 100 sce or more
8	**Dose Reduction:**
a	In built mechanism for adapting the tube current during each scan. This should enable radiation dose reduction where body part thickness is less. Specify mechanism used in the offered system.
b	The scanner should have inbuilt paediatric protocols
c	Latest Iterative Reconstruction Technique to be quoted as standard (please specify the technology).Certified document showing extent of dose reduction by these techniques should be attached.
9	**Image Reconstruction:**
a	Real Time reconstruction speed should be 12 images/sec or more
b	Display Matrix: 512 x 512
c	Reconstructed slice thickness should be up to 10mm and should be selectable.
d	Server Hardware: Dell/HP/IBM dual CPU; RAM- 64 GB minimum; Data Disc: RAID level 5; Graphical processing unit: NVIDIA GPU or equivalent: Image storage minimum 3TB (as PACS will be there)
e	Client hardware specification - Suitable 3 clients hardware with power backup should be supplied
10	**Basic Post Processing applications (3 concurrent users for all applications)**
a	The clients should be capable of simultaneously viewing and performing all post
b	processing functions as well as filming independently without the help of the Mainconsole

c	Two way data transfer between operator console and the server should be possible Standard evaluation applications: Distance, Angle, Marker, Region of Interest, Arrow, Pixel lens, Anatomical Registration, Synchronized Scrolling, Correlated Cursors.
d	Statistical Evaluation: Area/ volume, Standard deviation, Mean value, Image annotation and labelling, Histogram, Time-intensity curves, Peak-enhancement image, Time-to-peak images.
e	ROI evaluation: Parallel evaluation of multiple ROI in circle, irregular and polygonal forms.
f	2D: 2-D, including image zoom, pan and window; image manipulation, including averaging, reversal of grey-scale values, and mirroring; image filter functions, including advanced smoothing algorithm and advanced bone correction.
g	Image presentation: 2D, MPR, MPR thick, MP/MPR fusion, MIP, MIP thin, MinIP, VRT.
h	Real-time Multi-Planar Reconstruction (MPR) of secondary views, with viewing perspectives in all planes including curved and orthogonal MPR
i	3D Volume Rendering (VRT), Volume measurements.
j	Volume Calculation.
k	Interactive & Automatic Cine display should be available.
l	Bone removal, Table removal.
11	**Advanced applications (three or more concurrent user license for all application).**
a	Cardiac scan attachment with ECG Gated Segmented Recon, Calcium score, Vessel Flythrough of the Coronaries should be available with software package.
b	CT Angio: Automatic table and bone subtraction in CT angiography, Single click bone removal, manual vessel tracking, ability for a bone free visualization of vessels, Stenosis measurement.
c	Lung CT: low dose lung CT protocols for advanced lung nodule detection. segmentation and analysis, computer aided detection (CAD).
d	Dental CT: high-resolution evaluation of teeth and jaws with automatic panoramic and paraxial reconstruction, evaluation of mandibular canal and life size filming.
e	Tumour Comparison: Four time point comparison with previous imaging studies using CHOi & RECIST criteria, PET CT cross time point evaluation, quantification of tumour growth rates.
f	Multimodality Image fusion: between PET-CT, PET-MR, CTMR, MR-SPECT, MR-MR etc.
g	Colonography: Non invasive evaluation of the entire colon including external and endoscopic SSD views, 3D VR views and virtual dissection views.
h	CT Brain Perfusion and CT Body Perfusion.
i	Bronchoscopy-Non invasive evaluation of Bronchial, Endoscopic and SSD View, 3DVR& visual Dissection views.
j	Segmentation of lungs, Liver,Lymph nodes and general lesions- 3D mapping of vascular supply areas onto liver tissue, Virtual dissection planes and volumetric calculation

k	Advanced HU Statistics with color coding of hypodermic areas(Potential Indicator of Necrosis)
12	Dual Energy CT Scanner: The system must have dual energy capabilities and wide range of applications should be available. Dual Energy / Spectral CT/ Sequential Dual Energy in 128 slice acquisition and automatic post- processing should be offered as standard.
13	Dual Energy non-contrast applications
a	Kidney Stone Characterization
b	Gout Identification
14	Dual Energy contrast applications
a	Contrast augmentation & tissue visualization
b	Compare and quantify lesions and tissues
15	Standard Accessories
a	Multi size Film Dry Laser/ Thermal Imager of any reputed make. (500 dpi ormore)
b	DICOM Color Printer of any reputed make
c	Lead glass should be as per CT Lead glass (2mm lead has to be included in glass wooden frame) L= 1.4 m ,W= 1.2 m
d	Online UPS with Maintenance free batteries capable of 15 minutes back up to runthe entire CT, Computers, Work Stations etc.
e	Dual Head Pressure Injector Specification
i	Reputed make 350 PSI dual head pressure injector compatible with 100ml / 200ml syringe size with built in heat maintainer.
ii	Should have function of variable flow rate injection and dual flow / three phase simultaneous injection feature for cardiac CTA studies.
iii	Console should be touch screen with facility of pressure graph view and option to save minimum 100 protocols with different names.
iv	Should have Needle placement test function facility on console to confirm venous catheter placement for patient safety.
v	Should have Body based protocol software for easy operations.
vi	Ceiling Mount
f	Patient Positioning Accessories: Head Rest, Head and Arm Support, Knee and Leg Support. Paediatric Immobilizer
16	**Patient Communication System**: An integrated intercom and Automated Patient Instruction System (API) should be provided
17	**Installation**
a	The unit will be installed on site-modification basis. The vendor should inspect the site before quoting and ensure that the unit can be installed in the available space without any functional compromise. Complete layout site map and details of work (BOQ) should be part of technical bid. Provisions should be made for console room, changing room, wash basin, work-station and printer locations. It should also include Lead lined door with lead glass peeping window, radiation warning indicators and signages, Aluminium false ceiling, GVT floor tiles and full height wall tiles. All turnkey work should comply with specified standards of the hospital.
b	Necessary furniture and fixtures for comfortable working conditions, storage of system components and consumable stand for protective aprons and gonad shields. etc. should be provided.

c	Power and Air-conditioning requirement must be mentioned. AC of adequate capacity should be provided. Power supply by the institute will be terminated at existing point. All electrical provisions including earthing etc. will be vendor's responsibility
18	**Warranty/After Sale Service**
a	The comprehensive onsite warranty of entire system shall include X-ray tube, detector, all accessories, all hardware and software including licenses and third party items, UPS and batteries, items supplied civil, electrical and air conditioning works. If vendor is not a direct subsidiary of OEM (Principal), then such warranty must be vetted by OEM.
b	Regular preventive maintenance and QA checks as per AERB norms will be part of the warranty and CMC.
c	Free software update for 10 years.
d	Suppliers must ensure the availability of 'expertise service' and maintenance in Shillong.
19	**Instructions**
	All information in the tender document must be supported by original product data sheets or should be certified by the principals. Computer generated data sheets, photocopies or email printouts shall not be accepted.
20	**Turnkey Works:**
	The CT scan gantry room & Console rooms will be provided in raw state. The vendor should inspect the rooms and provide the necessary turnkey work including plastering, tiles, tables, furniture for computers, monitors, printers and connecting electrical/network cables/wires and sockets, painting, doors, Air Conditioner (for temperature and Humidity control). The material used should be a standard make and model as shown in the table below. The scope of work for turnkey will include the following rooms:
a	CTScanner gantry Room.
b	CT-Console Room
c	UPS area
	Walls:
A	All walls should be cement plastered 15 mm thickness including two coats of plastic emulsion paint for interior walls over two coats of wall putty and weather shield paint for exterior walls over cement primer. Tiles to be provided in areas as specified.
i	Construction/modification work including construction of brick wall if any, plastering, flooring as per the approved plan and equipment layout plan.
ii	Construction renovation/ modification demolition, exaction, filling work including construction of full or half brick wall if required, plastering, flooring as per the approved plan and equipment layout plan. Necessary openings/niches/cutouts, wherever required as per drawings and asked for by the Engineer-In-Charge, shall be provided by the contractor without any extra cost.
iii	Making surface good for floor modification for installing the CT-Simulator Unit
iv	Cable tray, trench & channel – necessary trenches, cable tray and channels at required locations.

v	**Addition to the tender specification:- Full wall tiling for CT Gantry & Console room With Matching colours**
vi	**Storage Work:Ply Storage with matched mica/Glass finished cabinets to be fixed in wall in gantry & console room .**
B	**Flooring:**
	50 mm thick cement concrete flooring with antistatic Vinyl flooring of minimum thickness of 2mm in all the rooms including equipment room.
	Antistatic Conductive flooring with copper plating & conductive adhesive with coving
	Note: Providing and laying approved quality, colour, design and shade fully homogeneous 600 x 600mm (thickness to be specified by the manufacturer) Vitrified tile flooring (Marbonite or Granamite, confirming to IS code 15622 with water absorption less than 0. 08%) flooring in pattern as detailed in drawing or as directed by the EIC and grouted with matching colour approved quality readymade grout, curing, cleaning, etc. to required line level etc. all complete at all leads, lifts and heights to the entire satisfaction of the EIC. Providing and fixing 2-3mm thick POP protection over polythene covering sheet to flooring areas till handed over and cleaning, etc. all complete as per drawings & specification and as directed by EIC with 100mm tile skirting to match in Brachytherapy room, control room, and all relevant rooms.Mode of measurement (finished surface area of the tiles shall be measured and paid. Rate shall be inclusive of providing and laying levelling course, PVC spacers, providing and applying epoxy grout and no additional payment shall be made for wastage. 50 mm thick cement concrete flooring at all heights and locations including scaffolding, preparing the surfaces, neat cement finishing to correct line or as required to receive architectural finish, level and plumb, curing wherever required complete as per specifications and drawings, with Vinyl flooring in CT-Simulator equipment and all relevant rooms. It should be made rodent/pest proof as in conjunction to the entire complex.
C	**Painting:**
i	Two coats Plastic Emulsion Paint over 2 coats of wall putty including primer in areas other than tiles.
ii	Coats of wall putty including primer in all areas, of approved brand and manufacture and approved shade finished with roller to wall & ceilings surfaces, in 2 coats over a coat of approved quality primer on the plastered/POP surface, POP board/Gypsum board surfaces including scaffolding, preparation of surface, sanding, light sanding, work platform, painting equipment/apparatus etc. required to complete interior grade finish etc. at all heights & levels complete as per drawings & Specifications.
iii	CT-Scanner Room/console room Walls – High quality High density Vitrified Tiles clad on the side walls up to false ceiling.
D	**False Ceiling:Metal Grid Celling 600mmX600 mm**
i	Acoustical tile for ceiling with light weight insulating material of high quality supported on grid or finished seamless with support above ceiling. Finished with white paint or powder coated with white paint, if metallic. Ceiling height to suit the equipment mounts and clearances.

ii	All materials to be used in works shall conform to Indian Standards specification as published by ISI from time to time/as approved by the Department. All works are to be carried out as per the applicable IS code of practice.
E	**Electrical Works:**
i	Internal Electrical Wiring: All interior electrical wiring with main distribution panel board, necessary MCBs, DB, joint box, switch box etc. the wires shall be of copper of different capacity as per the load and should be renowned make as listed below.
ii	Only FRLS wires of copper conductor of different capacity as per the load should be used.
iii	All necessary cabling like LAN, DICOM for data interface should be provided with adequate number of terminals.
iv	All the internal wiring including that of telephone, LAN, DICOM & PACS etc) will be concealed variety.
v	**Earthing**: Double-Earthing shall be provided with copper plate for the CT scanner and all accessories like UPS. The earthing for the AC should also be done by the suppliers. The earthing cable/wire shall be routed end-to-end through an insulated conduit.
vi	Switches, light and power points should be of modular type and of standard make as listed below.
	General Lightings: General Lightings: LED lighting of 6-22 W. Light dimming facility should be provided wherever necessary. And sky light of 6" x 4" must be install over the gantry
	Note: All electrical items such as switches, plug sockets, etc. should be of modular type make of reputed manufacturer as listed in the table below.
F	**Air Conditioning Works:**
i	The area marked for Site Modification work needs to be air-conditioned. Cassette AC 3 ton -2 nos in gantry room , 2 nos Split Air -1.5 ton Conditioners . Humidity control should be provided to effectively eliminate moisture condensation on the equipment. The Air conditioning system should be designed with standby unit(s) to provide uniform airconditioning 24 x 7.
ii	The outdoor units of AC should have grill coverings to prevent theft and damage.
iii	Stand-alone Room Dehumidifiers of adequate capacity for CT gantry Room, Console Room to be provided to ensure condensation-free atmosphere for the high value equipment.
G	**Environment specifications:**
i	Humidity range: Relative humidity 60% and 80% in all areas except equipment room which shall be as per requirement of the equipment.
ii	Temperature ranges: 22 ± 2° C in all areas throughout the year, except equipment room which shall be as per requirement of the equipment.

iii	Air conditioning load: The heat load calculations and maintaining the desired temperature and humidity shall be the responsibility of the supplier.
H	**List Of Items And Suggested Manufacturers/Brands:**
1	***Flooring Vitrified Tiles*** **:** Somany, Kajaria, H&R Johnson, Marbonite, Granamite.
2	***Pain t*** : Dulux, Asian Paints, Nerolac.
3	***Plumbing*** : Kohler, Jaguar, Grohe, Roca.
4	***Sanitary Item*** : CERA, Hindware, Parryware.
5	***Electrica*** **l:**
	i. **Cable**s: Finolex, Havells, V-Guard.
	ii. **Switches**: Legrand, L&T, Crabtree, Roma.
	iii. **Distribution Box, MCB**:Legrand, L&T, Siemens, Havels.
	iv. **Light Fittings**: Philips, Crompton, Wipro.
6	***Air Conditioning*** : Daikin, Hitachi, Blue Star,Voltas.
7	***Furniture*** : Hermen Miller, Godrej,Featherlit.
a	Executive revolving chair with arm rest:4 Nos. (Godrej or equivalent)
b	Steel Almirah with Rack: 1 Nos. (Godrej)
c	Console Table 1200 x 700 x 800 mm (L X D X H): Inos
d	Additional Table for workstation size of (1200 x 800) mm- 1
e	LED view box for 4 films - 2 Nos
f	Lead apron Hanger with trolly.
g	Roller blinds in console window
h	Temperature Humidity meter- 2 nos.
	Earthing:4(Four) nos. Copper plate earthing
I	The CT gantry and control console will be provided in raw state by NEIGRIHMS in RCC block The vendor should inspect the area at his own expenses and assess the turn key requirement as mentioned above.
J	Necessary Electrical Cabling & electrical panel must include in the cost .
	Lead Doors
1	1.4 m (Double leaf), 2mm lead has tobe sandwiched in the door and in the frame overlapping
2	1.4 m (Double leaf), 2mm lead must sandwiched fn the door and in the frame overlapping
3	0.88 m (Single leaf), 2mm lead must sandwiched in the door and in the frame overlapping

CTVS instruments

Sl.No.	Specifications	
	Description of Instrument	**Quantity required**
I	**PEDIATRIC CARDIAC SURGERY INSTRUMENT SET (with the following number of instruments each set):**	
1	Foerster sponge forceps 18cm length	**1**
2	Morse Sternal double bladed spreader (small) with 12x12mm blades	**1**
3	Morse Sternal double bladed spreader (medium) with 16x20mm blad	**1**
4	Langenbeck retractor 25x7mm 21cm length	**2**
5	Catspaw double ended retractor 15cm length	**2**
6	DeBakey Tissue forceps 2mm tip flat serrated handle 15cm length	**4**
7	DeBakey Forceps - Straight 1mm tips, flat serrated handle 15cm leng	**4**
8	Petit-Point Mixter 90° forceps (small) 15cm length	**2**
9	Waterson's Dissector 90° Angled Delicate serrated jaws 18cm length	**2**
10	Lahey 90° angled forceps (medium) 18cm length	**2**
11	Lahey 90° angled forceps (small) 15cm length	**2**
12	Towel clips (Backhaus) 11cm length	**18**
13	Mayo scissors curved razor edge/supercut blade 18cm length	**2**
14	Mayo scissors straight razor edge/supercut blade 18cm length	**2**
15	Metzenbaum scissors curved tungsten carbide insert blades 14cm len	**2**
16	Metzenbaum scissors curved tungsten carbide insert blades 18cm len	**2**
17	Metzenbaum scissors curved tungsten carbide insert blades 14cm length with tenotomy tips	**2**
18	Castaneda atraumatic 20° clamp 15cm length	**2**
19	Castaneda atraumatic 50° clamp 15cm length	**2**
20	Castaneda atraumatic 70° clamp 15cm length	**2**
21	Cooley semi-circle atraumatic jaws curved shanks 18cm length	**2**
22	Cooley pediatric clamp 90° angled atraumatic jaws, curved shanks, 15cm length	**2**
23	Satinsky Clamp - 30mm angled DeBakey atraumatic jaws, curved shanks 25cm length	**2**
24	DeBakey Aortic clamp 45° 18cm length	**2**
25	Vessel Snugger heavy	**2**
26	Vessel snugger fine	**2**
27	Desmarres/VSD retractor round handle 3x5mm curved blade 21cm le	**2**
28	Desmarres /VSD retractor round handle 8x8mm curved blade 21cm l	**2**
29	Desmarres /VSD retractor round handle 8x14mm curved blade 21cm	**2**
30	Blalock Nerve hook 21cm round handle	**2**
31	Garrett nitinol vessel dilator set (0.5mm-3.5mm)	**1**
32	Hegar dilators double ended set (1-27 size)	**1**
33	Atraumatic Debakey bulldog clamp straight jaws 4.5cm length	**4**
34	Atraumatic Debakey bulldog clamp curved jaws 4.5cm length	**4**
35	Olivecrona double ended dissector 2mmx3mm 24cm length	**1**
36	Ryder/dolphin nose needle holder tungsten carbide tip 15cm length	**2**
37	Mayo needle holder tungsten carbide tip 15cm length	**2**

38	Castroviejo needle holder with ratchet, 1.2x12mm diamond dust jaws, round handle, 15cm length for 5-0 needle	**2**
39	Castroviejo needle holder without ratchet, 1.2x12mm diamond dust jaws, round handle, 15cm length for 5-0 needle	**2**
40	Castroviejo needle holder with ratchet, 1.2x12mm diamond dust jaws, round handle, 15cm length for 6-0 needle	**2**
41	Castroviejo needle holder without ratchet, 0.4x12mm diamond dust jaws, round handle, 19cm length for 8-0 needle	**2**
42	Castroviejo needle holder without ratchet, 1.2x12mm diamond dust jaws, round handle, 15cm length for 6-0 needle	**2**
43	Castroviejo needle holder without ratchet, 1.2x12mm diamond dust jaws, round handle, 19cm length for 6-0 needle	**2**
44	Hartman Mosquito Forceps Curved atraumatic jaws 9.5cm length	**12**
45	Halsted Mosquito Artery Forceps with Curved Atraumatic Jaws 13cm	**12**
46	Spencer Wells Curved artery forceps with box joint 14cm	**12**
47	Spencer Wells Straight artery forceps with box joint 14cm	**12**
48	Bard Parker handle no. 3	**1**
49	Bard Parker handle no. 4	**1**
50	Bard Parker handle no. 7	**1**
51	Vorse tube occluding Clamp - Straight serrated jaws, straight shanks, stainless steel 15cm	**5**
52	Cardiopulmonary tubings Line holder plate/bench (Pediatric)	**1**
53	Magnetic instrument pad 12x15 inch	**1**
54	Tooth forceps 15cm length	**2**
55	Russian forceps 15cm length	**1**
56	Kocher forceps straight 15cm	**6**
57	Kocher forceps curved 15cm	**6**
58	Mosquito artery forceps	**12**
59	Kelly Artery forceps 21 length	**1**
60	Yasargil temporary clip 15mm blade	**5**
61	Yasargil clip applicator	**1**
62	Andrews-Pynchon steel curved 5mm tube suction instrument 23cm length	**2**
63	Cardiac sump suction tube 15° small	**2**
64	Wire twister needle driver tungsten carbide tips 15cm length	**1**
65	Wire cutter tungsten carbide tips 15cm length	**2**
II	**HEART VALVE SURGERY INSTRUMENT SET (with the following number of instruments in each set):**	
1	Foerster sponge forceps 24cm length	**1**
2	Morse Sternal double bladed spreader (large) with 30x40mm blades	**1**
3	Morse Sternal double bladed spreader (medium) with 28x24mm blad	**1**
4	Langenbeck retractor 35x15mm 21cm length	**2**
5	Volkmann rake retractor 4 pronged 21cm length	**2**
6	DeBakey Tissue forceps 2.7mm tips flat serrated handle 16cm length	**2**
7	DeBakey Tissue forceps 2.7mm tips flat serrated handle 20cm length	**2**
8	DeBakey Tissue forceps 2.7mm tips flat serrated handle 24cm length	**2**
9	DeBakey Tissue forceps 2.7mm tips flat serrated handle 30cm length	**2**

10	Waterson's Dissector 90° Angled Delicate serrated jaws 18cm length	**2**
11	Lahey 90° angled forceps (large) 24cm length	**2**
12	Towel clips (Backhaus) 15cm length	**12**
13	Strully Tonsil Scissors Curved 18cm length	**2**
14	Mayo scissors curved razor edge /supercut blade 22cm length	**2**
15	Mayo scissors straight razor edge /supercut blade 18cm length	**2**
16	Mayo scissors straight razor edge /supercut blade 22cm length	**2**
17	Metzenbaum scissors curved razor edge /supercut blade 23cm length	**2**
18	Metzenbaum scissors curved razor edge /supercut blade 23cm length with tenotomy tips	**2**
19	Metzenbaum scissors curved tungsten carbide blade 23cm length	**2**
20	Metzenbaum scissors curved tungsten carbide blade 23cm length with tenotomy tips	**2**
21	Diethrich Valve Scissors – Curved Razor edge/supercut Blades, Ring Handle, Stainless Steel 23cm	**2**
22	Cooley clamp semi-circle atraumatic jaws curved shanks 18cm length	**2**
23	Satinsky Clamp - 30mm angled DeBakey atraumatic jaws, curved shanks 22cm length	**1**
24	Satinsky Clamp - 30mm angled DeBakey atraumatic jaws, curved shanks 25cm length	**1**
25	DeBakey Aortic clamp 45° 26cm length	**2**
26	Vessel Snugger heavy	**2**
27	Vessel snugger fine	**2**
28	Desmarres/VSD retractor round handle 5mm curved blade 26cm leng	**1**
29	Desmarres /VSD retractor round handle 9mm curved blade 26cm leng	**1**
30	Desmarres /VSD retractor round handle 13mm curved blade 26cm le	**1**
31	Blalock Nerve hook 21cm round handle	**1**
32	DeBakey valve hook 26cm length	**2**
33	Cooley left atrial retractor 25x30mm blade, 24cm length	**1**
34	Cooley right atrial retractor 40x25mm blade, 24cm length	**1**
35	Cooley right atrial retractor 40x45mm blade, 24cm length	**1**
36	Aortic valve repair tool kit	**1**
37	Mitral chordae sizer	**1**
38	Ozaki AV Neo Sizer System	**1**
39	Schaefer aortic valve caliper set (Large, medium and small)	**1**
40	Bailey Valve Rongeur 4 x 10mm, 180mm length	**1**
41	Cosgrove Valve retractor system	**1**
42	Ross Aortic Valve Hook 24 cm length 16x15 mm blade	**1**
43	Ross Aortic Valve Hook 24 cm length 23x13 mm blade	**1**
44	Ross Aortic Valve Hook 24 cm length 24x16 mm blade	**1**
45	Ross Aortic Valve Hook 24 cm length 27x13 mm blade	**1**
46	Ryder/dolphin nose needle holder tungsten carbide tip 26cm length	**2**
47	Ryder/dolphin nose needle holder tungsten carbide tip 23cm length	**2**
48	Mayo needle holder tungsten carbide tip 26cm length	**2**
49	Mayo needle holder tungsten carbide tip 23cm length	**2**
50	Spencer Wells Curved artery forceps with box joint 14cm	**12**
51	Spencer Wells Straight artery forceps with box joint 14cm	**12**
52	Bard Parker handle no. 3	**1**
53	Bard Parker handle no. 3L	**1**

54	Bard Parker handle no. 4	**1**
55	Bard Parker handle no. 4L	**1**
56	Bard Parker handle no. 7	**1**
57	Bard Parker handle no. 7L	**1**
58	Vorse Tube Occluding Clamp - Straight Serrated jaws, Straight Shanks, Stainless Steel 21cm	**5**
59	Cardiopulmonary tubings Line holder plate/bench (Adult)	**1**
60	Magnetic instrument pad 12x15 inch	**1**
61	Tooth forceps 15cm length	**2**
62	Russian forceps 26cm length	**1**
63	Kocher forceps straight 21cm	**6**
64	Kocher forceps curved 26cm	**6**
65	Halsted Mosquito Artery Forceps curved 13cm length	**12**
66	Kelly Artery forceps 26cm length	**2**
67	Yankauer steel curved 10mm dia. tube bulb tip suction instrument 30cm length	**2**
68	Braun-Ralph 7mm dia. tube suction instrument 30cm length	**2**
69	Wire twister needle driver tungsten carbide tips 21cm length	**1**
70	Wire cutter tungsten carbide tips 21cm length	**2**
71	Chest Tube Passers with lock, 35.5cm length	**2**
III	**CABG INSTRUMENT SET (with the following number of instruments in each set):**	
1	Foerster sponge forceps 24cm length	**1**
2	Towel clips (Backhaus) 15cm length	**18**
3	Collins sternal retractor with large, medium and small blades	**1**
4	Sellors sternal retractor with large, medium and large blades	**1**
5	Internal mammary retractor set Chaux French pattern	**1**
6	DeBakey Tissue Forceps - 45° Angled 2.5mm tips, Flat Handle, 24cm length	**2**
7	DeBakey Tissue forceps 2mm tip flat serrated handle 21cm length	**4**
8	Gerald DeBakey forceps 1mm tips, flat handle, 21cm length	**4**
9	Mayo scissors curved razor edge /supercut blade 18cm length	**1**
10	Mayo scissors straight razor edge /supercut blade 18cm length	**2**
11	Metzenbaum scissors curved razor edge /supercut blade 23cm length	**2**
12	Mayo scissors straight tungsten carbide blade 18cm length	**2**
13	Metzenbaum scissors tungsten carbide blade 23cm length	**2**
14	Lahey 90° angled forceps (large) 24cm length	**2**
15	Cooley semi-circle atraumatic jaws curved shanks 18cm length	**1**
16	Satinsky Clamp - 30mm angled DeBakey atraumatic jaws, curved shanks 22cm length	**1**
17	Satinsky Clamp - 30mm angled DeBakey atraumatic jaws, curved shanks 25cm length	**1**
18	Ryder/dolphin nose needle holder tungsten carbide tip 23cm length	**2**
19	Mayo needle holder tungsten carbide tip 26cm length	**2**
20	Mayo needle holder tungsten carbide tip 23cm length	**2**
21	Allis tissue forceps 21cm length	**4**
22	Heparin flushing needle 0.8mm bulb tip 5cm length stainless steel	**3**
23	Heparin flushing needle 1mm bulb tip 5cm length stainless steel	**3**

24	Heparin flushing needle 1.5mm bulb tip 5cm length stainless steel	**3**
25	Heparin flushing needle 2mm bulb tip 5cm length stainless steel	**3**
26	Internal coronary vessel cannula stainless steel 1mm bulb tip	**5**
27	Shea vein scissors 15 cm length	**2**
28	Iris scissors curved razor edge /supercut blade 15cm length	**2**
29	DeBakey Aortic clamp 45° 26cm length	**2**
30	Vessel Snugger heavy	**2**
31	Vessel snugger fine	**2**
32	Spencer Wells Curved artery forceps with box joint 14cm	**18**
33	Spencer Wells Straight artery forceps with box joint 14cm	**18**
34	Bard Parker handle no. 3	**2**
35	Bard Parker handle no. 4	**2**
36	Vorse Tube Occluding Clamp - Straight Serrated jaws, Straight Shanks, Stainless Steel 21cm	**5**
37	Cardiopulmonary tubings Line holder plate/bench (Adult)	**1**
38	Magnetic instrument pad 12x15 inch	**1**
39	Tooth forceps 15cm length	**2**
40	Kocher forceps straight 21cm	**6**
41	Hartman Mosquito Forceps Curved atraumatic jaws 9.5cm length	**12**
42	Hartman Mosquito Forceps Straight atraumatic jaws 9.5cm length	**12**
43	Kelly Artery forceps 26cm length	**2**
44	Parsonnet epicardial retractor	**2**
45	Microsurgical diamond knife	**5**
46	Diethrich bulldog clamp atraumatic, straight 5cm length	**5**
47	Blalcok Nerve hook 21cm round handle	**5**
48	I.T.A. Holder curved to left	**2**
49	I.T.A. Holder curved to right	**2**
50	Garrett nitinol vessel dilator set (0.5mm-2mm)	**2**
51	Robb dissector set (0.5mm-2mm)	**1**
52	Ring tip Forceps - Straight 0.5x1mm rings w/diamond dust platform, Round Handle 21cm	**2**
53	Ring tip Forceps - Straight 0.5x1mm rings w/diamond dust platform, Round Handle 23cm	**2**
54	Potts micro scissors spring round handle 25° angle, 10mm blades, 21cm length	**2**
55	Potts micro scissors spring round handle 45° angle, 10mm blades, 21cm length	**2**
56	Potts micro scissors spring round handle 60° angle, 10mm blades, 21cm length	**2**
57	Potts micro scissors spring round handle 125° angle, 10mm blades, 21cm length	**2**
58	Diethrich-Hegemann Coronary Scissors 25° angle, 10mm blades, 21c	**2**
59	Diethrich-Hegemann Coronary Scissors 45° angle, 10mm blades, 21c	**2**
60	Diethrich-Hegemann Coronary Scissors 60° angle, 10mm blades, 21cm length	**2**
61	Diethrich-Hegemann Coronary Scissors 125° angle, 10mm blades, 21cm length	**2**
62	Potts micro scissors spring round handle 45° angle, 7mm blades, 21cm length	**2**

63	Potts micro scissors spring round handle 60° angle, 7mm blades, 21cm length	**2**
64	Potts micro scissors spring round handle 125° angle, 7mm blades, 21cm length	**2**
65	Diethrich-Hegemann Coronary Scissors 45° angle, 7mm blades, 21cm length	**2**
66	Diethrich-Hegemann Coronary Scissors 60° angle, 7mm blades, 21cm length	**2**
67	Diethrich-Hegemann Coronary Scissors 125° angle, 7mm blades, 21cm length	**2**
68	Castroviejo needle holder with ratchet, 2x1.8mm diamond dust jaws, round handle, 18cm length for 2-0 needle	**2**
69	Castroviejo needle holder without ratchet, 2x1.8mm diamond dust jaws, round handle, 18cm length for 2-0 needle	**2**
70	Castroviejo needle holder with ratchet, 0.4x12mm diamond dust jaws, round handle, 21cm length for 8-0 needle	**2**
71	Castroviejo needle holder with ratchet, 1.2x12mm diamond dust jaws, round handle, 21cm length for 7-0 needle	**2**
72	Castroviejo needle holder without ratchet, 0.4x12mm diamond dust jaws, round handle, 23cm length for 8-0 needle	**2**
73	Castroviejo needle holder without ratchet, 1.2x12mm diamond dust jaws, round handle, 23cm length for 7-0 needle	**2**
74	Derra clamp with DeBakey jaws, curved shanks 21cm length	**2**
75	Yankauer steel curved 10mm dia. tube bulb tip suction instrument 30cm length	**2**
76	Braun-Ralph 7mm dia. tube suction instrument 30cm length	**2**
77	Wire twister needle driver tungsten carbide tips 21cm length	**1**
78	Wire cutter tungsten carbide tips 21cm length	**1**
79	Chest Tube Passer with Lock 35.5cm length	**2**
IV	**THORACIC SURGERY SET (with the following number of instruments in each set)**	
1	Foerster sponge forceps straight 24cm length	**2**
2	Sklar Peanut Sponge forceps curved 21cm	**2**
3	Sklar Peanut Sponge forceps straight 21cm	**2**
4	Towel clips (Backhaus) 15cm	**12**
5	Rib Spreader, Finochietto's Pattern, Adult Size	**1**
6	Rib Spreader, Finochietto's Pattern, Pediatric Size	**1**
7	Rib Spreader, Tuffier's Pattern, Pediatric Size	**1**
8	Rib Spreader, Tuffier's Pattern, Pediatric Size	**1**
9	Bard Parker handle no. 3	**1**
10	Bard Parker handle no. 4	**1**
11	Bard Parker handle no. 3L	**1**
12	Spencer Wells Curved artery forceps with box joint 14cm	**18**
13	Spencer Wells Straight artery forceps with box joint 14cm	**18**
14	Halsted Mosquito Artery Forceps curved with box joint 10cm length	**12**
15	Davidson scapula retractor (Large)	**1**
16	Davidson scapula retractor (Small)	**1**
17	Langenbeck retractor 35x15mm 21cm length	**2**
18	Allison lung retractor (Large)	**1**

19	Allsion lung retractor (Small)	**1**
20	Duval Forceps 30 cm length	**2**
21	Duval Forceps 21 cm length	**2**
22	DeBakey Tissue forceps 2.7mm tips flat serrated handle 30cm length	**2**
23	Allis forceps 18 cm length	**2**
24	Allis forceps 21 cm length	**2**
25	Babcock forceps 30cm length	**2**
26	Babcock forceps 21 cm length	**2**
27	Lahey 90° angled forceps (medium) 21cm length	**2**
28	Lahey 90° angled forceps (large) 30cm length	**2**
29	Vascular clamp DeBakey atraumatic jaws, 45° angled, 30cm length	**2**
30	Russian forceps 30 cm length	**2**
31	Mayo needle holder tungsten carbide jaws 26cm length	**2**
32	Mayo needle holder tungsten carbide jaws 18 6cm length	**2**
33	Mayo scissors Straight blades 21 cm length	**2**
34	Mayo scissors Curved blades 21 cm length	**2**
35	Ryder/dolphin nose needle holder tungsten carbide tip 23cm length	**2**
36	Metzenbaum scissors tungsten carbide blade 26cm length	**2**
37	Metzenbaum scissors razor edge /supercut blade 26cm length	**2**
38	Czerny retractor 21 cm length	**2**
39	Kidney tray large size	**2**
40	Yankauer steel curved 10mm dia. tube bulb tip suction instrument 30cm length	**1**
41	Sarot Bronchus Clamps, jaws 38mm wide, 24cm length, curved left	**2**
42	Sarot Bronchus Clamps, jaws 38mm wide, 24cm length, curved right	**2**
43	DeBakey clamp right angled atraumatic 2x3 jaws, 24cm length	**2**
44	Kelly artery forceps 30cm length	**2**
45	Rib cutter (Giertz-Stille) 25cm length	**2**
46	Doyen costal elevator curved right	**1**
47	Doyen costal elevator curved left	**1**
48	Alexander-Farabeuf Periosteal elevator Double-ended. Blades 11mm x 24mm wide. 21cm length	**2**
49	Chest Tube Passer with Lock 35.5cm length	**2**
V	**AORTIC SURGERY INSTRUMENT SET (with the following instruments in each set)**	
1	DeBakey Tissue forceps 3.5mm tips flat serrated handle 21cm length	**4**
2	Bartolomeo antegrade cerebral perfusion cannula	**3**
3	Dardik Vascular Tunneler 12mm diameter, 65cm length	**1**
4	DeBakey atraumatic vascular clamp 90°, 12cm length	**4**
5	DeBakey atraumatic vascular clamp 45°, 12cm length	**6**
6	DeBakey atraumatic vascular clamp 45°, 15cm length	**6**
7	DeBakey atraumatic vascular clamp 45°, 23cm length	**2**
8	Morris DeBakey atraumatic aortic clamp 45°, 23cm	**2**
9	Morris DeBakey atraumatic aortic clamp 45°, 25cm	**2**
10	Aorta Aneurysm Clamp - Curved 50mm DeBakey-Pean Atraumatic jaws, Curved Shanks, Stainless Steel, 28cm length	**4**

11	Aorta Aneurysm Clamp - Curved 75mm DeBakey-Pean Atraumatic jaws, Curved Shanks, Stainless Steel, 28cm length	**4**
12	Aorta Aneurysm Clamp - Straight 50mm DeBakey-Pean Atraumatic jaws, Curved Shanks, Stainless Steel, 28cm length	**2**
13	Aorta Aneurysm Clamp - Straight 75mm DeBakey-Pean Atraumatic jaws, Curved Shanks, Stainless Steel, 28cm length	**2**
14	DeBakey Aorta Clamp - Full curved DeBakey-Pean Atraumatic jaws, Curved Shanks, Stainless Steel, 26.5cm length	**2**
15	Lambert-Kay Aorta Clamp 20cm, angled shanks, jaw working length 50mm, depth 3cm	**2**
16	Mayo scissors curved tungsten carbide blade 18cm length	**1**
17	Mayo scissors straight razor edge/ supercut blade 18cm length	**1**
18	Metzenbaum scissors curved razor edge /supercut blades 24cm length	**2**
19	Metzenbaum scissors curved razor edge /supercut blades 21cm length with tenotomy tips	**2**
20	Metzenbaum scissors curved razor edge /supercut blades 18cm length	**2**
21	Metzenbaum scissors curved razor edge /supercut blades 18cm length with tenotomy tips	**2**
22	Hegars candle dilator set for aortic surgery sizes 16 to 36	**1**
VI	**VASCULAR MICRO SURGERY SET (with the following instruments in each set)**	
1	Titanium Ring tip Forceps - Straight 0.5x1mm rings w/diamond dust platform, Round Handle 21cm	**2**
2	Titanium Ring tip Forceps - Straight 0.5x1mm rings w/diamond dust platform, Round Handle 23cm	**2**
3	Titanium Potts micro scissors spring round handle 25° angle, 10mm blades, 21cm length	**2**
4	Titanium Potts micro scissors spring round handle 45° angle, 10mm blades, 21cm length	**2**
5	Titanium Potts micro scissors spring round handle 60° angle, 10mm blades, 21cm length	**2**
6	Titanium Potts micro scissors spring round handle 125° angle, 10mm blades, 21cm length	**2**
7	Titanium Diethrich-Hegemann Coronary Scissors 25° angle, 10mm blades, 21cm length	**2**
8	Titanium Diethrich-Hegemann Coronary Scissors 45° angle, 10mm blades, 21cm length	**2**
9	Titanium Diethrich-Hegemann Coronary Scissors 60° angle, 10mm blades, 21cm length	**2**
10	Titanium Diethrich-Hegemann Coronary Scissors 125° angle, 10mm blades, 21cm length	**2**
11	Titanium Potts micro scissors spring round handle 45° angle, 7mm blades, 21cm length	**2**
12	Titanium Potts micro scissors spring round handle 60° angle, 7mm blades, 21cm length	**2**
13	Titanium Potts micro scissors spring round handle 125° angle, 7mm blades, 21cm length	**2**

14	Titanium Diethrich-Hegemann Coronary Scissors 45° angle, 7mm blades, 21cm length	**2**
15	Titanium Diethrich-Hegemann Coronary Scissors 60° angle, 7mm blades, 21cm length	**2**
16	Titanium Diethrich-Hegemann Coronary Scissors 125° angle, 7mm blades, 21cm length	**2**
17	Titanium Castroviejo needle holder with ratchet, 0.4x12mm diamond dust jaws, round handle, 18cm length for 8-0 needle	**2**
18	Titanium Castroviejo needle holder with ratchet, 1.2x12mm diamond dust jaws, round handle, 18cm length for 6-0 needle	**2**
19	Titanium Castroviejo needle holder without ratchet, 0.4x12mm diamond dust jaws, round handle, 18cm length for 8-0 needle	**2**
20	Titanium Castroviejo needle holder without ratchet, 1.2x12mm diamond dust jaws, round handle, 18cm length for 6-0 needle	**2**
21	Titanium Castroviejo needle holder with ratchet, 0.4x12mm diamond dust jaws, round handle, 21cm length for 8-0 needle	**2**
22	Titanium Castroviejo needle holder with ratchet, 1.2x12mm diamond dust jaws, round handle, 21cm length for 6-0 needle	**2**
23	Titanium Castroviejo needle holder without ratchet, 0.4x12mm diamond dust jaws, round handle, 21cm length for 8-0 needle	**2**
24	Titanium Castroviejo needle holder without ratchet, 1.2x12mm diamond dust jaws, round handle, 21cm length for 6-0 needle	**2**
25	Titanium Castroviejo needle holder with ratchet, 0.4x12mm diamond dust jaws, round handle, 23cm length for 8-0 needle	**2**
26	Titanium Castroviejo needle holder with ratchet, 1.2x12mm diamond dust jaws, round handle, 23cm length for 6-0 needle	**2**
27	Titanium Castroviejo needle holder without ratchet, 0.4x12mm diamond dust jaws, round handle, 23cm length for 8-0 needle	**2**
28	Titanium Castroviejo needle holder without ratchet, 1.2x12mm diamond dust jaws, round handle, 23cm length for 6-0 needle	**2**
29	Titanium Atraumatic Debakey bulldog clamp straight jaws 4.5cm length	**4**
30	Titanium Atraumatic Debakey bulldog clamp curved jaws 4.5cm leng	**4**
31	Titanium Gerald DeBakey forceps with 1.2 mm Jaws 18cm length	**4**
32	Titanium Gerald DeBakey forceps with 1.2 mm Jaws 21cm length	**4**
VII	**MINIMALLY INVASIVE VALVE SURGERY SET (with the following instruments in each set)**	
1	MICS endoscope holding system (Minimum 4 fulcrum points and clamping device to OT table)	**1**
2	MICS rib spreading system with two rotatable arms with small, medium and large blades	**2**
3	MICS Needle holder squeeze handle type, Jaw size 1x8mm straight jaw, instrument length 415mm, shaft diameter 5mm	**2**
4	MICS Needle holder squeeze handle type, Jaw size 2x8mm curved jaw, instrument length 415mm, shaft diameter 5mm	**2**
5	MICS Needle holder squeeze handle type, Jaw size 1.5x7mm Ryder type, instrument length 415mm, shaft diameter 5mm	**2**
6	MICS Needle holder squeeze handle type, Jaw size 1x8mm straight jaw, instrument length 350mm, shaft diameter 5mm	**2**

7	MICS Needle holder squeeze handle type, Jaw size 2x8mm curved jaw, instrument length 350mm, shaft diameter 5mm	**2**
8	MICS Needle holder squeeze handle type, Jaw size 1.5x7mm Ryder type, instrument length 350mm, shaft diameter 5mm	**2**
9	Chitwood Aortic Clamp Atraumatic 1:2 DeBakey toothing; jaw size 2.8 x60mm; instrument length 350mm	**2**
10	Chitwood Aortic Clamp Atraumatic 1:2 DeBakey toothing; jaw size 4.8 x85mm; instrument length 450mm	**2**
11	Cosgrove Flexible Atraumatic Aortic Cross Clamp 33mm jaws	**2**
12	Cosgrove Flexible Atraumatic Aortic Cross Clamp 61mm jaws	**2**
13	MICS forceps, Squeeze handle type, Straight jaw, Debakey type serration. Jaw size 1.5 x 11.0 mm; instrument length 415mm; shaft diameter 5mm	**2**
14	MICS forceps, Squeeze handle type 45° upwards angled jaw Debakey type. Jaw size 1.5 x 15.0 mm. Instrument length 415mm; shaft diameter 5mm.	**2**
15	MICS forceps, Squeeze handle type 45° angled to side Debakey type. Jaw size 1.5 x 15.0 mm. Instrument length 415mm; shaft diameter 5mm	**2**
16	Knot Pusher 45° angled; instrument length 420mm; shaft diameter 5r	**2**
17	MICS Valve Scissors squeeze handle type, 15° curved, 2 movable Blades / double action; blade length 15 mm; instrument length 420mm; shaft diameter 5mm	**2**
18	MICS Valve Scissors squeeze handle type, 30° curved, 2 movable Blades / double action; blade length 15 mm; instrument length 420mm; shaft diameter 5mm	**2**
19	MICS Valve Scissors squeeze handle type, 70° curved, 2 movable Blades / double action; blade length 15 mm; instrument length 420mm; shaft diameter 5mm	**2**
20	MICS Valve Scissors squeeze handle type, 15° curved, 2 movable Blades / double action; blade length 15 mm; instrument length 350mm; shaft diameter 5mm	**2**
21	MICS Valve Scissors squeeze handle type, 30° curved, 2 movable Blades / double action; blade length 15 mm; instrument length 350mm; shaft diameter 5mm	**2**
22	MICS Valve Scissors squeeze handle type, 70° curved, 2 movable Blades / double action; blade length 15 mm; instrument length 350mm; shaft diameter 5mm	**2**
23	MICS Atrial retractor set consisting of insertion instrument, retraction rod and atrial retraction blades set	**2**
24	MICS Tricuspid retractor set consisting of insertion instrument, retraction rod and retraction blades set	**1**
25	Papillary muscle exposure flexible collar set (Small and large)	**1**
26	Flexible intra atrial retractor / lift blade system set (Small, medium and large blades)	**1**
27	Nerve hook 350mm length	**2**
28	Mitral valve chordae gauge 230mm	**1**
29	Mitral valve chordae gauge 350mm	**1**
30	Mitral valve chordae /cusp retractor 230mm	**1**

31	Mitral valve chordae / cusp retractor 350mm	**1**
32	Magnetic needle finder 450mm length	**1**
33	Suture catcher / hook fine 1.8mm, 450 mm length	**2**
34	Suture catcher / hook extra fine 1.5mm, 450 mm length	**2**
35	Valve pusher 350mm length	**1**
36	Rongeurs straight 3x10mm jaw size, 350mm	**1**
37	Rongeurs straight 30°angled upwards, 3x10mm jaw size, 350mm	**1**
VIII	**MINIMALLY INVASIVE CABG SET (with the following instruments in each set)**	
1	MIDCAB Tissue Stabilizer, Heart Positioner and Retractor System system (table mounted system with small, medium and large blades)	**2**
2	DeBakey Double action 45° angled forceps 1mm tips, 25cm length	**2**
3	DeBakey Tissue Forceps - 45° Angled 2.5mm tips, Flat Handle, 24cm length	**2**
4	DeBakey Tissue forceps 2mm tip flat serrated handle 21cm length	**2**
5	MICS Needle holder, squeeze handle type, with lock, Jaw size 1x8mm straight jaw, instrument length 280mm, shaft diameter 5mm	**2**
6	MICS Needle holder, squeeze handle type, with lock, Jaw size 2x8mm curved jaw, instrument length 280mm, shaft diameter 5mm	**2**
7	MICS Needle holder, squeeze handle type, with lock, Jaw size 1.5x7mm Ryder type, instrument length 280mm, shaft diameter 5mm	**2**
8	MICS Needle holder, squeeze handle type, with lock, Jaw size 1x8mm straight jaw, instrument length 350mm, shaft diameter 5mm	**2**
9	MICS Needle holder, squeeze handle type, with lock, Jaw size 2x8mm curved jaw, instrument length 280mm, shaft diameter 5mm	**2**
10	MICS Needle holder, squeeze handle type, with lock, Jaw size 1.5x7mm Ryder type, instrument length 350mm, shaft diameter 5mm	**2**
11	MICS Needle holder, squeeze handle type, with lock, Straight jaw, Debakey type serration. Jaw size 1.5 x 11.0 mm; instrument length 350mm; shaft diameter 5mm	**2**
12	MICS forceps, Squeeze handle type, Debakey type Jaw size 1 x 10 mm. Instrument length 280mm; shaft diameter 5mm	**2**
13	MICS forceps, Squeeze handle type 45° angled to side Debakey type. Jaw size 1.5 x 10 mm. Instrument length 280mm; shaft diameter 5mm.	**2**
14	MICS forceps, Squeeze handle type 45° angled to side Debakey type. Jaw size 2.8 x 15 mm. Instrument length 280mm; shaft diameter 5mm.	**2**
15	MICS forceps, Squeeze handle type, Debakey type Jaw size 1 x 10 mm. Instrument length 350mm; shaft diameter 5mm	**2**

16	MICS forceps, Squeeze handle type 45° angled to side Debakey type. Jaw size 1.5 x 10 mm. Instrument length 350mm; shaft diameter 5mm	**2**
17	MICS forceps, Squeeze handle type 45° angled to side Debakey type. Jaw size 2.8 x 15 mm. Instrument length 350mm; shaft diameter 5mm.	**2**
18	MICS Potts scissors, Squeeze handle type 45° single action. 10mm blades, Instrument length 280mm; shaft diameter 5mm.	**2**
19	MICS Potts scissors, Squeeze handle type 125° inward single action. 10mm blades, Instrument length 280mm; shaft diameter 5mm.	**2**
20	MICS Potts scissors, Squeeze handle type 45° single action. 10mm blades, Instrument length 350mm; shaft diameter 5mm	**2**
21	MICS Potts scissors, Squeeze handle type 125° inward single action. 10mm blades, Instrument length 350mm; shaft diameter 5mm.	**2**
22	MICS clip applicator (for small clip LT-100 type) Instrument length 350mm; shaft diameter 5mm.	**2**
23	MICS clip applicator (for medium clip LT-200 type) Instrument length 350mm; shaft diameter 5mm.	**2**
24	Derra tangential occlusion clamp with DeBakey jaws, curved shanks 210mm length	**2**
25	Derra tangential occlusion clamp with DeBakey jaws, curved shanks 340mm length	**2**
26	Satisnky tangential occlusion clamp with DeBakey jaws, curved shanks 210mm length	**2**
27	Satinsky tangential occlusion clamp with DeBakey jaws, curved shanks 340mm length	**2**
28	Spiegel Mirror 350mm length	**2**
IX	**VATS INSTRUMENT SET (with the following number of instruments in each set)**	
1	VATS Lung Grasping Clamps – Foerster straight, 34cm length, 10mm shaft, 12mm oval ring jaws	**2**
2	VATS Lung Grasping Clamps – Foerster right curve, 34cm length, 10mm shaft, 12mm oval ring jaws	**2**
3	VATS Lung Grasping Clamps – Foerster left curve, 34cm length, 10mm shaft, 12mm oval ring jaws	**2**
4	VATS Lung Grasping Clamps – Duval straight, 34cm length, 10mm shaft	**2**
5	VATS D'Amico DeBakey Clamps, 37cm length, 10mm shaft	**2**
6	VATS Chitwood DeBakey Clamps- 2x3 jaws, 36cm length, 10mm shaft with ratchets	**2**
7	VATS DeBakey Cooley Forceps right angled with ratchets, 34mm length, 10mm shaft	**2**
8	VATS Forceps – Mixter.:-Double action jaws, rotating with connector pin for unipolar coagulation port , shaft 5 mm, length 34cm	**2**
9	VATS Metzenbaum scissors, 29cm length, 10mm shaft	**2**

10	VATS Needle holder 29cm, length, 5mm shaft for 5-0 suture with diamond dust jaws	**2**
11	VATS Needle Holder, 34cm length, 7mm shaft, for 4-0 Suture with diamond dust/TC jaws	**2**
12	VATS Needle Holders for 2-0 Suture, 34cm length, 10mm shaft with diamond dust/TC jaws	**2**
13	VATS Chitwood Knot Pusher, 32cm length, 5mm shaft	**2**
14	VATS D'Amico Suction Instrument, 45cm length, 10 mm shaft	**2**
15	VATS Dennis Suction Instrument,45cm length, 5 mm Shaft	**2**
16	VATS Suture puller, 29cm length, 10mm shaft	**2**
17	VATS Allis forceps, 33cm length, 7mm shaft	**2**
18	VATS Satinsky parenchymal clamp 1 x 2 DeBakey jaws, 71 mm jaw length, 34 cm length with ratchets	**2**
19	Bipolar cautery with ligation and sealing system	**2**
20	VATS Maryland forceps curved jaws 31cm length, rotating, with unipolar coagulation port	**2**
21	VATS DeBakey Pulmonalis clamp 1x2 jaws, 31cm length	**2**
22	VATS Cautery hook 34 cm length	**2**
23	VATS Trocar, reusable 10mm shaft	**5**
24	VATS Trocar, reusable 5mm shaft	**5**
25	VATS suction irrigation cannula	**2**
26	VATS Clip applicator 34cm length (large- LT 200 clip type)	**2**
27	VATS Clip applicator 34cm length (small- LT 100 clip type)	**2**
28	VATS Fan retractor	**1**
29	Towel clip (Backhaus) 15cm	**18**
30	Chest Tube Passer with Lock 35.5cm length	**2**

	Endomotor & Apex Locator
Sl. No.	**Specifications**
1	**Endo Motor**
.	Miniature contra-angle head that can be adjusted in 6 positions.
.	Should Have On/Off button on the motor handpiece.
.	Must have reciprocating motion and continuous rotation,
.	The system should Include a file library with preset programs for Reciprocation files, Continuous motion sequential files, Glide path preparation files, Gates, etc. and 2 free programs for individual settings in continuous rotation.
	Should have following features
i	Auto reverse rotation at preset torque limit
ii	Torque range: 0.6 - 4.0 Ncm
iii	Speed range: 250 - 1200 rpm
iv	Operates on a rechargeable battery and when connected to the mains
v	Battery autonomy: approx. 2 hours or more continuous use
vi	Full recharge in approx. 5 hours or less
2	**Apex Locator**
1	Electronic apex locator having internally powered equipment with rechargeable battery for Continuous operation.
2	The Apex Locator should be based on ratio method
3	It should not require any calibration
4	it should have audible signals with adjustable volume to measure the working length of root canals.
5	It must comply with IEC 60601-1 Safety and IEC 60601-1-2 EMC (Electromagnetic compatibility) standards

	WHOLE BODY PLETHYSMOGRAPH WITH DIFFUSION STUDY
Sl.No.	**Specifications**
	COMPLETE SPIROMETRY SYSTEM
	Pulmonary Function Test for analysis and enhanced spirometry with latest, advanced technology for measurement of static lung volumes through whole body plethysmography (Thoracic Gas volume) and airway resistance with minimal patient effort & real time display of curves using latest Ultrasonic Flow Sensor technology, which is easy to disassemble & clean with following specifications:
	EQUIPMENT SEPCIFICATIONS:
	Standard measurements:
.	Dynamic lung volumes and flow rates: FVC, IVC, VC, MVV, VT, FEV1, FEV6, PEF, PIF, FEF 25-75, FEV1/VC%, MEF25%, MEF50%, MEF75%, MVV
.	Static lung volume measurements: FRC Plethysmography, ERV, RV, TLC, VC, IC
.	Airway Resistance and compliance: real-time display of curves and full editing capabilities for sReff, sRtot, sR0.5and determination of Reff, Rtot, R0.5etc.
.	CO-Diffusion SB Real-time: with continuous, high-speed gas analysis for calculation of DLCO, VA, KCO, TLC, FRC, RV and trapped gas evaluation.
.	CO diffusion method with a non-breath hold manoeuvre with continuous, high-speed gas analysis for calculation of DLCO, VA, KCO, TLC, FRC, RV.
.	Must have facility for spirometry with airway resistance/reactance analysis during tidal breathing including differentiation between central and peripheral airway resistance, with portable Impulse oscillometery/FOT device outside the cabin for use in paediatric and elderly patients with less compliance
	Technical Requirements:
.	Flow measurement- Ultrasonic
.	Range ±16 L/s Accuracy 2 ±%
.	Resistance <0.05 Kpa/(Ls) at 16L/s
.	Resolution 0.01 l/s
.	Fully computerized calibration procedure for flow sensors and gas analyzers
.	System should be free from any Volume Calibration.
.	Latest Ultrasonic Sensor resistance free and calibration free or As per ATS/ERS standards
	Body Cabin:
.	A wide cabin with internal volume range of 850-1200 liters to provide ease of accessibility and comfort to the patient without effecting volume changes.

.	Comfortable height with low entry step Adjustable height of chair with swivel arm/ fixed bench) with maximal load of 150 kg or above. Arm should extend out of cabin so that patient on wheelchair can conduct tests
.	Patient door handle inside — to support patients with claustrophobia
.	Built-in compensation chamber for quick artifact reduction
.	3D-adjustable Ultrasonic sensor inside cabin for excellent patient fitting
.	Inbuilt small diffusion unit inside the cabin or outside for an ultra-fast accurate multi-gas-analyzer for CO and Methane or Helium
.	Gas sampling close to the mouth via thin sample line.
.	Inhalation of the gas via built-in demand valve for minimum gas consumption.
.	Airway pressure monitoring during the complete manoeuvre for full quality control
.	Integrated microphone and speaker by which operator can commuincate with patient
	The Bodyplethysmography Measurement
.	Full test procedures should be able to complete in less than 3 minutes
.	Should be able to view the last 3-4 s Raw loops with automatic slope (BTPS) compensation
.	Suitable Guidance for stable Raw and tidal breathing including view of breathing frequency (BF)
.	Should be able to perform combined slow/forced spirometry manoeuvre or separated manoeuvre
.	Different animation incentive to perform Forced Spirometry
.	Should be able to review comprehensive results with clear, easy to read, logical screens, assisting technician and clinician with a variety of tools like Z-score, ULN-LLN, classification bar for obstruction and restriction, automated interpretation to improve clinical outcome
.	Should have Single-click overlay functionality of all trials for resistance and FRC plethysmography curves to check reproducibility and quality
.	Resistance/Volume loop for the quick diagnosis
.	Comprehensive setting possibilities (axis scaling, resting/painting mode, number of loops, tangents for sReff, sRtot, ERV or IRV manoeuvre etc.
	The CO-Diffusion SB Realtime Test:
.	Standard breath-holding manoeuvre with all test gases sampled at the mouth, from the start to the end of the test.
.	Discard and sample volumes should be able to modify to test even the smallest vital capacity subjects and any volume of dead space.
.	Should have CO diffusion method with a non-breath hold manoeuvre /Intrabreath with continuous, high-speed gas analysis for calculation of DLCO, VA, KCO, TLC, FRC, RV.
.	Should have a training mode so that the patient, coached by the operator, can practice a test with room air and therefore get faster to qualitative results on the diffusion manoeuvre without waste of test gas.
	Forced Oscillometry (FOT) / Impulse Oscillometry (IOS)

.	Oscillometry suitable for measurement of lung dysfunction in paediatrics (4 years onwards), Adults & Geriatric patients.
.	Should be able to do the diagnosis in young children, advanced lung disease, geriatric, and neuromuscular patients.
.	Should be able to do spontaneous resting breathing with passive co-operation of patient and routine spirometry.
.	Must be able to diagnose bronchial instabilities in patients of COPD/Asthma
.	Should be able to predict reversibility conditions using Tidal breath analysis (Tidal flow-volume)
.	Should have Spirometry along with Oscillometry in the same device
.	Should have valid reference equations for both Adult & Pediatric population.
	Other requirements:
.	Report modification of an existing report
.	System should have all latest reference values including GLI 2017 as well as India reference values for Spirometry, Diffusion. System should have Ostween reference values for Oscillometry.
.	Determination of important parameters of lung diffusion e.g.CO diffusion capacity and alveolar volume, as well as other absolute volumes.
.	Complete test according ATS/ERS standards incl. ATS/ERS repeatability criteria
.	The complete unit should be European CE with fourdigit certified body number or US FDA)approved or equivalent as per Government of India Public procurement order dated 15th June 2017.
	Scope of Delivery:
.	Comfortable-sized body cabin with Ultrasonic sensor and shutter
.	Built-in fast diffusion multigasanalyser CO/CH4-Helium and demand valve
.	Impulse Oscillometry (I0S)/Forced Oscillometry(FOT) outside the cabin
.	Compact trolley with height adjustable work surface from same manufacturer / OEM (local trolley not acceptable)
.	Small microphone
.	System box with integrated isolation transformer
.	Standard Accessories Kit Including 10 Nose Clips& Pads and 100 Disposable Bacteria Filters must be provided
.	2 cylinders of diffusion gas mixture whose composition is as per standards of the ATS and ERS
.	High Flow pressure reducer for diff usion gas: 1no or as required by Technology
.	IOS / FOT should have an independent arm / table clamp /a trolley and arm for ease of movement supplied by OEM so that test can be done independently of operator holding the system to the patient and for safety of operator providing a safe testing distance

.	IOS/FOT should be supplied with calibrator device for entire warranty and CMC period
.	Desktop computer with suitable Intel Core i5 processor, adequate storage and 21” LED monitor, 64 bit- OS – Original Windows 10, 11th Gen i5 Processor, 8GB RAM or better with Color Printer. Each system should have it's own PC, printer and UPS with at least 15 minutes battery backup
.	Instruction for Use (English)
	B. GENERAL SPECIFICATIONS:
.	Manufacturers to have ISO -13485 certification for quality standards.
.	Manufacturers to have IEC 60601 part 1& 2 certification.
.	All essential accessories compatible with the system to be provided.
.	Comprehensive training for lab staff and support services till familiarity with the system to be provided.
	C. TERMS AND CONDITIONS:
.	Five years comprehensive warranty after installation.
.	CMC for five years after completion of 5 years warranty of the equipment, spare parts/ accessories used.

	Bi plane DSA lab for Intervention Neuro radiology
Sl. No.	**Specifications**
	State of the art, Biplane ceiling/floor mounted C-arm/G-arm system for diagnostic and interventional Neurovascular procedures including 3D-rotational angiography and Digital Subtraction Angiography (DSA).
1	**MULTI DIRECTIONAL C- ARM/G-ARM POSITIONER**
1.1	The system should have two gantries: One floor mounted and one ceiling suspended providing full body coverage. The lateral plane should have motorized longitudinal C-arm movement.
1.2	It should be possible to pre-program the gantries for multiple examinations positions.
1.3	All movements of the gantry should be controlled from the controller on the table side.
1.4	The system should have adequate collision protection for safety of the patient.
1.5	The floor mounted C-arm should be able to provide head to toe imaging without re-positioning of the adult patient.
1.6	Both gantries should have fast speed for angulation and positioning. The frontal plane should have a speed of at least 20 degrees / sec for LAO and RAO and 15 degrees / sec for Cranial and Caudal and the lateral plane should have a speed 10 degrees / sec or more for LAO / RAO and Cranial / Caudal rotation in single plane mode. Both the gantries should have minimum 10 degrees / sec speed in bi-plane mode".
1.7	Frontal Plane Angulation: RAO/LAO shoud be at least 100/110 degrees and Cranial/caudal should be 30/30 degrees or more. Lateral plane rotation should be 0 to 90 degrees LAO/RAO and cranial and caudal should be 35 degrees or more.
1.8	Gantry angulations in both planes frontal and lateral should be freely user selectable to satisfy clinical imaging needs.
1.9	Both the gantries including table should have an automatic positioning capability dependent on the reference image being selected.
2	**PATIENT TABLE**
2.1	The table should have motorized vertical and longitudinal and free floating with head tilt facility and lateral tilt facility of ±15˚.
2.2	Table should bear minimum patient weight 200 kg or more with additional weight for at least 50 kg during resuscitation.
2.3	Table length should be 270 cm or more, width 45 cm or more
2.4	The table should have the facility of automatic bolus chase for peripheral angiography.

2.5	It should be possible to swivel the table in case of emergencies. Accessories should include head fixing aids, narrow head tabletop with mattress, Radiolucent Carbon fiber arm supports, drip stand and Catheterization arm support. Radial arm board. And head holder clamp device.
3	**X RAY GENERATOR**
3.1	Generator should be multi pulse / high frequency for constant output.
3.2	Output should be 100 KW or more
3.3	Radiography KVP range should be 50 KV -125 KV or more.
3.4	Output at 100 KV should be 1000 mA or more
3.5	It should have automatic exposure control device for radiographic fluoroscopic and angio mode.
3.6	It should have digital display of KVP and mAs.
3.7	Anatomical programming radiography should be possible.
3.8	It should have overloading protection.
3.9	It should have the facility for pulse fluoroscopy at variable rates for reducing the X-ray dose to the patient during intervention procedure.
4	**X RAY TUBE**
4.1	Powerful and noise free rotating anode x-ray tube with spiral groove bearing / liquid metal bearing technology and fluid lubricant for faster cooling must be provided. It should be with a minimum of two or more focal spots (small & large). Large focal spot at least 80 KW output for extended runs.
4.2	X-Ray tube should have Primary/secondary grid switch and automatic Copper filteration to reduce radiation leakage to patient and automatic exposure control system.
4.3	Anode heat storage capacity of at least 3.0 MHU (actual value) or more to run continuously for 6 – 8 hrs. without shutting off without deteriorating image quality.
4.4	Cooling system- oil/water cooling to ensure continuous operation.
4.5	Anode heat cooling rate should be 2900W or more.
5	**RADIATION PROTECTION**
5.1	The system should meet all National/International Safety Standards and comply with BARC & AERB guidelines.
5.2	Should have integrated computer controlled automatic X-Ray Beam filtering with copper filters.
5.3	Display and recording of Radiation dose for each procedure (per fluoroscopy/cine time) should be continuously available.
5.4	The system should have a facility to remove the anti-scatter grid on the detector for ensuring lower dose in pediatric imaging.

5.5	Lead glass Window partition, minimum (200 x 120cm) (as per international radiation protection standard) – can be customized as per requirement.
5.6	Radiation shield ceiling and table mounted/suspended. (as per international radiation protection standard).
5.7	Mobile height adjustable X ray protection shield with contour cut out for optimizing shield both sides of the patient.
5.8	***Vendor should provide the following:***
a	Radiation protective apron) of high quality with hangers: (Total quantity 20: Front type - 10, Wrap around – 6, Two-piece type - 4 and Lead Cap - 4). It should be state of art light weight with a lead equivalent of 0.5mm.
b	Thyroid guards 20 in number with lead equivalent of 0.5 mm
c	Two hanger stands to hold 5 apron each and two wall mounted hangers to hold 5 aprons each.
d	Lead spectacles 5 in numbers.
e	Lead lined gloves: Two pairs
6	**DYNAMIC FLAT DETECTOR SYSTEM**
6.1	Both planes should have flat panel detectors with diagonal size of at least 48 cm or more in one plane and 42 cm or more for the other plane. The pixel size should have 200 microns or less for both frontal and lateral planes.
6.2	Should have acquisition and display in at least 1536 x 1536 pixels. Any other additional feature / design / technology towards image q u a l i t y improvement and dose reduction will be preferred.
6.3	Flat detector should have 16 bit acquisition with at least 3 levels of acquisition and at least 3 levels of zoom for both planes.
6.4	The DQE of detector should be 75% or more for best acquisition efficiency and to minimize loss of radiation energy.
6.5	The system should have capability to acquire the images @ minimum 3.75 to 30 frames per second for fluoro and cine. For DSA frames rate range should be 0.5 to 6.0 fps.
7	**MONITORS**
7.1	System should be supplied single integrated large display of 52 inches or more medical grade TFT / LCD high resolution monitors with minimum 2 nos. of back up monitors in the Procedure Room for Live, Reference and image of required plane can be viewed without changing any hardware ,If not then the system should be supplied with 4 nos of back up monitor ".

7.2	System should be supplied with atleast 05 Medical Grade TFT/LCD high resolution monitors of 19 inches or more each display monitor in the Console Room for display of Live, Reference, Hemodynamics, Stent enhancement, 3D workstation and for each planes.
7.3	The monitors inside the lab should be suspended from ceiling with railings so that they can be easily moved to either side of the table.
8	**WORKSTATIONS**
8.1	DICOM workstation to be provided in Console Room with provision to review, post processing and quantifications for coronary and ventricular functions. It should be possible to perform post processing in console room even while online acquisition is being performed.
8.2	The Workstations should be equipped with latest generation computer with 19"TFT monitor with storage capacity of at least 1 TB Hard disk, 16 GB RAM, intel i7(latest generation- 10th) and original licensed version compatible operating system along with latest CD/DVD recorder and Colour laser printer.
9	**DIGITAL IMAGE SYSTEM**
9.1	DSA imaging for acquisition storage and retrieval in high matrix of 1024 x 1024 or more acquisition/ display and storage of image application to give excellent resolution with latest image processing software.
9.2	Gray scale depth of at least 12-bit pixel should be possible at all frame speeds.
9.3	Image storage capacity of 1,00,000 image at 1024 x 1024 matrix at a minimum of at least 8 bits/pixel on main system hard disk.
9.4	Cath lab should be supplied with state of art complete vascular online & off-line quantifications software which are clinically validated with operation from Procedure room and Console room with facility to operate from procedure room and console room. Auto calibration should be possible.
9.5	On line acquisition & display of DSA images in 1024 x 1024 matrix with DSA post processing from table side control in Procedure room and Console room. All 2D and 3D road mapping / remodelling features should be offered.
9.6	Two-way intercom facility between Console room and Procedure room.
9.7	Cine loop replay facility and last image hold/grab facility during fluoroscope (Fluoro save)
9.8	3D workstation with Fusion capabilities from Rotation angiography, Pre acquired CT, MR datasets and 3D Roadmap guidance package with facility to perform CT like imaging in the Cath lab.

9.9	With uncompromised registration in real time 2D fluoroscopy with 3D anatomy from CT, MR data sets
9.1o	Advanced image processing technique for Real time edge enhancement Real time harmonisation Real time noise reduction and dose correction algorhythms. Real time pixel shift to reduce the motion artifcats
10	**ARCHIVAL SYSTEM**
10.1	Digital Archival System capable to review, post-processing and quantifications of coronary and ventricular functions in the Console room. It should be possible to perform simultaneous off-line post processing in Console room.
10.2	Direct digital archival on compact disk (CD /DVD-recordable) in latest DICOM format preferably in loss less compression.
10.3	Ability to view CD and post process with clinically validated quantification software.
10.4	Ability to export DICOM cardiovascular images onto CD/DVD/another image recording medium.
10.5	Archival System should have one Review workstation with DVD/ combo devices of latest specification with printers.
10.6	The systems should be fully DICOM ready and fully compliant for connection to PACS system with that being offered by the OEM for Cath lab
10.7	Ability to convert the DICOM loops to BMP/JPEG and AVI format
11	**HEMODYNAMICS**
11.1	It should have the following features: -
a	12 Lead ECG Amplifier with floating input
b	At least 4 pressures with floating inputs
c	Time measurement
d	SPO2, Pressure gradient facility, NIBP measurement should be possible.
11.2	Storage of patient specific data on hard disk and retrieval as and when required.
11.3	ECG cable and pressure transducers with facility for superimposition of pressure tracings with printing supports inside the operating room. 10 Nos (each to be supplied free of cost one time consumable).
11.4	High power contrast injector of latest technology with 50 compatible syringes & tubing to be provided.
11.5	Ceiling suspended operation lamp to be provided.
11.6	wired Foot switch for fluoroscopy and acquisition.
12	**UPS** with 30 minutes battery backup for complete Cath lab. Emergency lighting both should be on the UPS.
13	**WARRANTY & CMC**

13.1	The Model offered should be the latest High-end model under current production. Refurbished Units will not be accepted. The model offered should have BIS/US FDA /European CE approval
13.2	Warranty: Warranty for 5 years for the complete Cath Lab in toto including items covered in Turnkey project and all items listed within inter-alia.
13.3	The equipment should be software and platform protected in the warranty period.
13.4	Comprehensive Maintenance Contract for additional 5 years after the completion of 05 years of warranty for the Cath lab in toto including items covered in turnkey project.
13.5	Confirmation of availability of required spares, X-ray tube, UPS and other essential items for Cath Lab in toto including items covered in turnkey project for 10 years from completion of installation to be provided.
13.6	Downtime penalty: The equipment must have 95% uptime. The OEM shall extend the CMC by five times the number of days that the equipment has been non-functional/in downtime (beyond 95% uptime)

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High End Echocardiography System
Specifications
General Specification:
System Should be State of art Ultra-Premium High End Fully Digital with Broadband digital Beam Former or equivalent .
The system should have minimum 40,00,000 digitally processing channel
The system should have minimum 300 region specific presets like Adult Cardiac, Pediatric Cardiac, Neonatal Cardiac Musculoskeletal and vascular presets. All Presets should be customized according to the user.
The system should have Quick View mode for 2D & CDI Preset selection during exam and minimum 8 sub preset for 2D & CDI Modes
The System panel height should be adjusted 140cm to 200cm for user and patient comport during critical procedure.
The System operational panel can do Global movements of 40º either direction for positioning with locking of position with periodical interval.
The system monitor should be minimum 21" LCD with backlit LED with Flexible Arm with Display matrix minimum 1920 * 1080 and Swivel and Rotation 35-45 degree both directions.
The freely fully programmable, mode-sensitive color Touch command should be minimum 12" size with High Resolution Display matrix minimum of 1280 * 800 and should be Tablet mode operation enable direct access to all basic and advanced system controls.
All Panel keys should customize according to user preferences
The system should have single key image optimization for 2D and Doppler
Minimum frequency should be 1MHz and Maximum Frequency should be 33MHz can be selected depends on Probe
System Depth should be minimum 40 cm
The System should have Automatic Real time Image Optimization
The system should have 256 gray scales
The Boot up time less than 30 sec and stand by Boot less than 15 sec.
The System should have 4 universal active Transducer ports.
System hardware Design Specification:
The System should have latest Innovation Technology like Multi Synchronizing Pulser which drive simultaneously with superimposing several waveforms to each element of transducer. It makes thin beams with focused in-depth direction, Resulting Increases Signal to Noise Ratio to the Fundamental Ultrasound waves to allow clear Detection of Second harmonic information. Clinically should get Increased Penetration, Spatial and Contrast resolution at the same time reduced artifact and clutter noise
The System should have Multi Beam Receiving Technology. The system should able to receive multiple lines or a wide area signal simultaneously, creating a high-density field of scan lines across the footprint of the transducer. The system should produce lateral and temporal resolution combined with higher frame rates
The System should have Multi-Harmonic Compounding Technology. The Signals obtained from each individual beam should overlap data from adjacent beams to get straight homogeneous beams. The compounding should be RF (amplitude and phase) signal stage.

The System should have Next Generation Beam Selection in Touch screen to achieve Very High Frame rate, More homogeneity and Very good Image quality at Deeper Depth and Increased sensitivity
The system should have selection in Touch screen for Full Focus key to get the clear Image from Near to Far Field without adjusting Focus.
The system should have Ultra-Wide view by using next Generation Beam Selection in Touch Screen.
The System should have Multi Slice based Matrix array transducer technology. The main element and side elements of the Transducer's are controlled separately to create a thin slice beam with continuous focus from near field to far field and System should have option to control the Slice Thickness of Beam.
The System should have Matrix 4D probe for Adult and Pediatric TTE Cardiac applications
The System should upgrade to Matrix 4D TEE Probe and Volume Matrix TEE probe's insertion head should be as small as Possible for patient Comport.
The System should have Real time Quad view imaging. All four images should be active and Different modalities can be seen Real time Imaging
The System should have On Screen Navigation for System Operation for Ease of use.
The System should have RAW Data Processing for 2D/M Mode/CDI Mode/Doppler Mode and various Advanced Applications.
The system should have new method of Tissue Enhancement techniques to enhance ultrasound beam data by Group of Lines to allow early identification of diffuse random noise and structural boundaries and to improve resolutions and give uniform homogenous image, and multiple selection should be possible.
The System should have Spatial & Frequency Compound imaging in Transmit and Receive Direction with Multiple selection.
The System should have pulse subtraction / Pulse Inversion Tissue Harmonic Imaging for Better Contrast and Less Side Lobe Artifact
The System Should be Next Generation Tissue Harmonic Imaging by Transmitting Two Band width of Information and Receiving Difference of Two Band Width and Second Harmonic of Primary Band width Resulting Uniform Image Quality from Near to Far Field and multiple selection should be possible.
The System Should have Tissue Optimization depends on Fat Tissue by sound Velocity Correction as a Standard Features and also Auto Tissue Correction should be Possible for Linear Probes.
The System Upgradable to visualize images with Very few artifacts by cancelling multiple reflection from the body by Innovative Technology to get gold standard Image Quality.
The System should have 6 step Lateral Gain Compensation and 8 step TGC/STC adjustment and these controls done by Digital type in Touch command screen and Also Hard Key STC and Keyboard should be Provided.
The System Should offer to Single Crystal with Micro Slice based 2D Matrix Probes for Better Imaging and Transducer increases clinical accuracy and reveals more detail in all depths for Routine Cardiac Screening
The Adult Cardiac Volume matrix transducer should enable to acquire high-quality 4D volumes at high framerate and Maximum Volume rate should be more than 150vps.

The System should have Raw Data processing. Stored Images can be Recalled and Get the M Mode Trace etc.
The System should Upgradable to store the patient data automatically External HDD (Min 5TB HDD) and Necessary Data Base Software to be Inbuilt. This is very much Important to avoid system slow due to Storage
General Imaging Specification:
The system should have advanced wide band color Doppler imaging mode with directional in formations without blooming / over painting for low flow applications for Fetal Cardiac Applications.
The system should have real time panoramic view imaging that operates by sweeping a transducer over the anatomy of interest. Should be possible with all transducers.
System should have innovative Best Micro-Vascular Imaging technology expands the range of visible blood flow and provides visualization of low velocity micro vascular flow usually unseen with routine ultrasound.
The System should Upgradable to enable to measure MPI (Myocardial Performance Index) from the Time change Curve in TDI for Fetal Heart Applications.
The System should Upgradable to Z-score Analysis for Fetal Heart Measurement.
The system should have PW Doppler & HPRF mode for All Transducer's and CW Doppler for All Sector probes
The System Upgradable to Cardiac Contrast imaging.
The System should have Advanced DICOM for Image Transfer
Cardiac Imaging Specifications:
The System able to Display Cardiac 4D Image along with Internal Blood Flow by Both superficial and deep structures in a specific region can be observed simultaneously by superimposing them. Simultaneous display with a color 4D image showing internal blood flow should be possible
The System should have Tri-plane scanning with Following Features:
Cross section from the apex view
Simultaneous B-Mode Imaging in 3 planes
System should have Advanced Cardiac 2D wall motion
The Following Feature's should be available in 2D WMT
Automated analysis of myocardial motion
Intuitive Polar map – Bull's Eye Format – 3 Cross Sectional Graph
Higher resolution, precise measurements
3 Chamber Auto Trace
Biplane Volume Calculation
Auto EF (Ejection Fraction) and calculation of GLS (Global Longitudinal Strain)
The System should Upgradable to Advanced 3D Wall Motion Tracking Feature to provide immediate visual and quantitative access to global and regional myocardial wall motion dynamics.
The Following Feature's should be available in 3D WMT:
Simultaneous Tracking display of 4 chambers
Right Ventricle Analysis
Left Atrium Analysis
Quad Display – 3 Different Plane and 3D Image
The System should Upgraded to Automated MVA tool to provide concise anatomic and functional assessment of the mitral valve and also Quad display offers a clear overview of different scan planes using Volume TEE Probe

The mitral valve Surgical View should Display as seen by the surgeon to facilitate visual assessment of the leaflets for better surgical planning as Optional.
The System Should Upgradable to advanced Cardiac Contrast Package available in the industry
The System should have Next Generation Stress Echo package with Treadmill and Dobutamine Protocol with Following Details:
The Dobutamine Stress Protocol should have followed Phase sequence:
Rest Phase, 5MCG, 10MCG, 15MCG, 20MCG, 25MCG, 30MCG, 35MCG, 40MCG and Post Phase.
At a time Compare any 4 Phase of cycles in Review mode
Any point of time, any phase of cycle can do WMT for Reconfirmation.
Also Stress Echo protocol can add Color Mode and Doppler mode for any phase and same Should be compared other sequence
The System Should have 2D Strain/Wall Motion Tracking for Fetal Heart using Normal Convex probe with Polar Map or Bull's Eye Display and also show Inner Tracking and outer Tracking Separately
System should Upgradable to Automatic Fetal Heart Volume scan using Volume probe with Automatic view/Selection of 4Ch, LVOT, RVOT, Stomach, Ductal Arch, Aortic Arch, 3V View, SVC/IVC from Touch screen to view Different anatomy for Fetal Heart by One touch.
Advanced Cardiac package Specifications
The System should have Cardiac AI (Artificial Intelligent)
The System should possible for ML (Machine Learning) and DL (Deep Learning) for Following Measurements:
Machine Learning (ML):
Auto EF LV – 4Ch View mode
Auto EF LA – 4 Ch View mode
2D WMT – Auto Plane Detection -Cardiac Strain Imaging
2D WMT (LV, LA, RV, RA)- Auto Strain Imaging.
Deep Learning (DL):
Auto E/A, LVOT, TR, AV – 4Ch View mode
The System Upgradable to Work Flow Navigator and Displays a guide for the following diseases:
Pulmonary hypertension
Diastolic dysfunction
Left ventricular hypertrophy
Cardiac 2D Tracking For LV, LA, RV, RA should be Automatic after selection of Position.
Measurement package Specification:
The System should have Automated Cardiac measurement and Auto EF and Auto E/A Measurement should be Available and Following package should be available.
2D-mode measurements:
LV (left ventricular function) measurements
LA (left atrial volume) measurements
AV (aortic valve) measurements
MV (mitral valve) measurements
PV (pulmonary valve) measurements
LV MASS measurements
Auto EF measurements

M-mode measurements:
LV (left ventricular function) measurements
AV (aortic valve) measurements
MV (mitral valve) measurements
Doppler measurements
Trans-Aortic valve flow measurement
Trans-Mitral valve flow measurement
Trans-Pulmonary vein flow measurement
Trans-Tricuspid valve flow measurement
Trans-Pulmonary valve flow measurement
Blood flow waveform auto measurements
Coronary measurements/PISA measurements
QP/QS Measurement
Following Probes should be supplied along with system:
Single Crystal Phased Array Cardiac Probe with Band width of 1-6MHz for Adult Cardiology Application and support for 2D Wall motion Tracking Application.
Phased array Cardiac Probe with Band width of 3-6 MHz with Small Foot Print for Pediatric Cardiology Application and support for 2D Wall motion Tracking Application.
4D Matrix Array Cardiac Probe with Band width of 1-6MHz for Adult Cardiology 3D/4D Application and support for 3D Wall motion Tracking Application.
Linear probe with Band width of 3-11MHz for Vascular Applications.
4D Matrix array Multiplane TEE Adult Cardiac Probe with Band width of 2-6MHz for Adult Cardiology Application
Multiplane TEE Pediatric Cardiac Probe with Band width of 3-8MHz for Pediatric Cardiology Application
The Following Probes should be available for future Upgrade and quoted as optional:
Phased array Cardiac Probe with Band width of 4-10MHz with Small Foot Print for Neonatal Cardiology Application (use of 800 to 1200 Gram Baby Weight) mainly for Incubator and support for 2D Wall motion Tracking Application.
Phased array Cardiac Probe with Band width of 4-12MHz with Pediatric and Neonatal Cardiology Application
4D Matrix Array Cardiac Probe with Band width of 2-7MHz for Pediatric Cardiology 3D/4D Application and support for 3D Wall motion Tracking Application.
Single Crystal Convex Probe with Band width of 1-10MHz for Fetal Cardiology
Following Accessories Should Supply along with System:
B&W Thermal Printer with 10 nos of Paper Rolls
Color Dicom Printer with two packets of Film/Paper
Suitable UPS(online) with 30 min Back up
Please attach the Original Manufacture's Product Catalog and Data sheet
The System should able to demonstrate all Quoted Feature's including Optional Feature's.
5 Years Comprehensive Warranty for Entire Equipment, Probes and Accessories which include service, spare as well as probes. Please quote CMC which include service and spares for 5 Years after expiry of Warranty.

95% Uptime Guarantee should be Given. In case down time Exceed 5% penalty in the Form of Extended Warrantee, Down the Number of days for which the Equipment goes out of service will be applied.
The system should compulsorily have DICOM and LAN connectivity and same to be done at the time of installation.
External Certification: The Offered Model must have a Valid Quality Certificate-

	EMG System wireless (Electromyograph)
Sl No.	**Specifications**
	The system should have:-
1	Should be able to work in Lab and Field studies (Portable & easy to carry)
2	The unit should be high speed USB based 16 channels recording station upgradable to 32 or more channels
3	RF Transmitting Range at-least 40 meter 25 / 30
4	High sampling rate of 2-4 KHz and and 16 Bit ADC resolution
5	High CMRR Ratio: 80 dB or more
6	Simple recording view, averaging, Zooming, Fast Fourier Transform, Spectrum etc.
7	Software controlled filtering High Pass, Low Pass filters, AC Coupling, Digital filters, band pass filter & Main filters.
8	The software should have built in smart analysis features like rms, power spectrum, template matching, curve fitting, cross correlation, Arithmetic & mathematic formulae base calculations.etc
9	Must have a facility for online/offline analysis with MATLAB.
10	Compatible Four sensors based balance board for record and analysis of static posturography.
11	Wireless EMG Sensor (Qty 4)
12	Parallel-Bar technology for guaranteed high fidelity signals no motion artifacts.
13	Each sensor should provide 1 sEMG and 3 acceleration signals.
14	Small size lightweight sensors of 37 mm x 26 mm x 15 mm or less.
15	Software selectable accelerometer sensitivity of ± 1.5g or ±6g
16	Wireless Four channel Force Sensitive Resistor Sensors (Qty 1)
17	To monitor the pressure under varieties of conditions in several locations at once.
18	The membranes are affixed to shoe inserts for recording foot pressure timing at the heel, toe, first and fifth metatarsals.
19	Suitable for Gait and impact studies.
20	FSR membrane option at 5mm2 ,15mm2 ,40mm2 (Qty 10 each)
21	Other compatible sensors like twin axis goniometer, Load cell, inertial sensor, EKG sensor should be available for future application.
22	US FDA, ISO & European CE certificates to be provided.
23	Demonstration & Training free of cost at the site by company experts.

Head & Neck Reconstruction Set - for treatment of Maxillofacial Trauma

Sl. No.	Description of Items /Stores
A	**Storage and Sterilizing Container**
1	Implant modules for mandibular reconstruction and medface plates and screws
2	Inlay for implant module above
3	Sterilizing container, complete, for all sizes instruments and implants container with lid
B	**Upper Face Implants**
1	Orbital floor plate basic middle, 0.3 mm
2	Orbital floor plate complex large, 0.3 mm
C	**Mid face System Implants**
1	4 hole straight plate, with bar
2	6 hole curved plate, with bar
3	T-plate, 5 holes
4	Y-plate, 5 holes, 4mm bar
5	2x2 hole, 3-d plate
6	6 hole l plate 8mm bar, 100 deg left, standard
7	6 hole l plate 8mm bar, 100 deg right, standard
8	Mesh, standard, 120x120, profile 0.6mm
D	**Titanium Bone Screws (dia. 1.5 mm to 1.7mm)**
1	Titanium bone screws, dia. 1.5/1.7mm, length 4mm, 5mm, 6mm, 7mm & 8mm.
E	**Titanium Emergency Bone Screws (dia. 1.7 mm to 1.9mm)**
1	Titanium screws, dia. 1.7/1.9mm, length 5mm & 7mm.
F	**Drill Bits**
1	Twist drill, dia. 1.1 to 1.3mm, wl, 5mm, 8mm, 12mm
2	Twist drill, dia. 0.8 to 1.0mm, wl, 4mm, 6mm, 12mm
G	**Mandibular Reconstruction Plates and Screws**
1	Titanium plate, 4 holes, regular
2	Titanium plate, 4 holes, 4mm bar
3	Titanium plate, 4 holes, 8mm bar
4	Titanium plate, 6 holes, regular
5	Titanium L plate, 4 holes, 4mm bar, right
6	Titanium L plate, 4 holes, 4mm bar, left
7	Titanium L plate, 4 holes, 8mm bar, right
8	Titanium Lplate, 4 holes, 8mm bar, left
9	Titanium t- shape plate, 6 holes, regular
10	Titanium y-shape plate, 5 holes, 8mm bar
H	**Titanium Bone Screws (dia. 2.0mm)**
1	Titanium bone screws, dia. 2.0mm, length 6mm, 8mm, 10mm, 12mm and 14mm.
I	**Screws (dia. 2.3mm)**
1	Titanium bone screws, dia. 2.3mm, length 8mm and 10mm.

	ESR Analyser
Sl.No.	**Specification**
1	Machine should be fully automatic working mode
2	Working principle should be red cell aggregation method
3	Machine should accept EDTA sample vials.
4	Sample volume should be less than 1 ml
5	Throughput should be 150 or more
6	On board quality control facility should be there
7	Machine should have inbuilt thermal printer facility
8	Machine should have inbuilt Bar code reader
9	Machine should have inbuilt Mixer
10	Mixer should comply with ICSH & CLSI guidelines
11	Provision of internal temperature correction should be provided
12	OEM should be the manufacturer of controls & calibrators
13	Type of consumable should be cards
14	200 no of tests to be supplied with machine
15	One set of Control to be supplied with machine (low,medium,high)
16	Display should be LCD
17	HCT correction option should be available in machine
18	Machine should have LIS connectivity facility
19	Machinie should have at least one RS 232 serial port
20	Sample Loading type should be in batch mode
21	No of samples that be loaded at a time should be minumum 60
22	Machine should give results within a minute after initial mixing
23	ESR Measuring range should be from 2 to 120 in mm
24	Sensor should be LED & analog type
25	Machine should have faciltiy to introduce CBC racks for ESR detection
26	5 years Comprehensive warranty to be provided

	Bench Top Clinical Flow Cytometer
Sl.No.	**Specifications**
1	Bench Top Flow Cytometer should have 3 lasers (red, blue and violet) with and should becapable of 12parameter analysis (10fluorescents plus forward and side scatter). System shouldhave upgradable features up to 12 or more. The company should mention laser power outputand minimum laser power received at the flow cell at the time of sample acquisition, for alllasers in the offer.
2	Should have sample acquisition rate of at least 20,000 events per second or more.
3	Pulse Height, Area and Width information available for all parameters tobe able to discriminate doublets based on size, granularity & nucleic acid content.
4	The system should have threshold settings option on multiple channels/ parameters for asingle sample run.
5	Must have compensation capability between all fluorescence channels manually andthrough auto compensation.
6	The system software should be capable of establishing baseline settings of systemperformance and be able to adjust for instrument variability thereby automating instrumentsetup.
7	The equipment should have analogue/ digital signal processing with dynamic range of atleast 18bit data acquisition or more in order to get the clear resolution.
8	Optical filters should be easily changeable by user without having to call service engineers.
9	Sample Carry-over of the fluidics (cells) of the system should not be more than 0.1%.
10	The company should provide standard software for complete plot and graphical analysisof flow files with facilities such as back gating.
11	The instrument should be capable of performing daily QC and of maintaining monthlyquality assurance data for monitoring performance of the instrument
12	Must have automated loader with minimum of 30 tubes or more.
13	Must have provision for integrated bar code reading to identify carousel number & tubelocation.
14	System should be CE-IVDR approved for maximum parameters used in analysis
15	Instrument software should have capability with automated gatingstrategy flowing ISHAGE guidelines for accurate measurement of CD34+ stem cells
16	The data management system should have PC workstation with at least processor, 160GB hard disk drive, DVD/CD writer (combo drive), 22" monitor and colour laser jet printer.System must have LIS compatibility.

17	On-line UPS with at least 30 minutes' backup should be quoted with the system and shouldbe supplied with the equipment.
18	The company should provide multiple time to time free trainings to the users as per theirrequirement during setting up of flow lab and later for up gradation
19	Participating company should have direct presence in India with relevant application andservice specialist for anytime support.
20	The company should have proven capability demonstrated in the past in after-sale-serviceand application support in the field of flow cytometry instrumentation in India.
21	Accepts any company 5ml. (12 x 75mm) polystyrene and polypropylene and microcentrifuge 1.5mL and 2ml.
22	Rates for all the reagents needed to run the assay to be quoted. Complete list of primaryantibodies for immunophnotyping of lymphoma panel, myeloid and lymphoid leukaemia apanel, multiple myeloma panel, MRD panel, CD 34 assay, HLA B 27 assay to be provided withrate quotes.
23	Document supporting track record and satisfactory performance from Institutes ofnational importance (minimum three) should be prided
24	5 years' warranty followed by 5 years CMC.
25	E-bidder have to adhere to Government of India, Ministry of Finance, PPD division Public procurement order OM F.No.6/18/2019-PPD dated 23rd july,2020 inserting Rule 144(Xi)in GFR 2017 ,No 1 dated: 23/7/2020 and subsequent Orders No 2 & 3 or as amended from time to time , failing which the bids shall be treated as non-responsive.

	Hospital Fowler Bed
Sl No.	**Specifications**
1	**Hospital Fowler Bed**
1	Frame work made of Powder coated Rectangular M.S Tube
2	4 Section top made of perforated ABS /metallic perforated top lasercut finish with antimicrobial powder coating of minimum 60Micron
3	Movement of Backrest, knee rest, and hi-lo positio ns maneuvered by separate 3 crank system.
4	Protective bumpers at all four corners
5	ABS molded. Head & foot panels
6	Telescopic IV Rod with four locations
7	Overall Size 210 l x 90 w with deviation of + 5% and height 55-100 cm
8	Finish antimicrobial Epoxy powder coated
9	ABS Side Rail with bilateral angle indicator both Head and Foot end & Necessary lock mechanisim sh ould be there for patient safety and to prevent accidental release of side rail with patient leaing on it
10	Bed mounted on 125 mm diameter dual castor with two brakes
11	Wheel bearing: sealed bearing in the swivel and the wheel Swivel is ball-bearing
12	It should be single section mattress for easy clea ning with a spprox size of 200 x85Cm
13	Mattress must be made Thick Medical Grade Mattress high- density Urethane Foam of density more than 40 kg/m3 with minimum ,soft sup port foam on one side with ripple surface and firm support foam on the other and reversible type .Total thickness should not be less than 12 Cm
14	Mattress Cover must be of soft ploy urethane type , flexible highly tear resistant, anti- microbial, anti-static, flame retardant, disinfectant- and liquid proof, washable
15	Mattress cover removable via side zipper
16	Bed must have Manually operated 3 crank system which can be folds away underneath the bed for various positions like Head section, Leg section ,back section and high-low
17	Manually operated crank allows adjusting backrest should be 0-70 degree, leg section and foot section should be 0-25 degree or better

18	Bed must have Safe working load 200 Kg & Max. Patient weight 135 kg .Factory Test certification for load bearing must be uploaded in Technical bid, failing which bid will be consider as non compliant.
19	The OEM must have quality certification like ISO/CE/FDA/BIS/CDSCO or equivalent
20	Should be provided with Moulded chart holder, Rubber buffer (4") (set of four),Urine bag holder
2	**Adjustable Bed Side Table**
1	Overall Size of top should be 810 mm x 352 mm W
2	Fitted with gas spring mechanism shall have latch pressing mechanism for lowering down the table top: the raising of the top shall be done by merely lifting up without pressing the latch.
3	The gas spring shall be housed in aluminium extruded telescopic section for smooth sliding up and down from approx. 760 to 1050 mm
4	Single /Two sections PVC /Membrane pressed top anti scratch material shall be fixed on 19 mm squire ERW tube frame Work
5	Bigger section of the table top should be hinged & could be inclined to raise position options front side of bigger section of the top should be provided with raised PVC edge to prevent things from slipping off top
6	Base of adjustable table should be made from 40 mm x 20 mm x 16 G rectangular tube welded to 40 mm x 75 mm x 5 mm thick channel connecting length 640 mm and should be fitted with four castor Wheel Dia 50 mm.
7	M.S. tubular part, Linkages, flats are to be In House, Pre-treated, Shot Blasting and Epoxy powder coated as per ISI standard, 50 to 60 microns.
3	**Bed side locker**
1	Over all approx. size: 40 cms x 40 cms x 82 cms H approx.
2	Body consisting of 2 sides and back, is made from one piece of 20 G ms CRCA sheet. Fitted with PVC/membrane top with raised edges on four sides
3	Drawer front and cabinet door also made from MS powder quoted /PVC with locking mechanisim & handle
4	PVC/membrane top is of scratchresistant and UV-rays resistant of 400microns thick. One drawer 90mm H x 355 mm W x 380mmD approx fitted with very smooth slides, is provided below the top
5	Under the drawer is an open storage space and below it is a closed door cabinet.

6	Door of the cabinet box is pivoted at top and bottom. Base of the drawer is fitted with castors of wheel dia 50 mm, all without brake.
7	All MS parts are passed through 8 tank Pre-treated & Anti microbial and thermosetting powder coated process. SS parts finished with Matt Polish.
8	Colour should match with other product

	High Flow Nasal Oxygen Therapy Unit
Sl.No.	**Specifications**
1	**Delivery range of oxygen concentration (FiO2)** : 21% to 100 % Or higher
2	**Consumables provided** : Breathing circuit (Adult), Breathing circuit (Pediatric), Humidification chamber, Adult nasal cannula, Pediatric nasal cannula, Air filters
3	**Warranty in Years (Option of comprehensive warranty is available through bidding only, which if opted will supersede normal warranty in the catalogue)** : 5 Or higher
4	**Additional requirement -1** : NA, Able to Generate Oxygen Pressure of 50 to 55
	Additional requirement -2
1	Suitable for treatment of Hypoxemic patients with respiratory distress
2	It should be complaint for use on patients in ICU
3	It should be single system for treating infants, paediatric and adult patients
4	Inbuilt flow generator capable of delivering wide range of flow: 2-25 litres in paediatric mode and 10- 60 litres in adult mode
5	Inbuilt Air /o2 blending and Fio 2 monitoring , facility to deliver wide range of oxygen concentration (Fio2) from 21 to 100%
6	It should have inbuilt Air source without need for external compressor
7	Integrated heated humidifier
8	Color display to monitor humidity setting, flow Fio2 and faults
9	Must have visual and audible alarm indicator
10	Disinfection mode with heated disinfection tube for sterilization of the device after patient use
11	Rate of one heated wire patient breathing tube and the rate of one nasal cannula of infant paediatric & adult should be offered separately
12	Paediatric nasal cannula should be made of kink proof material and has adhesive wiggle pads to stick on skin to facilitates kangaroo care
13	It should be compatible for use on tracheotomy patients
14	Should have safety certificate from a competent authority CE issued by notified body registered in the European commission/ FDA(US)/STQC CB certificate or valid detailed electrical and functional safety test report from ERTL
15	Warranty need not be provided for circuits and prongs.

	Hydrogen Peroxide Decontamination System
Sl.No.	**Specifications**
1	The Unit should be fully microprocessor controlled Plasma Sterilizer based hydrogen Peroxide Decontamination System p with universal data acquisition system with state of art gas plasma technology
2	The Unit should be kept on floor free standing with mobile wheels
3	The sterilization normal cycle time should be between 45 to 50 minutes and must have rapid cycles for quick sterilization within 25-30minutes.
4	The unit should be able to sterilize all kind surgical instruments, endoscopes rigid as well as flexible by using state of art hydrogen peroxide gas plasma technology.
5	The sterilization temperature should be around 55 degrees Celsius and of low moisture.
6	Should have two vertically sliding doors.
7	Should display on touch screen panel during cycle on both the sides.
8	The unit should have rectangular chamber with usable volume of 120 liters or more.
9	The unit should have Intake air via a HEPA filter
10	The unit should have Foot pedal to open the device door/hands-free operation
11	The Sterilizer Should be able to sterilize flexible lumen with inside diameter of 1mm and length of 2000 mm & 500mm (rigid) respectively. The sterilization claims should be backed by clinical testing.
12	Should be able to sterilize single-through lumen PCD & hollow-type Trocar / cannula 2mm dia. And length of 1500mm.
13	The concentration of Hydrogen Peroxide solution should be minimum for safely sterilization of delegate instruments.
14	Sterility (H_2O_2) should be only in either closed cassette or Cartridge for better and accurate dispensing into the chamber and to avoid spillage / leakage. (H_2O_2 bottles more than 20 ml will not be considered as cartridge)
15	The unit should have no toxic residuals with primary by products being water vapor and oxygen and it should be safe for patient, staff and environment.
16	The unit should completely automatically monitor its operations with audiovisual alarms and built-in thermal printer
17	Sterilization chamber is made of stainless steel (AISI 316/304 grade) which resists to react with hydrogen peroxide plasma gas.
18	Should monitoring on network computer.
19	Should store the sterilization data by SD memory card/USB/LAN.

20	The Operation of the sterilizer should have no requirement of additional water supply source.
21	Chamber should have two sliding shelves systems to be selected for 1 or 2 shelves
22	The maintenance mode should be accessible from front screen for easy maintaining activity.
23	Electricity Connection should be supplied for 220-240V, AC. 50/60Hz, Single phase.
24	The plasma sterilizer should conform to the following Norms and Directives & certificates in support should be submitted.
	- ISO 9001:2008 – Quality systems
	- ISO 13485:2003 - Quality systems for medical devices
	- ISO 14937:2000 – all requirements for sterilization of medical products
	- Direct 93/42/EEC
25	The plasma sterilize should be of High quality with European CE/ USFDA/ BIS or equivalent approvals, also comply with EN ISO 14937.
26	The unit should be supplied with automatic heat sealing machine, appropriate UPS to run at least one cycle backup, sterilization cartridges, chemical indicators, BI indicators, BI incubator, sterilization trays, Tyvek pouches for packing, printer paper roll. The complete consumable to run at least 100 cycles should be provided along with the system.
27	The equipment should be to sterilize scopes of Robotic system. (Certificate from OEM of renowned robotic & laparoscopic instrument to be provided).

	ICE (Intra Cardiac Echocardiography) for Arrhythmias
Sl.No.	**Specifications**
	Intracardiac Echocardiograph (ICE) Feature capable of providing detailed intracardiac echocardiograph imaging of the cardiac anatomy along with a compatible Ultrasound system to be provided for the 3D electroanatomical system
1	A fully versatile echo imaging platform that utilizes intra cardiac electrocardiography(ICE) technology in invasive setting to visualize cardiac structures and blood flow
2	It provides digital image acquisition and display of images from the intra cardiac probe inserted into the heart through intravascular access.
3	Tissue Harmonic Imaging with patented Pulse Inversion Technology.
4	Imaging Modes: 2-D, M-Mode, PW & CW Doppler, Colour Flow Doppler, Tissue Doppler
5	DICOM Networking Compatibility
6	CD, DVD, thumb drive and PC format export capability
7	TEE and surface probe compatible
8	Interface capability with existing Conventional EP Lab platform
9	Should provide increased consistence from user to user and should adjust imaging parameters with the push of a button.
10	Should provide fully articulating flicker free 19-inch-high resolution flat panel display with nearly infinite positioning adjustments.
11	Support for up to three on-board peripherals or probes
12	On board patient reporting with embedded images.
13	Adaptive image processing for noise and artifact reduction to improve tissue conspicuity.
14	System should ISO /BIS Approved
15	System should have a standalone ICE technology. It can be used individually in different types of cases like during ASD/VSD/PDA devices and Electrophysiology procedures both.
16	Compatible ICE catheters should be quoted along with the system.
17	The Consumables quoted, and the system should be preferably from the same manufacturer.
	Documentation:
1	User / Technical / Maintenance manuals to be supplied in English.

2	Log book with instructions for daily, weekly, monthly and quarterly maintenance checklist. The job description of the hospital technician and company service engineer should be clearly spelt out.
3	Cost close consumables and accessories which are not covered under warranty (no spare parts will be considered) & CMC period has to quote in schedule XI as percentage value in the Technical Bid which will be freeze for entire warranty & CMC period ,Failing which bid will be treated as non-complian
	Environmental factors:
1	Shall meet IEC-60601-1-2:2001 (Or Equivalent BIS) General Requirements of safety for Electromagnetic Compatibility or should comply with 89/366/ECC; EMC-Directive. Certificate must be submitted
2	The unit shall be capable of operating continuously in ambient temperature of 30-40 deg C and relative humidity of 15-90% .
3	The unit shall be capable of being stored continuously in ambient temperature of 10- 50 deg C and relative humidity of 15 – 90 % .
	Warranty and Maintenance
1	Warranty for 5 years followed by CMC for 5 years including Spares & service
2	Mandatory 2 PMs / Year with unlimited breakdown calls has to be attended by the bidder/manufacturer throughout the warranty & CMC period at site .i.e. NEIGRIHMS, SHILLONG.
3	Duly signed Mandatory PM reports have to be submitted periodically, falling which necessary action will be initiated as per term& condition of the tender.

Laboratory Refrigerator		
Sl No.	**Descriptions**	**Specifications**
1	**Standards**	**Conformity to Standards:** CE (with 4 digit notified number), BIS (As per medical directive)
		Electrical safety standards: IEC 61010 With latest amendments
2	**Performance Parameters**	**Purpose:** The laboratory Refrigerators are specifically designed and are suitable for research laboratories,Medicine storage, blood banks applications and across other laboratories working with critical elements
		Capacity of the refrigerator in liters: 490-580, 580-610, 600-750
		Temperature range in °C: 2 deg C to 8 deg C
		Control panel settings: Thermometer, Main switch and temp selection
		Type of Door: Single door
		Material of Construction of body: Galvanized steel
		Insulation material: High grade foam material
		Outside finish: Epoxy coated finish
		Should have digital display of temperature: Yes
		Rotary air circulation to maintain temperature uniformity: Yes
		Flouroscent internal light available: Yes
		Refrigerator Energy star rating: NA
		Material used for shelves: Perforated Stainless Steel 304
		Number of shelves: 4
		Material of Inner chamber: SS 304
		Warranty of the refrigerator in years: 3, 5, 10, Others, 1, 2, 4
		Controller based audiovisual alarm: Yes
		Warranty of Compressor in years: 2
	Additional Specification Parameters	Warranty period 5 years and thereafter 5 years CMC Comprehensive Maintenance Service at the rate not more than 5% of contract price per annum
		Should have internal storage volume of at least 600 L or should be able to store more than 320 standard blood bags.
		Digital temperature (LED) display with at least 0.5°C resolution of graduation.
		Protected digital RTD sensor should preferably be dipped into in a product simulation bottle.

3		Buy back value to be indicated in ATC-1 & financial Document % of the offered FOB /Basic Cost of the system /assets to arrive at Book /Reserve value.
4	**Purpose**	Should be designed specifically for Blood Centre use for storing whole blood or packed red cells and should not be commercial or modified commercial refrigerators.
5	**Type**	Approved standard electrical Blood Bank Refrigerator that uses a compressor circulating CFC-free refrigerant.
6	**Quality standard**	Should be compliant with ISO 13485 and ISO 9001:2008.
		Should be compliant with CE class IIA or BIS Compliant.
		Should meet electrical safety specifications of IEC 61010-1.
7	**Capacity**	Should have internal storage volume of at least 600 L or should be able to store more than 320 standard blood bags.
8	**Construction**	Outside of the refrigerator should have corrosion resistant sheet of at least 1 mm thickness.
		Inside of the refrigerator should be made of high grade stainless steel of at least 22 G.
		Insulation should be more than 5mm thick with foaming agent which is CFC free.
9	**Drawers**	Should be made of scratch resistant stainless steel.
		Roll out type.
		Should have at least four or more in number
10	**Door**	Glass door with full visibility of units without opening the door.
		Automatic/magnetic closing door with opening audio and visual alarm.
		Door lock should be available.
11	**Electrical characteristics**	Should be compatible with input voltage of 220-240 V, 50 Hz, single phase AC.
		Should have an integrated voltage stabilizer and external servo stabilizer of appropriate ratings meeting ISI specifications (input 160-260 V and output 220-240 V and 50 Hz)
		Minimum compressor starting voltage should be 22% below normal voltage.
		At room temperature of 25°C should be able to maintain at ideal compressor running time of 27%.
		Should have inside temperature range of 2-6°C.
		User parameter settings: set point, high alarm point, low alarm point, buzzer off time, C/F unit display choice.
		Whatever the load, setting accuracy less than or equal to 0.5°C (preferably 0.1°C).

12	**Internal temperature**	Should ensure frost free performance thereby avoiding either freezing or heating.
		If defrosting function used, temperature should not go outside range specified above.
		The temperature inside should be kept uniform in all shelves by forced air circulation through fans.
		The fans should shut off when door is opened
13	**External ambient temperature**	Can perfectly maintain internal temperature as above at full load in an ambient temperature of +10°C to at least +30°C.
14	**Hold-over time**	A full load of blood packs at +4°C (+1°C) should take more than 1.5 hours to rise to above +6°C if power goes off.
16	**Cooling down time**	A full load of blood packs at +25°C should not take more than 13 hours for all the packs to reach below +6°C.
17	**Temperature monitoring, thermograph and related alarms**	Protected digital RTD sensor should preferably be dipped into in a product simulation bottle.
		Microprocessor controlled primary temperature control with user defined parameters
		Digital temperature (LED) display with at least 0.5°C resolution of graduation.
		Integrated visual and audible temperature alarm systems.
		Provision to be connected to a remote monitoring system and remote alarm.
		The temperature record should be electrically logged (USB accessible data logger) and also documented on a physical thermograph preferably with a 7- day, ink-less, pressure-sensitive circular chart recorder.
		Must have battery backup for temperature recordings which is especially needed during power failure/fluctuations.
		Additional battery backup for alarm so that alarm will not fail in case of power failure, and should be able to sustain the alarm.
18	**Product certification**	CE class IIA or BIS or WHO-GMP or CDSCO or US FDA
19	**Lighting**	All shelves should have sufficient illumination so that labels on units can be easily read.
		Should have light bulbs/tubes that can be changed without removing the drawers.
	Documents	The following documents should be supplied:
		User/Technical/Maintenance manuals in English should be supplied.
		Certificate of Calibration and inspection from the factory

20		Log book with instructions for daily, weekly, monthly and quarterly maintenance checklist clearly spelling out the job description of the hospital technician and company engineer.

Laundry Machines

Sl.No.	Specifications	
I	**Industrial Washer Extractor (Sluicing Machine) Qty – 1 No.**	
	Features	
	Front loading, open pocket.	
	Forward and reveres basket rotation.	
	Heavy duty high spin. Single motor frequency drive.	
	5 compartment automatic soap dispenser through PLC.	
	Suspension with shock absorber & springs.	
	The system must have Sluice option /feature in the system	
1	Type of Control	Fully Programmable Logic Controller (PLC) with minimum 24 programs storage capacity with minimum 6 cycle in each program, to customize the wash programs according to the type of the linen.
2	Display	Touch screen color display.
3	Authorization system with Password	Login Id & Password with 3 different levels
		Level 1: Administrator Level
		Level 2: Supervisor Level
		Level 3: Operator Level
4	Basket Size	Dia. 840 x 550 mm depth.approx
5	Basket Volume	300 Ltrs or more
6	Final Extract Speed	850 rpm or more
7	Washing Speed	28 – 36 rpm
8	'G' Force	350 at Final Extract.
9	Clear Door Opening	Dia. 500mm approx(Front loading & unloading).
10	Drive Motor	7.5 Hp (5.6 kw) Motor, VFD Controlled, 3 Ph, HEM / equivalent make.
11	VFD	Machine should have variable frequency inverter drive for various speed for wash, Distribution, Low medium, High Spin Extract. 7.5 HP, 3 Ph, Fuji / Schneider/equivalent make.
12	Heater	18-20 kW.
13	Door Lock	Machine should have both manual and auto door lock. This makes the door not to open at time of operation.
14	Safety	Electric interlock with Door limit switch, unbalancing switch and emergency stop for safety & trouble-free operation.
15	Main Body/Outer Cabinet	Made of full stain less steel front, side, top & back covers of 1.2 mm thickness. Die pressed SS front & Door.
16	Inner Drum / Basket	Made of high grade Stainless Steel sheet of SS 304 Quality of 1.5mm thickness. CNC Perforation dia. 5mm.
17	Outer Drum	Made of high-grade stain less steel SS 304 Quality of 2.5 mm thickness.

18	Bearing Housing	GG25 cast iron bearing housing with 2 Nos made of SKF Heavy duty taper roller bearings packed with lubricants & sealed.
19	Soap Compartment	Full Stainless Steel 5 soap Compartment with Stainless Steel Jugs made of SS 316 quality of 1.2 mm thickness each fitted With Pressure water Jets for complete flush out of Liquid & solid detergents.
20	Water Inlet	Cold water inlet dia. 1''(dia. 25 mm), Hot water inlet dia. 1''(dia. 25 mm) optional, water inlet for chemical dia. 1'' (dia. 25 mm).
21	Drain	Dia. 3'' BSP (dia. 75 mm), Electrically Valve Operated.
22	Electric Supply	3 - Phase + N , 415 V ± 10%, 50 Hz, AC
II	**Industrial Hygiene Barrier Washer Extractor Qty 4 Nos.**	
	Features:	
	Front loading and rear unloading, open pocket.	
	Forward and reveres basket movement.	
	Heavy duty high spin. Single motor frequency drive	
	5 compartment automatic soap dispenser through PLC	
	Pneumatic operated water inlet valves, drain valve, soap	
	Soap containers for powder & liquid products.	
	Suspension with shock absorber & springs.	
	PLC controlled.	
	Heavy duty door pneumatic interlock and emergency stop for	
1	Type of Control	Fully Programmable Logic Controller (PLC) with minimum 24 programs storage capacity with minimum 6 cycle in each program, to customize the wash programs according to the type of the linen.
2	Display	Touch screen color display.
3	Authorization system with Password	Login Id & Password with 3 different levels.
		Level 1: Administrator Level
		Level 2: Supervisor Level
		Level 3: Operator Level
4	Basket Size	Dia. 1020 x 760 mm depth-approx
5	Basket Volume	600 Ltrs or more
6	Final extraction	800 rpm + 2%
7	Washing Speed	30 – 34 rpm
8	G – Force	350 or more.
9	Drive Motor	15 Hp (11.25 kw) Motor, 3 Ph. VFD Controlled, Single motor with variable frequency inverter drive for various speed for wash, Distribution, Low, Medium, High Spin extract.

10	VFD	Machine should have variable frequency inverter drive for various speed for wash, Distribution, Low medium, High Spin Extract. 15 HP, 3 Ph, Fuji / Schneider make.
11	Heater	27 -30kW.
12	Door Lock	Machine should have both manual and auto door lock. This makes the door not to open at time of operation.
13	Inner Basket	Made of high grade Stainless Steel sheet of SS 304 grade minimum 2mm thickness CNC Perforation dia. 5mm.
14	Outer Drum	Made of high grade stain less steel of SS 304 grade, minimum 3 mm thickness. Outer shell is reinforced by a steel plate.
15	Main Body /Outer Cabinet	Made of stain less steel front, back and both sides cover of SS 304 grade, minimum 1.2mm thickness Die pressed SS Door.
16	Bearing Housing	Cast iron bearing housing with 2 Nos, made of SKF Heavy duty taper roller bearings packed with lubricants & sealed.
17	Soap Dispenser	Full Stainless Steel minimum 5 Compartment Soap Dispenser with Stainless Steel Jugs should be made of SS 316 grade, each fitted With Pressure water Jets for complete flush out of Liquid / Solid Detergents.
18	Door Opening	The Hygienic washer has a large door design for easy loading and unloading of the linen and has strong hinge type. Door size: 475 x 330 mm.
19	Water Inlet	Cold water inlet dia. 1.5’’(dia. 40 mm), Hot water inlet dia. 1.5’’(dia. 40mm), water inlet for chemical dia. 3/4’’ (dia. 20 mm). Solenoid valve Pneumatically operated.
20	Drain	4’’ BSP (dia. 100 mm).
21	Compressed Air Inlet	PU 8 (dia. 8mm). Pressure 5 – 6 bar
22	Electric Supply	415 V ± 10%, 3 - Phase + N, 50 Hz, AC.
III	**Industrial Tumbler Dryer Qty – 1 Nos.**	
	Features:	
	Front loading, open pocket.	
	Forward and reveres basket rotation.	
	Automatic with cool down feature.	
	Fully Programmable Controller.	
	Door Limit switch and emergency stop for safety & trouble-free	
	SS fine mesh for collect lint.	

1	Type of Control	Fully Programmable Logic Controller (PLC) with minimum 10 programs storage capacity. To customize the Dry programs such as temperature and time according to the type of the linen.
2	Display	Touch screen color display
3	Authorization system with Password	Login Id & Password with 3 different levels
		Level 1: Administrator Level
		Level 2: Supervisor Level
		Level 3: Operator Leve
4	Basket Size	Dia. 1220 x 1050 mm depth approx.
5	Basket Volume	1200 Ltrs or more.
6	Basket Speed	28 ± 3 RPM
7	Drive Motor	Drive motor of 2 HP. HEM / equivalent make.
8	Blower Motor	Blower motor of 2 HP. HEM / equivalent make.
9	Radiator	27 -30 KW Electric Radiator
10	Main Body	Made of MS powder coated and cubical welded construction with glass wool insulation.
11	Inner Basket	Made of Stainless Steel sheet densely perforated on automatic machines with circles periphery of 1.2mm thick and perforation of dia. 8mm.
12	Door Lock	Machine is provided with manual heavy duty latch lock with limit switch, in case of door opening the machine basket will stop.
13	Door Opening	Large door opening for loading & unloading Dia. 750mm.
14	Hot Air Exhaust	Size: 200x200mm.
15	Lint Screen	Made of Stainless Steel self-collecting lint screen, easily accessible
16	Electric Supply	3 - Phase + N, 415 V ± 10%, 50 Hz, AC
IV	**Industrial Tumbler Dryer Qty – 1 No.**	
	Features	
	Front loading, open pocket.	
	Forward and reverse basket rotation.	
	Automatic with cool down feature.	
	Fully Programmable Controller.	
	Door Limit switch and Emergency stop for safety & trouble-free	
	SS fine mesh for collect lint.	
1	Type of Control	Fully Programmable Logic Controller (PLC) with minimum 10 programs storage capacity. To customize the Dry programs such as temperature and time according to the type of the linen.
2	Display	Touch screen color display.
3	Authorization system with Password	Login Id & Password with 3 different levels.
		Level 1: Administrator Level
		Level 2: Supervisor Level
		Level 3: Operator Level

4	Basket Size	Dia. 970 x 830 mm depth approx.
5	Basket Volume	600 Litres more
6	Basket speed	32 ± 3 RPM
7	Drive Motor	Drive motor of 1 hp. HEM / equivalent make.
8	Blower Motor	Blower motor of 1 hp. HEM / equivalent make.
9	Electric Radiator	24 kW -30 kw Electric Radiator.
10	Main Body	Made of MS powder coated and cubical welded construction with glass wool insulation.
11	Inner Basket	Made of Stainless Steel sheet densely perforated on automatic machines with circles periphery of 1.2mm thick and perforation of dia. 8mm.
12	Door Lock	Machine is provided with manual heavy duty latch lock with limit switch, in case of door opening the machine basket will stop.
13	Door Opening	Large door opening for loading & unloading Dia. 750mm.
14	Hot Air Exhaust	Size: 150 x 200mm
15	Lint Screen	Made of Stainless Steel self-collecting lint screen, easily accessible front side.
16	Electric Supply	3 - Phase + N + E, 415 V ± 10%, 50 Hz, AC.
V	**Industrial Washer Extractor Qty – 1 No. Capacity: Minimum 100kgs, Dry weight.**	
	Features	
	Front loading, open pocket.	
	Forward and reveres basket rotation.	
	Heavy duty high spin. Single motor frequency drive.	
	5 compartment automatic soap dispenser through PLC.	
	Suspension with shock absorber & springs.	
1	Type of Control	Fully Programmable Logic Controller (PLC) with minimum 24 programs storage capacity with minimum 6 cycle in each program, to customize the wash programs according to the type of the linen.
2	Display	Touch screen color display.
3	Authorization system with Password	Login Id & Password with 3 different levels.
		Level 1: Administrator Level
		Level 2: Supervisor Level
		Level 3: Operator Level
4	Basket Size	Dia. 1300 x 800 mm depth.approx
5	Basket Volume	1000 Ltrs or more
6	Final Extract Speed	850 rpm or more
7	Washing Speed	28 – 36 rpm.
8	‘G’ Force	350 at Final Extract.
9	Clear Door Opening	Dia. 500mm approx. (Front loading & unloading).

10	Drive Motor	25 Hp (18.75 kw) Motor approx, VFD Controlled, 3 Ph, HEM / equivalent make
11	VFD	Machine should have variable frequency inverter drive for various speed for wash, Distribution, Low, medium, High Spin Extract. 25 HP, 3 Ph, Fuji / Schneider/e quivalent make.
12	Heater	25-30 kW.
13	Door Lock	Machine should have both manual and auto door lock. This makes the door not to open at time of operation.
14	Safety	Electric interlock with Door limit switch, unbalancing switch and emergency stop for safety & trouble-free operation.
15	Main Body /Outer Cabinet	Made of full stain less steel front, side, top & back covers of 1.2 mm thickness. Die pressed SS front & Door.
16	Inner Drum / Basket	Made of high grade Stainless Steel sheet of SS 304 Quality of 1.5mm thickness. CNC Perforation dia. 5mm.
17	Outer Drum	Made of high-grade stain less steel SS 304 Quality of 2.5 mm thickness.
18	Bearing Housing	GG25 cast iron bearing housing with 2 Nos made of SKF Heavy duty taper roller bearings packed with lubricants & sealed.
19	Soap Compartment	Full Stainless Steel 5 soap Compartment with Stainless Steel Jugs made of SS 316 quality of 1.2 mm thickness each fitted With Pressure water Jets for complete flush out of Liquid & solid detergents.
20	Water Inlet	Cold water inlet dia. 1’’(dia. 25 mm), Hot water inlet dia. 1’’(dia. 25 mm) optional, water inlet for chemical dia. 1’’ (dia. 25 mm).
21	Drain	Dia. 4-5” BSP (dia. 100-120 mm), Electrically Valve Operated
23	Electric Supply	3 - Phase + N , 415 V ± 10%, 50 Hz, AC
VI	**Industrial Weighing Machine**	**Qty – 1 Nos.**
	Industrial weighing machine should be minimum 100 kg capacity with digital display	
VII.	**Vacuum Ironing Table with Press**	**Qty -2 nos**
1	Working Size	Large rectangular working area size should be minimum 1300W x 800D in mm.

2	Main Body	Formed out of powder coated in a state of the art conveyor powder coating unit. All components easily accessible.
3	Table Top	Heat resistant silicon padding. Vacuum board is uniformly perforated and is covered with aluminum mesh for a perfect and uniform ironing finish
4	Suction Blower	Heavy duty 0.75 HP centrifugal blower driven by independent blower motor activated by spring loaded full length foot pedal work in conjunction with sturdy micro switch.
5	Exhaust	Extended exhaust duct with lighting device.
6	Heater	Full Stainless Steel in built heater of minimum 0.8 kw capacity. and o.8 kw for press.
7	Steam Iron Press	It has a side iron tray for the iron and is also equipped with a silicon ironing pad.
8	Electric Supply	3 - Phase + N, 415 V ± 10%, 50 Hz.
	Electric Steam Generator	
	(Connected To Ironing Table)	
1	Main Body	Formed out of powder coated in a state of the art conveyor powder coating unit. All components easily accessible.
2	Suitable for Iron table	Boiler should be suitable minimum 2 no of iron table.
3	Power input	Boiler should have minimum 1Hp pump and 6 KW electrical heaters.
4	Steam Output	Produce steam minimum 8 kg/hr. at 3 to 3.5 bar operating pressure.
5	Steam Outlet	Dia. 1/2'' – 1 no
6	Water Inlet	Dia. 1/2'' – 1 no
7	Blow Down Outlet	Dia. 1/2'' – 1 no.
8	Water Feeding	Auto water feeding facility with external 25 liters storage capacity can.
9	Electric Supply	3 - Phase + N, 415 V ± 10%, 50 Hz.
VIII.	**Dry Linen Cage Trolley**	**Qty 6 Nos.**
	The trolley should incorporate the following features:	
	Complete stainless steel of construction with round pipe for long rust free life. These	
	Thickness	***Thickness of sheet should be at least 0.8 mm***
	Size	***Overall size of trolley should be at least 42" Wx 24" D x 48" H.***
	Wheels	***Castor wheels should be at least 4"/5'' dia***
IX	**Dry Trolley**	**Qty 10 Nos.**
	The trolley should incorporate the following features:	
	Complete stainless steel of construction for long rust free life. Corners to be rounded	
	Thickness	***Thickness of sheet should be at least 0.8 mm***
	Size	***Overall size of trolley should be at least 36" Wx 24" D x 30" H.***

	Wheels	***Castor wheels should be at least 4" dia***
	Drain valve size	***½" dia***
X.	**Wet Trolleys**	**Qty 10 Nos.**
	The trolley should incorporate the following features:	
	Complete stainless steel of construction for long rust free life. Corners to be rounded	
	Thickness	***Thickness of sheet should be at least 0.8 mm***
	Size	***Overall size of trolley should be at least 36" Wx 24" D x 30" H.***
	Wheels	***Castor wheels should be at least 4" dia***
	Drain valve size	***½" dia***
	Thickness of SS Mesh	***Minimum 0.8 mm thickness***
XI	**Automatic Laundry Dosing pumps**	
	Automatic Laundry Dosing pumps should be made up with Robust Stainless steel.	
	Automatic pumps capable of dispensing 7-8 Chemicals to the washer extractor for	
	Pump must be equipped with safety features that prevent chemicals from being pumped	
	Flow Rate between 500-600 Ml/Min	
	Must be CE /BIS Compliant	
	Pumps should be serviced quarterly by OEM & service centre must be located within	
XII	**Water softener Plant 5000 LPH(If required) has to be installed by the bidder**	
XIII	**Furniture**	
1	Executive Cahir-5 no	
2	Table: -2 nos	
3	Record keeping wardrobe: -2 nos	
4	Computer Table -2 nos	
5	SS Rack: -5 nos	
6	SS Tools: -6 nos	
	NOTE:-	
	Quality Certificates /Catalogues/Datasheets & successful installation and	
	The bidder must submit necessary product catalogue/brochure/datasheet etc. in the	
	34. **Washing Chemicals/Detergents**:	
	· Details of washing formulae (Minimum Two/ three brands) as well as processes to be used for processing all types of linen will be submitted by the bidder at the time of	
	· Non submission of either of these will lead to rejection of the bidder from the bid.	
	· All chemicals being used in the laundry shall be in liquid form only from reputed brands as suits to the detail composition mentioned at Annexure I	

	Dual action Ultrasonic and Pneumatic lithotripter
Sl.No.	**Specifications**
1	Should have both ballistic and ultrasound energies to be used simultaneously.
2	Should be able to use the energies independently also.
3	A dual pedal footswitch to operate both or one energy.
4	It should be possible to integrate both probes into the same hand piece so that both ultrasound and pneumatic energies can be delivered simultaneously to the stone for dual action lithotripsy.
5	Separate hand-pieces for ballistic and ultrasound devices.
6	Separate probes for ballistic and ultrasound devices.
7	Facility to integrate both probes when using both the energies simultaneously to fragment large and hard stones.
8	Facility to connect the unit to the hospital compressed air-supply.
9	Medical grade compressor should be supplied.
10	Should be able to withstand pressures from 3.5 to 5 Bar.
11	Facility to integrate the pneumatic hand piece to the suction equipment should be provided
12	Facility to collect the stone fragments.
13	Hand pieces should be compatible for Plasma sterilization or for autoclaving.
14	Probes for various applications and scopes.
15	Ballistic probes with probe connector & wrench: **3 each**
a	0.8mm, 1mm, 1.6mm probes with length 600-610mm for ureteroscopic applications.
b	0.8mm, 1.3mm probes with length 400-410mm for mini perc.
c	2mm probes with length 420-430mm for standard PCNL.
d	1mm combination probe for simultaneous energy usage along with ultrasound probe.
e	0.8 mm and 1.6mm suction compatible probes.
16	Ultrasound probes:
	Dual function ultrasound probes with probe connector & wrench: **three each.**
17	For fragment and suction, Probes should have holes in the distal tip to prevent mucosal suction into the probe-
a	3.3 and 4mm probes with length 400-410mm for standard PCNL.- **3nos**
b	1.9 mm probe with length 350-360mm for mini perc. - **3nos**
c	1.5 mm probe with length 570-580mm for ureteroscopic applications. - **3nos**

18	Suction probes to be supplied for the suction purpose along with pneumatic lithotripsy: **3nos each**
a	4 mm, 3.5 mm and 1.6 mm suction probes.
19	All accessories should be from the same company.
20	Must have USFDA / CE, BIS certificates.

	Dual Action Lithotripter
Sl.No.	**Specifications**
1	Should have a single generator for both ultrasonic and low frequency mechanical energy integrated in the same machine.
2	The system should be able to deliver these energies by Same probes and Hand pieces
3	The system should have a Surgeon Controlled / Hand Activation Transducer& Suction
4	The system should be equipped with Surgeon Control" and have probe of "3.76mm probe size providing the largest Inner lumen for stone fragments evacuation"
5	The unit should be supplied with following probes (as quantity written in front of each probe size):
	i. 3.76mm- 4 nos ii. 3.4mm- 4nos iii. 1.83mm- 4 nos iv. 1.50 mm-4 nos v. 0.97mm -4 nos
6	The system should simultaneously produce (at the probe tip): -Constant Ultrasonic Wave energy & Intermittent Shockwave (ballistic/mechanical) Energy — high-rate of occurrence —300 x per second / 300 Hz Delivered via a Revolutionary Single Probe Design With Large Inner Lumen
7	The system must Fragment and aspirate all stone sizes, shapes, and composition at a faster speed with significant reduction in procedure time benefits the patient, physician and hospital
8	The system must be Compatible with standard Steam Autoclaving & Plasma Cycle
9	The System must be used for fragmentation of urinary tract calculi in the kidney, ureter, and bladder
10	The system must offer a complete Probe Size Portfolio — with Single-Use & Re-Usable
11	The system should have Integration of both ultrasonic + high frequency bursts of mechanical wave energies, delivered simultaneously from a single probe and suction control.
12	The system should effectively fragment and pulverizes stones of various shape, size and composition.
13	The system should be of Auto tuning equipped -, a true "plug & play" system.
14	The systems should have a user Friendly Torque wrench design —reduces the force required to assemble probe onto transducer.
15	They system should have a single Hand piece design.
16	The system should also have hand activation which eliminates the need for the footswitch.
17	The system should have Ergonomic Placement of Buttons allows for surgeon control for all procedures (PCNL, m PCNL, URS, Bladder).

18	The system should have a transducer with Surgeon Controller Suction and Integrated Hand Activation.
19	Unit should be supplied with Sterilization Tray to accommodate all instruments and equipment.
20	The unit should be having Torque wrench for connecting / disconnecting probes to the hand piece.
21	Demonstration whenever required should be arranged.
22	5 Years warranty & 5 Comprehensive maintenance contract.
23	Generator Specifications:
24	Voltage of 220-240VAC

Extension OF Oxygen Pipeline Connection from LMO tank to RCC Gas Manifold room

Sl No.	Specifications
	Extension OF Oxygen Pipeline Connection from LMO tank to RCC Gas Manifold room
	Supply, Laying, Installation, testing and commissioning of copper pipes and related accessories alarm panel, Isolation Valve, NRV, Pressure gauges as per the detail specification & drawing to connect the pipeline from LMO tank (No 2) installed near RMO hostel to Gas manifold room near RCC
	Length: -650 mtrs +10%
	Scope of Work
1	Supply, Laying, Installation, testing and commissioning of copper pipes and related accessories as per the detail specification & drawing to connect the pipeline from LMO tank (No 2) instated near RMO hostel to Gas manifold room near RCC.
2	Necessary stable MS structures with all the fittings, coloring, clamps and related civil work with minimum height of 4 mtr and 6 mtr (road crossing) as well as MS Pole /Supporting structure at a distance of every 3 mtr must be included in the tender. The cupper pipe must be laying on the MS Support with C clamp screwed in every 1.5 mtr for better stability .
3	Dual coat Synthetic colour with in between band of oxygen cupper piping must be included in the bid
4	Isolation valve must be provided in both the end of the pipe line.
5	Alarm System for low TANK MUST BE PLACED IN Manifold Room to indicate the detail status of the LMO tank
a	Low content Alarm
b	Low tank pressure alarm
c	Low pipeline pressure Alarm
6	Automatic Changeover Panel: -
I	PLC controlled auto change over
II	must have facility to connect minimum 3 sources. (Low Pressure Input Like LMO and Other two high pressure input from Manifold)
III	Unintturpated supply during power supply fail
IV	Audiovisual Signals must be available
V	Must have High flow output 2100LPM @ 4.2 bar
VI	Must have different pressure unit like bar, psi & kG/CM 2 display
VII	Real-time alarm status through email/SMS
VIII	Must Confirm to HTM-02-01/NFPA-99 /ISO 7396
IX	Must have input Voltage 220Vac.
7	Pressure gauge:-Analogue pressure gauge to check line pressure
8	Line Pressure regulator of high flow capacity of 2000 lpm

	Supply, Laying, Installation, testing and commissioning of copper pipes and related accessories alarm panel, Isolation Valve, NRV, Pressure gauges as per the detail specification & drawing to connect the pipeline from LMO tank (No 2) installed near RMO hostel to Gas manifold room near RCC
	BOQ
1	Cupper Pipe 54 mm with all fittings- 650 Mtr
2	MS support structure as per site requirement
3	Isolation Valve of adequate size of cupper pipe -2 no’s
4	Alarm System-1no
5	Automatic Changeover Panel -1 no
6	Analogue Pressure gauge -2 no
7	Pressure regulator -2 nos

Hydraulic Stacker

Sl. No.	Technical Specification	
1	Rated lifting capacity(kg)	2000
2	Max.lifting height(mm)	2000/2500
3	Lowered height of forks(mm)	90
4	Fork length(mm)	1100 n above
5	Adjustable width of forks(mm)	300-750
6	lifting speed(mm/s)	15-20
7	Lowering speed(mm/s)	Adjustable
8	Outer width of front legs(mm)	690
9	Operation power of carank(kg)	32
10	Front wheel size(mm)	φ74×70
11	Rear wheel size(mm)	φ180×50
12	Overall size(mm)	1410×780×1540/1790/2040
13	Truck weight(kg)	250 kg
14	Material	made of Steel,Handle: Steel/MS,Wheel: PU Nylon
15	Pump assembly includes neutral position for controlled handling of load.	
16	Pistons and cylindermust be hard chrome Plated.	
17	Double sealed high pressured polyurethane seals must be used to prevent	
18	Must be with Heavy duty 1 piece C section for better strength	
19	Confirms to all safety standards like EN1757--1:200 or equivalent	
20	Warranty	3 years

	Mortuary Cabinet
Sl. No.	**Specification**
1	
a	Designed for long storage of cadavers
b	Proper design enduring best hygiene
c	Energy Efficient
d	Sturdy Construction
e	Low Maintenance
2	
a	Mobile with brakes for castor wheels/fixed chamber
b	Corrosion free exterior and interior with full stainless steel finish
c	Double walled cooling units
d	Outer shell constructed of thick steel sheets of type 304-SS grade
e	The inner chamber to be of heavy gauge stainless steel sheet of SS-304 grade.
f	The 60mm gap between the walls to be filled with high grade polyurethane insulation,ensuring maximum thermal efficiency.Puff density should be 40 kg/cu.m
3	
a	Individual doors with minimum 620mm x 550mm opening
b	Air proof sealing
c	Identification Name Plates
d	Heavy duty Aluminium Casting rails SS Frames
e	4 SS Body trays with Castors
f	There should be an option for curved body tray
4	
	(W x H x D) - 1800 x 2200 x 2300 mm approx.
5	
a	Microprocessor based temperature control
b	Temp. range 4 ˚C ± 2 ˚C
c	Digital LED display with touchpad data entry for adjustable temperature and alarm setting
d	PUF/Rigid insulation foam
e	ISI certified high end ultra mute CFC free hermetically sealed compressors,conforming to latest international standard and guidlines
f	Efficient condenser with automatic avaporating system (condensate). Forced air circulation system.
g	Automatic defrosting system
6	
a	Should be stainless steel 304 SS
b	Minimum rise of trolley should be 32 cm and maximum size should be 190 cm or more
c	Should carry a patient with minimum weight of 220 kg

d	the height should be adjusted by Hydraulic Cylinder and Manual Pumping foot pedal with return with spring.
7	
a	Shall meet IEC-60601-1-2:2001 (Or Equivalent BIS) General Requirements of safety for Electromagnetic Compatibility or should comply with 89/366/ECC; EMC-Directive
b	The unit shall be capable of operating continuously in ambient temperature of 30-40 deg C and relative humidity of 15- 90 %
c	The unit shall be capable of being stored continuously in ambient temperature of 10-50 deg C and relative humidity of 15 – 90 %
8	
a	Power Input to be 220 - 240 VAC,50 Hz and suitable stabilizer (4 kVA or higher)
b	Battery back-up on display for 0 to 4 hrs in case of power failure.
c	Fitted with Indian plug
9	
a	Manufacturer should have ISO certification for quality standards.
b	Comprehensive training for lab staff and support services till familiarity with the system
c	Electrical Safety conforms to standard for electrical safety IEC 60601-1 (Or equivalent International/National Standart) general requirement for Electrical Safety of Medical Equipment.
10	
a	User / Technical / Maintenance manuals to be supplied in English.
b	Log book with instructions for daily, weekly, monthly and quarterly maintenance checklist. The job description of the hospital technician and company service engineer should be clearly spelt out
c	Cost of spare parts, consumables and accessories (Electrodes,Battery,Filters) which are not covered under warranty & CMC period has to quote in schedule XI as percentage value in the Technical BidList of consumables with price frozen for 10 years , or else will be consider to be cover throughout the warranty & CMC period.
d	Calibration and routine Preventive Maintenance Support as per manufacturer documentation in service / technical manual has to be done throughout the warranty & CMC period.
e	Compliance report to be submitted in a tabulated and point wise manner clearly mentioning the page / Para number of original catalogue / data sheet and the offer details has to submit in the technical bid. Any point, if not substantiated with authenticated catalogue / manual, will not be considered.
f	Certificate of inspection and quality control indicating the S/N for all non-consumable items with date at the time of installation
11	
	Warranty for 5 years followed by CMC for 5 years including Spares & service.

Compatible Bipolar Forceps for KLS Maxium ESU/Vessel sealer Unit		
Sl No.	**Specifications**	
		Quantity
1	Maxium Bipolar Laparoscopic Forcep Handle: 83-585-01 Forcep: 83-585-02	2
2	Cevical Punch Biopsy Forceps	10
3	Punch Biopsy Forceps	5
4	Metzenbaum Scissors (golden handle) 20 cm, 11-961-20-07	10

	Hot Air Oven
Sl.No.	**Specification**
1	Capacity: 450 litres
2	Dimensions (outer)Height 110 cms (Approx) Length 112 cms Breadth 74 cms (Inner) 98cms x77cms x62 cms
3	Temperature Range:+5 degrees to 250 degrees C
4	Control accuracy :+/- 0.5degrees C
5	Uniformity:+/- 2.0 at 100.0 degrees C
6	Minimum 3. No of shelves with height adjustable/removable in 25mm steps
7	Glass window in built onto the door for easy viewing
8	Automatic cut off heater and blower when door opened
9	Digital PID Temperature controller with timer alarms and auto tuning
10	Aerodynamic internal design for achieving horizontal air circulation
11	Solid and plain bottom without electrical on wheels
12	Outer body made of GI epoxy coated
13	Inner made of stainless steel 304 with clear bottom
14	Over temperature thermostat
15	CE certified
16	Warranty period (Minimum 2 year) to be mentioned
17	AMC with charges to be indicated

	Optical Coherence Tomography (OCT)
Sl.No.	**Specifications**
I	**OCT** should be of Swept Source technology or Spectral Domain Technology OCT. It should have non- contact high resolution tomography and bio-microscopyimaging system which includes normative database for Macular thickness, Optic nerve head and RNFL. It should have features like advanced RPE analysis, more than 5 Line Raster, Anterior Segment Imaging without any external attachment. The in-vivo-imaging device should be intended for cross-sectional and three dimensional scans of tissues.
	OCT Scanning:
●	Axial resolution: 5 µm (in tissue)
●	Transverse resolution: 15 µm - 25 µm (in tissue)
●	Scan speed: Atleast 27, 000 A-Scans per second
●	A-scan depth: 2.0 mm (in tissue), 1024 points
●	Optical Source: superluminescent diode (SLD), 840 nm
●	Anterior Chamber Scan with scan depth of approx. 5mm or more and Scan length of approx. 15mm or more.
●	Anteior Chamber measurements. Anterior Chamber depth. Lens vault. Angle to angle distance
●	High Definition Angle scans with scan length of approx. 5mm or more with Iridocorneal angle measurement
●	Wide angle to angle scan with minimum scan length of approx.15mm or more with measurements of angle opening distance (AOD) at 500mm and 750mm, trabecular iris space area at 500mm and 750mm and sclera spur (SSA) angle. High Definition cornea scan with refractive tool.Pachymetry Map with minimum 24 radial line scans of 8mm or more scan length
	Fundus Imaging:
●	Line scanning ophthalmoscope (LSO)
●	Live during scanning
●	Transverse resolution: 25 µm (in tissue)
●	Optical source: super luminescent diode (SLD), 750 nm
●	Field of view: 36 degree x 30 degree
●	Facility for OCT Angiography
●	Facility for Choiroidal Imaging
●	Software/Normative Data:
●	normative database for RNFL, MACULA. Macula thickness analysis and Macula change analysis. RNFL Thickness analysis and.
●	Guided progression analysis (GPA). ONH Analysis
●	C-Scan visualization, Minimum Intensity Projection in En Face Analysis and 3D display with enhance depth imaging (EDI).
●	Anterior segment imaging & cornea imaging should be without any external attachment.

●	Auto Tracking (Must), Auto Fovea detection, Auto Disc center for glaucoma. Single eye combined report of Macular thickness and RNFL thickness. Combination report of RNFL and Ganglion cell deviation maps.
	Scanning Patterns:
●	3 D
●	Macular Cube 200 x 200 Combo: 200 horizontal scan lines comprised of 200 Ascans
●	Macular Cube 512 x 128 Combo: 128 horizontal scan lines comprised of 512 Ascan
●	Angio scans 8 x 8, 6 x 6, 3 x 3.
●	HD21 Line Raster, HD Raster, HD cross, HD 1 Line 100x
●	5 Line Raster: 4096 A-scan per B-scan (adjustable length, spacing and orientation)
	Focus Adjustment Range:
●	-20D to +20D (diopters)
	Fixation:
●	Internal and External
	Computer:
●	With latest operating System
●	High-performance multi-core processor. The integrated design should include a powerful PC with windows 10, i7 intel or higher processor, an integrated flat screen monitor of high resolution and should be atleast 19" in size.
●	Archiving on External Hard disc of atleast 1TB/for:>80,000 scans
●	CD-RW, DVD-ROM drive
●	UPS - 2KVA must be provided
	Pupil Size Requirement:
●	<2.0 mm
	OCT should have Asian Normative Database.
●	Updation of OCT software in future must be done free of cost
●	Latest high quality colour Laser printer must be provided.
●	Motorized Instrument table
●	USFDA / CE/CDSCO/BIS Certified

Orthopaedics Impalnts			
Sl. No.	**Item Description**	**Quantity**	**Units**
	OEM		
1	**Total Knee Replacement**		
1.01	Femoral Component (Right /Left)	1.00	Each
1.02	Tibial Component (Right /Left)	1.00	Each
1.03	Tibial Inserts	1.00	Each
1.04	Patella	1.00	Each
2	**Total Hip Replacement (Cemented)**		
2.01	Femoral Cemented Stem	1.00	Each
2.02	Modular Femoral Head	1.00	Each
2.03	Acetabular Cemented Cup	1.00	Each
3	**Total Hip Replacement (Uncemented)**		
3.01	Acetabular Uncemented Cup	1.00	Each
3.02	Uncemented Femoral Stem	1.00	Each
3.03	Liner	1.00	Each
3.04	Femoral Modular Head	1.00	Each
3.05	Bone Screw 20mm	1.00	Each
3.06	Bone Screw 25mm	1.00	Each
3.07	Bone Screw 30mm	1.00	Each
3.08	Bone Screw 35mm	1.00	Each
3.09	Bone Screw 40mm	1.00	Each
4	**Modular Bipolar Hip Replacement (Cemented)**		
4.01	Femoral Cemented Stem	1.00	Each
4.02	Modular Femoral Head	1.00	Each
4.03	Bipolar Monoblock Cup	1.00	Each
5	**Modular Bipolar Hip Replacement (Uncemented)**		
5.01	Modular Femoral Head	1.00	Each
5.02	Uncemented Stem	1.00	Each
5.03	Bipolar Monoblock Head	1.00	Each
6	**Fracture specific Titanium Locking Plates /Nails -PHILOS - Proximal Humeral Plate**		
6.01	PHILOS long -Proximal Diaphyseal Humeral Plate 3 holes	1.00	Each
6.02	PHILOS long -Proximal Diaphyseal Humeral Plate 4 holes	1.00	Each
6.03	PHILOS long -Proximal Diaphyseal Humeral Plate 5 holes	1.00	Each
6.04	PHILOS long -Proximal Diaphyseal Humeral Plate 6 holes	1.00	Each
6.05	PHILOS long -Proximal Diaphyseal Humeral Plate 7 holes	1.00	Each
6.06	PHILOS long -Proximal Diaphyseal Humeral Plate 8 holes	1.00	Each
6.07	PHILOS long -Proximal Diaphyseal Humeral Plate 9 holes	1.00	Each
6.08	PHILOS long -Proximal Diaphyseal Humeral Plate 10 holes	1.00	Each
6.09	PHILOS long -Proximal Diaphyseal Humeral Plate 11 holes	1.00	Each
6.1	PHILOS long -Proximal Diaphyseal Humeral Plate 12 holes	1.00	Each
6.11	PHILOS long -Proximal Diaphyseal Humeral Plate 13 holes	1.00	Each

6.12	Locking Screw - Diameter 3.5 mm, Length 12 -60 mm, self tapping	1.00	Each
7	**Fracture specific Titanium Locking Plates /Nails - 3.5 mm Medial Distal Humerus Plate**		
7.01	3.5 mm Medial Distal Humerus Plate -Right and Left - 3 combi holes	1.00	Each
7.02	3.5 mm Medial Distal Humerus Plate -Right and Left - 5 combi holes	1.00	Each
7.03	3.5 mm Medial Distal Humerus Plate -Right and Left - 7 combi holes	1.00	Each
7.04	3.5 mm Medial Distal Humerus Plate -Right and Left - 9 combi holes	1.00	Each
7.05	3.5 mm Medial Distal Humerus Plate -Right and Left - 14 combi holes	1.00	Each
7.06	3.5 mm Locking Screws 10 - 40 mm, self tapping	1.00	Each
7.07	3.5 mm Cortical Screws 10 - 40 mm, self tapping	1.00	Each
7.08	4 mm Cancellous Bone Screws, Short Thread 20 -50 mm	1.00	Each
7.09	2.7 mm Locking Screws 10 -60 mm (2mm increment)	1.00	Each
7.1	2.4 mm Locking Screws 10 40 mm (2mm increment)	1.00	Each
8	**Fracture specific Titanium Locking Plates /Nails - 3.5 mm Extra -Articular Distal Humerus Plate -Right and Left**		
8.01	3.5 mm Extra -Articular Distal Humerus Plate -Right and Left - 6 combi holes	1.00	Each
8.02	3.5 mm Extra -Articular Distal Humerus Plate -Right and Left - 8 combi holes	1.00	Each
8.03	3.5 mm Extra -Articular Distal Humerus Plate -Right and Left - 10 combi holes	1.00	Each
8.04	3.5 mm Locking Screws 10 -40 mm, self tapping	1.00	Each
8.05	3.5 mm Cortical Screws 10 -40 mm, self tapping	1.00	Each
8.06	4 mm Cancellous Bone Screws, Short Thread 20 -50 mm	1.00	Each
8.07	2.7 mm Locking Screws 10 -60 mm (2mm increment)	1.00	Each
8.08	2.4 mm Locking Screws 10 -40 mm (2mm increment)	1.00	Each
9	**Fracture specific Titanium Locking Plates /Nails - LCP Distal Tibial Plate 2.7 /3.5, media (Right /Left)**		
9.01	LCP Distal Tibial Plate 2.7/3.5, medial (Right /Left) - 4 holes	1.00	Each
9.02	LCP Distal Tibial Plate 2.7/3.5, medial (Right /Left) - 5 holes	1.00	Each
9.03	LCP Distal Tibial Plate 2.7/3.5, medial (Right /Left) - 6 holes	1.00	Each
9.04	LCP Distal Tibial Plate 2.7/3.5, medial (Right /Left) - 7 holes	1.00	Each
9.05	LCP Distal Tibial Plate 2.7/3.5, medial (Right /Left) - 8 holes	1.00	Each
9.06	LCP Distal Tibial Plate 2.7/3.5, medial (Right /Left) - 9 holes	1.00	Each

9.07	LCP Distal Tibial Plate 2.7/3.5, medial (Right /Left) - 10 holes	1.00	Each
9.08	LCP Distal Tibial Plate 2.7/3.5, medial (Right /Left) - 11 holes	1.00	Each
9.09	LCP Distal Tibial Plate 2.7/3.5, medial (Right /Left) - 12 holes	1.00	Each
9.1	LCP Distal Tibial Plate 2.7/3.5, medial (Right /Left) - 13 holes	1.00	Each
9.11	LCP Distal Tibial Plate 2.7/3.5, medial (Right /Left) - 14 holes	1.00	Each
9.12	Cortex Screws 2.7 mm, 10 -60 mm, self tapping	1.00	Each
9.13	Cortex Screws 3.5 mm, 10 -60 mm, self tapping	1.00	Each
10	**Fracture specific Titanium Locking Plates /Nails - 4.5 mm LCP Proximal Tibial Plate (Right /Left)**		
10.01	4.5 mm LCP Proximal Tibial Plate (Right /Left) -4 holes	1.00	Each
10.02	4.5 mm LCP Proximal Tibial Plate (Right /Left) -5 holes	1.00	Each
10.03	4.5 mm LCP Proximal Tibial Plate (Right /Left) -6 holes	1.00	Each
10.04	4.5 mm LCP Proximal Tibial Plate (Right /Left) -7 holes	1.00	Each
10.05	4.5 mm LCP Proximal Tibial Plate (Right /Left) -8 holes	1.00	Each
10.06	4.5 mm LCP Proximal Tibial Plate (Right /Left) -9 holes	1.00	Each
10.07	4.5 mm LCP Proximal Tibial Plate (Right /Left) -10 holes	1.00	Each
10.08	4.5 mm LCP Proximal Tibial Plate (Right /Left) -11 holes	1.00	Each
10.09	4.5 mm LCP Proximal Tibial Plate (Right /Left) -12 holes	1.00	Each
10.1	4.5 mm LCP Proximal Tibial Plate (Right /Left) -13 holes	1.00	Each
10.11	4.5 mm LCP Proximal Tibial Plate (Right /Left) -14 holes	1.00	Each
10.12	4.5 mm Cortex Screws, 10 -60 mm, self tapping (2mm increment)	1.00	Each
10.13	5 mm Locking Screws, 14 -90 mm, self tapping (2mm increment)	1.00	Each
11	**Fracture specific Titanium Locking Plates /Nails -3.5 mm Medial Proximal Plate (Right /Left)**		
11.01	3.5 mm Medial Proximal Plate (Right /Left) -4 combi holes	1.00	Each
11.02	3.5 mm Medial Proximal Plate (Right /Left) -5 combi holes	1.00	Each
11.03	3.5 mm Medial Proximal Plate (Right /Left) -6 combi holes	1.00	Each
11.04	3.5 mm Medial Proximal Plate (Right /Left) -7 combi holes	1.00	Each
11.05	3.5 mm Medial Proximal Plate (Right /Left) -8 combi holes	1.00	Each
11.06	3.5 mm Medial Proximal Plate (Right /Left) -9 combi holes	1.00	Each
11.07	3.5 mm Medial Proximal Plate (Right /Left) -10 combi holes	1.00	Each
11.08	3.5 mm Medial Proximal Plate (Right /Left) -11 combi holes	1.00	Each
11.09	3.5 mm Medial Proximal Plate (Right /Left) -12 combi holes	1.00	Each
11.1	3.5 mm Medial Proximal Plate (Right /Left) -13 combi holes	1.00	Each
11.11	3.5 mm Medial Proximal Plate (Right /Left) -14 combi holes	1.00	Each
11.12	3.5 mm Medial Proximal Plate (Right /Left) -15 combi holes	1.00	Each
11.13	3.5 mm Medial Proximal Plate (Right /Left) -16 combi holes	1.00	Each
11.14	3.5 mm Medial Proximal Plate (Right /Left) -17 combi holes	1.00	Each
11.15	3.5 mm Medial Proximal Plate (Right /Left) -18 combi holes	1.00	Each
11.16	3.5 mm Medial Proximal Plate (Right /Left) -19 combi holes	1.00	Each

11.17	3.5 mm Medial Proximal Plate (Right /Left) -20 combi holes	1.00	Each
11.18	3.5 mm Cortex Screws, 14 -70 mm, self tapping (2mm increment)	1.00	Each
11.19	3.5 mm Locking Screws, 65 -95 mm, self tapping (5mm increment)	1.00	Each
12	**Fracture specific Titanium Locking Plates /Nails - LCP Distal Femur Plate (Right /Left)**		
12.01	LCP Distal Femur Plate (Right /Left) - 5 holes	1.00	Each
12.02	LCP Distal Femur Plate (Right /Left) - 6 holes	1.00	Each
12.03	LCP Distal Femur Plate (Right /Left) - 7 holes	1.00	Each
12.04	LCP Distal Femur Plate (Right /Left) - 8 holes	1.00	Each
12.05	LCP Distal Femur Plate (Right /Left) - 9 holes	1.00	Each
12.06	LCP Distal Femur Plate (Right /Left) - 10 holes	1.00	Each
12.07	LCP Distal Femur Plate (Right /Left) - 11 holes	1.00	Each
12.08	LCP Distal Femur Plate (Right /Left) - 12 holes	1.00	Each
12.09	LCP Distal Femur Plate (Right /Left) - 13 holes	1.00	Each
12.1	4.5 mm Cortex Screws, 18 -60 mm, self tapping (5mm increment)	1.00	Each
12.11	4.5 mm Locking Screws, 18 -85 mm, self tapping	1.00	Each
13	**Fracture specific Titanium Locking Plates /Nails - LCP Volar Distal Radius Plates (Right /Left)**		
13.01	LCP Volar Distal Radius Plates (Right /Left) -4 hole head, 3 hole shaft	1.00	Each
13.02	LCP Volar Distal Radius Plates (Right /Left) -4 hole head, 4 hole shaft	1.00	Each
13.03	LCP Volar Distal Radius Plates (Right /Left) -4 hole head, 5 hole shaft	1.00	Each
13.04	LCP Volar Distal Radius Plates (Right /Left) -5 hole head, 3 hole shaft	1.00	Each
13.05	LCP Volar Distal Radius Plates (Right /Left) -5 hole head, 4 hole shaft	1.00	Each
13.06	LCP Volar Distal Radius Plates (Right /Left) -5 hole head, 5 hole shaft	1.00	Each
13.07	2.4 mm Locking Screws, 6 to 30 mm, self tapping (2mm increment)	1.00	Each
13.08	2.4 mm Cortex Screws, 6 to 30 mm, self tapping (2mm increment)	1.00	Each
14	**Fracture specific Titanium Locking Plates /Nails - ACF Plate (Diff. 1.0mm)**		
14.01	ACF Plate 5mm	1.00	Each
14.02	ACF Plate 6mm	1.00	Each
14.03	ACF Plate 7mm	1.00	Each
14.04	ACF Plate 8mm	1.00	Each
14.05	ACF Plate 9mm	1.00	Each
14.06	ACF Plate 10mm	1.00	Each
14.07	ACF Plate 11mm	1.00	Each
14.08	ACF Plate 12mm	1.00	Each

14.09	SCF Screw 10 mm to 24 mm (Difference 2.0 mm)	1.00	Each
15	**Fracture specific Titanium Locking Plates /Nails - Cervical Plate (Diff. 2.5 mm)**		
15.01	20 mm size	1.00	Each
15.02	22.5 mm size	1.00	Each
15.03	25 mm size	1.00	Each
15.04	27.5 mm size	1.00	Each
15.05	30 mm size	1.00	Each
15.06	32.5 mm size	1.00	Each
15.07	35 mm size	1.00	Each
15.08	37.5 mm size	1.00	Each
15.09	40 mm size	1.00	Each
15.1	42.5 mm size	1.00	Each
15.11	45 mm size	1.00	Each
15.12	47.5 mm size	1.00	Each
15.13	50 mm size	1.00	Each
15.14	52.5 mm size	1.00	Each
15.15	55 mm size	1.00	Each
15.16	57.5 mm size	1.00	Each
15.17	60 mm size	1.00	Each
15.18	62.5 mm size	1.00	Each
15.19	65 mm size	1.00	Each
15.2	67.5 mm size	1.00	Each
15.21	70 mm size	1.00	Each
15.22	72.5 mm size	1.00	Each
15.23	75 mm size	1.00	Each
15.24	77.5 mm size	1.00	Each
15.25	80 mm size	1.00	Each
15.26	82.5 mm size	1.00	Each
15.27	85 mm size	1.00	Each
15.28	87.5 mm size	1.00	Each
15.29	90 mm size	1.00	Each
15.3	92.5 mm size	1.00	Each
15.31	95 mm size	1.00	Each
15.32	97.5 mm size	1.00	Each
15.33	100 mm size	1.00	Each
15.34	102.5 mm size	1.00	Each
15.35	105 mm size	1.00	Each
15.36	107.5 mm size	1.00	Each
15.37	110 mm size	1.00	Each
15.38	Cervical Screw 4 mm and 4.3 mm - 8 mm to 20 mm (Difference 2 mm)	1.00	Each
16	**Fracture specific Titanium Locking Plates /Nails - Reconstruction Plates**		
16.01	Reconstruction Plates - 4 combi holes	1.00	Each
16.02	Reconstruction Plates - 5 combi holes	1.00	Each
16.03	Reconstruction Plates - 6 combi holes	1.00	Each

16.04	Reconstruction Plates - 7 combi holes	1.00	Each
16.05	Reconstruction Plates - 8 combi holes	1.00	Each
16.06	Reconstruction Plates - 9 combi holes	1.00	Each
16.07	Reconstruction Plates - 10 combi holes	1.00	Each
16.08	Reconstruction Plates - 11 combi holes	1.00	Each
16.09	3.5 mm Locking Screws, 10 mm to 30 mm, self tapping (2mm increment)	1.00	Each
16.1	3.5 mm Cortex Screws, 10 mm to 30 mm, self tapping (2mm increment)	1.00	Each
17	**Proximal Femoral Nail (Right /Left) Titanium**		
17.01	Diameter -9mm; Length -170mm;	1.00	Each
17.02	Diameter -9mm; Length -200mm;	1.00	Each
17.03	Diameter -9mm; Length -240mm;	1.00	Each
17.04	Diameter -10mm; Length -170mm;	1.00	Each
17.05	Diameter -10mm; Length -200mm;	1.00	Each
17.06	Diameter -10mm; Length -240mm;	1.00	Each
17.07	Diameter -11mm; Length -170mm;	1.00	Each
17.08	Diameter -11mm; Length -200mm;	1.00	Each
17.09	Diameter -11mm; Length -240mm;	1.00	Each
17.1	Diameter -12mm; Length -170mm;	1.00	Each
17.11	Diameter -12mm; Length -200mm;	1.00	Each
17.12	Diameter -12mm; Length -240mm;	1.00	Each
17.13	PFN Blade 75mm	1.00	Each
17.14	PFN Blade 80mm	1.00	Each
17.15	PFN Blade 85mm	1.00	Each
17.16	PFN Blade 90mm	1.00	Each
17.17	PFN Blade 95mm	1.00	Each
17.18	PFN Blade 100mm	1.00	Each
17.19	PFN Blade 105mm	1.00	Each
17.2	PFN Blade 110mm	1.00	Each
17.21	PFN Blade 115mm	1.00	Each
17.22	PFN Blade 120mm	1.00	Each
17.23	PFN End Caps 0.5 mm	1.00	Each
17.24	PFN End Caps 10 mm	1.00	Each
17.25	PFN End Caps 15 mm	1.00	Each
17.26	4.9mm Locking Bolts 26 mm	1.00	Each
17.27	4.9mm Locking Bolts 28mm	1.00	Each
17.28	4.9mm Locking Bolts 30mm	1.00	Each
17.29	4.9mm Locking Bolts 32mm	1.00	Each
17.3	4.9mm Locking Bolts 34mm	1.00	Each
17.31	4.9mm Locking Bolts 36mm	1.00	Each
17.32	4.9mm Locking Bolts 38mm	1.00	Each
17.33	4.9mm Locking Bolts 40mm	1.00	Each
17.34	4.9mm Locking Bolts 42mm	1.00	Each
17.35	4.9mm Locking Bolts 44mm	1.00	Each
17.36	4.9mm Locking Bolts 46mm	1.00	Each
17.37	4.9mm Locking Bolts 48mm	1.00	Each

17.38	4.9mm Locking Bolts 50mm	1.00	Each
17.39	4.9mm Locking Bolts 52mm	1.00	Each
17.4	4.9mm Locking Bolts 54mm	1.00	Each
17.41	4.9mm Locking Bolts 56mm	1.00	Each
17.42	4.9mm Locking Bolts 58mm	1.00	Each
17.43	4.9mm Locking Bolts 60mm	1.00	Each
17.44	4.9mm Locking Bolts 62mm	1.00	Each
17.45	4.9mm Locking Bolts 64mm	1.00	Each
17.46	4.9mm Locking Bolts 66mm	1.00	Each
17.47	4.9mm Locking Bolts 68mm	1.00	Each
17.48	4.9mm Locking Bolts 70mm	1.00	Each
17.49	4.9mm Locking Bolts 72mm	1.00	Each
17.5	4.9mm Locking Bolts 74mm	1.00	Each
17.51	4.9mm Locking Bolts 76mm	1.00	Each
17.52	4.9mm Locking Bolts 78mm	1.00	Each
17.53	4.9mm Locking Bolts 80mm	1.00	Each
17.54	4.9mm Locking Bolts 82mm	1.00	Each
17.55	4.9mm Locking Bolts 84mm	1.00	Each
17.56	4.9mm Locking Bolts 86mm	1.00	Each
17.57	4.9mm Locking Bolts 88mm	1.00	Each
17.58	4.9mm Locking Bolts 90mm	1.00	Each
17.59	4.9mm Locking Bolts 92mm	1.00	Each
17.6	4.9mm Locking Bolts 94mm	1.00	Each
17.61	4.9mm Locking Bolts 96mm	1.00	Each
17.62	4.9mm Locking Bolts 98mm	1.00	Each
18	**DHS (Titanium) Long & Short Barrel -135 degres**		
18.01	Long Barrel -2 combi holes	1.00	Each
18.02	Long Barrel -3 combi holes	1.00	Each
18.03	Long Barrel -4 combi holes	1.00	Each
18.04	Long Barrel -5 combi holes	1.00	Each
18.05	Long Barrel -6 combi holes	1.00	Each
18.06	Long Barrel -8 combi holes	1.00	Each
18.07	Long Barrel -10 combi holes	1.00	Each
18.08	Long Barrel -12 combi holes	1.00	Each
18.09	Long Barrel -14 combi holes	1.00	Each
18.1	Long Barrel -16 combi holes	1.00	Each
18.11	Long Barrel -18 combi holes	1.00	Each
18.12	Long Barrel -20 combi holes	1.00	Each
18.13	Short Barrel -2 combi holes	1.00	Each
18.14	Short Barrel -3 combi holes	1.00	Each
18.15	Short Barrel -4 combi holes	1.00	Each
18.16	Short Barrel -5 combi holes	1.00	Each
18.17	Short Barrel -6 combi holes	1.00	Each
18.18	DHS Lag Screw -50 mm	1.00	Each
18.19	DHS Lag Screw -55 mm	1.00	Each
18.2	DHS Lag Screw -60 mm	1.00	Each
18.21	DHS Lag Screw -65 mm	1.00	Each

18.22	DHS Lag Screw -70 mm	1.00	Each
18.23	DHS Lag Screw -75 mm	1.00	Each
18.24	DHS Lag Screw -80 mm	1.00	Each
18.25	DHS Lag Screw -85 mm	1.00	Each
18.26	DHS Lag Screw -90 mm	1.00	Each
18.27	DHS Lag Screw -95 mm	1.00	Each
18.28	DHS Lag Screw -100 mm	1.00	Each
18.29	DHS Lag Screw -105 mm	1.00	Each
18.3	DHS Lag Screw -110 mm	1.00	Each
18.31	DHS Lag Screw -115 mmm	1.00	Each
18.32	DHS Lag Screw -120 mm	1.00	Each
18.33	DHS Lag Screw -125 mm	1.00	Each
18.34	DHS Lag Screw -130 mm	1.00	Each
18.35	DHS Lag Screw -135 mm	1.00	Each
18.36	DHS Lag Screw -140 mm	1.00	Each
18.37	DHS Lag Screw -145 mm	1.00	Each
18.38	Compression Screw 36 mm	1.00	Each
18.39	4.5 Cortex Screw 20mm to 50mm, self tapping (2mm increment)	1.00	Each
18.4	5 Locking Screw 20mm to 50mm, self tapping (2mm increment)	1.00	Each
19	**Broad DCP with Locking Holes (Stainless Steel)**		
19.01	Dynamic Compression Plate 4.5mm 4 hole	1.00	Each
19.02	Dynamic Compression Plate 4.5mm 5 hole	1.00	Each
19.03	Dynamic Compression Plate 4.5mm 6 hole	1.00	Each
19.04	Dynamic Compression Plate 4.5mm 7 hole	1.00	Each
19.05	Dynamic Compression Plate 4.5mm 8 hole	1.00	Each
19.06	Dynamic Compression Plate 4.5mm 9 hole	1.00	Each
19.07	Dynamic Compression Plate 4.5mm 10 hole	1.00	Each
19.08	Dynamic Compression Plate 4.5mm 11 hole	1.00	Each
19.09	Dynamic Compression Plate 4.5mm 12 hole	1.00	Each
19.1	Dynamic Compression Plate 4.5mm 13 hole	1.00	Each
19.11	Dynamic Compression Plate 4.5mm 14 hole	1.00	Each
19.12	Dynamic Compression Plate 4.5mm 15 hole	1.00	Each
19.13	Dynamic Compression Plate 4.5mm 16 hole	1.00	Each
19.14	Dynamic Compression Plate 4.5mm 17 hole	1.00	Each
19.15	Dynamic Compression Plate 4.5mm 18 hole	1.00	Each
19.16	4.5 mm Cortical Screws 10 to 52 mm (Difference 2 mm)	1.00	Each
19.17	5 mm Locking Screws 10 to 52 mm (Difference 2 mm)	1.00	Each
20	**Broad DCP with Locking Holes (Titanium Alloy)**		
20.01	Dynamic Compression Plate 4.5mm 4 hole	1.00	Each
20.02	Dynamic Compression Plate 4.5mm 5 hole	1.00	Each
20.03	Dynamic Compression Plate 4.5mm 6 hole	1.00	Each
20.04	Dynamic Compression Plate 4.5mm 7 hole	1.00	Each
20.05	Dynamic Compression Plate 4.5mm 8 hole	1.00	Each
20.06	Dynamic Compression Plate 4.5mm 9 hole	1.00	Each
20.07	Dynamic Compression Plate 4.5mm 10 hole	1.00	Each

20.08	Dynamic Compression Plate 4.5mm 11 hole	1.00	Each
20.09	Dynamic Compression Plate 4.5mm 12 hole	1.00	Each
20.1	Dynamic Compression Plate 4.5mm 13 hole	1.00	Each
20.11	Dynamic Compression Plate 4.5mm 14 hole	1.00	Each
20.12	Dynamic Compression Plate 4.5mm 15 hole	1.00	Each
20.13	Dynamic Compression Plate 4.5mm 16 hole	1.00	Each
20.14	Dynamic Compression Plate 4.5mm 17 hole	1.00	Each
20.15	Dynamic Compression Plate 4.5mm 18 hole	1.00	Each
20.16	4.5 mm Cortical Screws 10 to 52 mm (Difference 2 mm)	1.00	Each
20.17	5 mm Locking Screws 10 to 52 mm (Difference 2 mm)	1.00	Each
21	**ACL Reconstruction**		
21.01	ACL Repair Implants: Stainless Steel Cannulated Interference Screw; Diameter: 7; L 20	1.00	Each
21.02	ACL Repair Implants: Stainless Steel Cannulated Interference Screw; Diameter: 7; L 25	1.00	Each
21.03	ACL Repair Implants: Stainless Steel Cannulated Interference Screw; Diameter: 7; L 30	1.00	Each
21.04	ACL Repair Implants: Stainless Steel Cannulated Interference Screw; Diameter: 8; L 20	1.00	Each
21.05	ACL Repair Implants: Stainless Steel Cannulated Interference Screw; Diameter: 8; L 25	1.00	Each
21.06	ACL Repair Implants: Stainless Steel Cannulated Interference Screw; Diameter: 8; L 30	1.00	Each
21.07	ACL Repair Implants: Stainless Steel Cannulated Interference Screw; Diameter: 9; L 20	1.00	Each
21.08	ACL Repair Implants: Stainless Steel Cannulated Interference Screw; Diameter: 9; L 25	1.00	Each
21.09	ACL Repair Implants: Stainless Steel Cannulated Interference Screw; Diameter: 9; L 30	1.00	Each
21.1	ACL Repair Implants: Stainless Steel Cannulated Interference Screw; Diameter: 10; L 20	1.00	Each
21.11	ACL Repair Implants: Stainless Steel Cannulated Interference Screw; Diameter: 10; L 25	1.00	Each
21.12	ACL Repair Implants: Stainless Steel Cannulated Interference Screw; Diameter: 10; L 30	1.00	Each
21.13	ACL Repair Implants: Ttanium Cannulated Interference Screw; Diameter: 7; L 20	1.00	Each
21.14	ACL Repair Implants: Ttanium Cannulated Interference Screw; Diameter: 7; L 25	1.00	Each
21.15	ACL Repair Implants: Ttanium Cannulated Interference Screw; Diameter: 7; L 30	1.00	Each
21.16	ACL Repair Implants: TtaniumCannulated Interference Screw; Diameter: 8; L 20	1.00	Each
21.17	ACL Repair Implants: TtaniumCannulated Interference Screw; Diameter: 8; L 25	1.00	Each
21.18	ACL Repair Implants: Ttanium Cannulated Interference Screw; Diameter: 8; L 30	1.00	Each

21.19	ACL Repair Implants: Ttanium Cannulated Interference Screw; Diameter: 9; L 20	1.00	Each
21.2	ACL Repair Implants: Ttanium Cannulated Interference Screw; Diameter: 9; L 25	1.00	Each
21.21	ACL Repair Implants: Ttanium Cannulated Interference Screw; Diameter: 9; L 30	1.00	Each
21.22	ACL Repair Implants: Ttanium Cannulated Interference Screw; Diameter: 10; L 20	1.00	Each
21.23	ACL Repair Implants: Ttanium Cannulated Interference Screw; Diameter: 10; L 25	1.00	Each
21.24	ACL Repair Implants: Ttanium Cannulated Interference Screw; Diameter: 10; L 30	1.00	Each
21.25	ACL Repair Implants: Bioabsorbable Cannulated Interference Screw; Diameter: 7; L 20	1.00	Each
21.26	ACL Repair Implants: Bioabsorbable Cannulated Interference Screw; Diameter: 7; L 25	1.00	Each
21.27	ACL Repair Implants: Bioabsorbable Cannulated Interference Screw; Diameter: 7; L 30	1.00	Each
21.28	ACL Repair Implants: Bioabsorbable Interference Screw; Diameter: 8; L 20	1.00	Each
21.29	ACL Repair Implants: Bioabsorbable Interference Screw; Diameter: 8; L 25	1.00	Each
21.3	ACL Repair Implants: Bioabsorbable Cannulated Interference Screw; Diameter: 8; L 30	1.00	Each
21.31	ACL Repair Implants: Bioabsorbable Cannulated Interference Screw; Diameter: 9; L 20	1.00	Each
21.32	ACL Repair Implants: Bioabsorbable Cannulated Interference Screw; Diameter: 9; L 25	1.00	Each
21.33	ACL Repair Implants: Bioabsorbable Cannulated Interference Screw; Diameter: 9; L 30	1.00	Each
21.34	ACL Repair Implants: Bioabsorbable Cannulated Interference Screw; Diameter: 10; L 20	1.00	Each
21.35	ACL Repair Implants: Bioabsorbable Cannulated Interference Screw; Diameter: 10; L 25	1.00	Each
21.36	ACL Repair Implants: Bioabsorbable Cannulated Interference Screw; Diameter: 10; L 30	1.00	Each
21.37	ACL Repair Implants: Bioabsorbable Cannulated Interference Screw; Diameter: 11; L 20	1.00	Each
21.38	ACL Repair Implants: Bioabsorbable Cannulated Interference Screw; Diameter: 11; L 25	1.00	Each
21.39	ACL Repair Implants: Bioabsorbable Cannulated Interference Screw; Diameter: 11; L 30	1.00	Each
21.4	ACL Reconstruction Button along with loop and preloaded with passing suture, L -15	1.00	Each
21.41	ACL Reconstruction Button along with loop and preloaded with passing suture, L -20	1.00	Each

21.42	ACL Reconstruction Button along with loop and preloaded with passing suture, L -25	1.00	Each
21.43	ACL Reconstruction Button along with loop and preloaded with passing suture, L -30	1.00	Each
21.44	ACL Reconstruction Button along with loop and preloaded with passing suture, L -35	1.00	Each
22	**Suture Anchors**		
22.01	Titanium 2.8 mm with pre loaded suture	1.00	Each
22.02	Titanium 3.5 mm with pre loaded suture	1.00	Each
22.03	Titanium 5 mm with pre loaded suture	1.00	Each
22.04	Titanium 6.5 mm with pre loaded suture	1.00	Each
22.05	Absorbable 5.0 mm with pre loaded suture	1.00	Each
22.06	Absorbable 6.0 mm with pre loaded suture	1.00	Each
23	**Pedicle Screw Rod System -Thoraco -Lumbarspine fractures and lumbar spinal fusions (Titanium)**		
23.01	Mono Axial and Poly Axial Pedical Screw -Diameter 4; Length 20	1.00	Each
23.02	Mono Axial and Poly Axial Pedical Screw -Diameter 4; Length 25	1.00	Each
23.03	Mono Axial and Poly Axial Pedical Screw -Diameter 4; Length 30	1.00	Each
23.04	Mono Axial and Poly Axial Pedical Screw -Diameter 4; Length 35	1.00	Each
23.05	Mono Axial and Poly Axial Pedical Screw -Diameter 4; Length 40	1.00	Each
23.06	Mono Axial and Poly Axial Pedical Screw -Diameter 4; Length 45	1.00	Each
23.07	Mono Axial and Poly Axial Pedical Screw -Diameter 4; Length 50	1.00	Each
23.08	Mono Axial and Poly Axial Pedical Screw -Diameter 4; Length 55	1.00	Each
23.09	Mono Axial and Poly Axial Pedical Screw -Diameter 4; Length 60	1.00	Each
23.1	Mono Axial and Poly Axial Pedical Screw -Diameter 4.5; Length 20	1.00	Each
23.11	Mono Axial and Poly Axial Pedical Screw -Diameter 4.5; Length 25	1.00	Each
23.12	Mono Axial and Poly Axial Pedical Screw -Diameter 4.5; Length 30	1.00	Each
23.13	Mono Axial and Poly Axial Pedical Screw -Diameter 4.5; Length 35	1.00	Each
23.14	Mono Axial and Poly Axial Pedical Screw -Diameter 4.5; Length 40	1.00	Each
23.15	Mono Axial and Poly Axial Pedical Screw -Diameter 4.5; Length 45	1.00	Each
23.16	Mono Axial and Poly Axial Pedical Screw -Diameter 4.5; Length 50	1.00	Each

23.17	Mono Axial and Poly Axial Pedical Screw -Diameter 4.5; Length 55	1.00	Each
23.18	Mono Axial and Poly Axial Pedical Screw -Diameter 4.5; Length 60	1.00	Each
23.19	Mono Axial and Poly Axial Pedical Screw -Diameter 5; Length 20	1.00	Each
23.2	Mono Axial and Poly Axial Pedical Screw -Diameter 5; Length 25	1.00	Each
23.21	Mono Axial and Poly Axial Pedical Screw -Diameter 5; Length 30	1.00	Each
23.22	Mono Axial and Poly Axial Pedical Screw -Diameter 5; Length 35	1.00	Each
23.23	Mono Axial and Poly Axial Pedical Screw -Diameter 5; Length 40	1.00	Each
23.24	Mono Axial and Poly Axial Pedical Screw -Diameter 5; Length 45	1.00	Each
23.25	Mono Axial and Poly Axial Pedical Screw -Diameter 5; Length 50	1.00	Each
23.26	Mono Axial and Poly Axial Pedical Screw -Diameter 5; Length 55	1.00	Each
23.27	Mono Axial and Poly Axial Pedical Screw -Diameter 5; Length 60	1.00	Each
23.28	Mono Axial and Poly Axial Pedical Screw -Diameter 5.5; Length 20	1.00	Each
23.29	Mono Axial and Poly Axial Pedical Screw -Diameter 5.5; Length 25	1.00	Each
23.3	Mono Axial and Poly Axial Pedical Screw -Diameter 5.5; Length 30	1.00	Each
23.31	Mono Axial and Poly Axial Pedical Screw -Diameter 5.5; Length 35	1.00	Each
23.32	Mono Axial and Poly Axial Pedical Screw -Diameter 5.5; Length 40	1.00	Each
23.33	Mono Axial and Poly Axial Pedical Screw -Diameter 5.5; Length 45	1.00	Each
23.34	Mono Axial and Poly Axial Pedical Screw -Diameter 5.5; Length 50	1.00	Each
23.35	Mono Axial and Poly Axial Pedical Screw -Diameter .55; Length 55	1.00	Each
23.36	Mono Axial and Poly Axial Pedical Screw -Diameter 5.5; Length 60	1.00	Each
23.37	Mono Axial and Poly Axial Pedical Screw -Diameter 6; Length 20	1.00	Each
23.38	Mono Axial and Poly Axial Pedical Screw -Diameter 6; Length 25	1.00	Each
23.39	Mono Axial and Poly Axial Pedical Screw -Diameter 6; Length 30	1.00	Each

23.4	Mono Axial and Poly Axial Pedical Screw -Diameter 6; Length 35	1.00	Each
23.41	Mono Axial and Poly Axial Pedical Screw -Diameter 6; Length 40	1.00	Each
23.42	Mono Axial and Poly Axial Pedical Screw -Diameter 6; Length 45	1.00	Each
23.43	Mono Axial and Poly Axial Pedical Screw -Diameter 6; Length 50	1.00	Each
23.44	Mono Axial and Poly Axial Pedical Screw -Diameter .6; Length 55	1.00	Each
23.45	Mono Axial and Poly Axial Pedical Screw -Diameter 6; Length 60	1.00	Each
23.46	Mono Axial and Poly Axial Pedical Screw -Diameter 6.5; Length 20	1.00	Each
23.47	Mono Axial and Poly Axial Pedical Screw -Diameter 6.5; Length 25	1.00	Each
23.48	Mono Axial and Poly Axial Pedical Screw -Diameter 6.5; Length 30	1.00	Each
23.49	Mono Axial and Poly Axial Pedical Screw -Diameter 6.5; Length 35	1.00	Each
23.5	Mono Axial and Poly Axial Pedical Screw -Diameter 6.5; Length 40	1.00	Each
23.51	Mono Axial and Poly Axial Pedical Screw -Diameter 6.5; Length 45	1.00	Each
23.52	Mono Axial and Poly Axial Pedical Screw -Diameter 6.5; Length 50	1.00	Each
23.53	Mono Axial and Poly Axial Pedical Screw -Diameter .6.5; Length 55	1.00	Each
23.54	Mono Axial and Poly Axial Pedical Screw -Diameter 6.5; Length 60	1.00	Each
23.55	Mono Axial and Poly Axial Pedical Screw -Diameter 7; Length 20	1.00	Each
23.56	Mono Axial and Poly Axial Pedical Screw -Diameter 7; Length 25	1.00	Each
23.57	Mono Axial and Poly Axial Pedical Screw -Diameter 7; Length 30	1.00	Each
23.58	Mono Axial and Poly Axial Pedical Screw -Diameter 7; Length 35	1.00	Each
23.59	Mono Axial and Poly Axial Pedical Screw -Diameter 7; Length 40	1.00	Each
23.6	Mono Axial and Poly Axial Pedical Screw -Diameter 7; Length 45	1.00	Each
23.61	Mono Axial and Poly Axial Pedical Screw -Diameter 7; Length 50	1.00	Each
23.62	Mono Axial and Poly Axial Pedical Screw -Diameter 7; Length 60	1.00	Each

23.63	Mono Axial and Poly Axial Pedical Screw -Diameter 7; Length 60	1.00	Each
23.64	Mono Axial and Poly Axial Pedical Screw -Diameter 7.5; Length 20	1.00	Each
23.65	Mono Axial and Poly Axial Pedical Screw -Diameter 7.5; Length 25	1.00	Each
23.66	Mono Axial and Poly Axial Pedical Screw -Diameter 7.5; Length 30	1.00	Each
23.67	Mono Axial and Poly Axial Pedical Screw -Diameter 7.5; Length 35	1.00	Each
23.68	Mono Axial and Poly Axial Pedical Screw -Diameter 7.5; Length 40	1.00	Each
23.69	Mono Axial and Poly Axial Pedical Screw -Diameter 7.5; Length 45	1.00	Each
23.7	Mono Axial and Poly Axial Pedical Screw -Diameter 7.5; Length 50	1.00	Each
23.71	Mono Axial and Poly Axial Pedical Screw -Diameter 7.5; Length 60	1.00	Each
23.72	Connecting Rod 5.5 mm (Round or Hex Head)	1.00	Each
23.73	Connecting Rod 40	1.00	Each
23.74	Connecting Rod 50	1.00	Each
23.75	Connecting Rod 60	1.00	Each
23.76	Connecting Rod 70	1.00	Each
23.77	Connecting Rod 80	1.00	Each
23.78	Connecting Rod 90	1.00	Each
23.79	Connecting Rod 100	1.00	Each
23.8	Connecting Rod 110	1.00	Each
23.81	Connecting Rod 120	1.00	Each
23.82	Connecting Rod 130	1.00	Each
23.83	Connecting Rod 140	1.00	Each
23.84	Connecting Rod 150	1.00	Each
23.85	Connecting Rod 160	1.00	Each
23.86	Connecting Rod 170	1.00	Each
23.87	Connecting Rod 180	1.00	Each
23.88	Connecting Rod 190	1.00	Each
23.89	Connecting Rod 200	1.00	Each
23.9	Connecting Rod 210	1.00	Each
23.91	Connecting Rod 220	1.00	Each
23.92	Connecting Rod 230	1.00	Each
23.93	Connecting Rod 240	1.00	Each
23.94	Connecting Rod 250	1.00	Each
23.95	Connecting Rod 260	1.00	Each
23.96	Connecting Rod 270	1.00	Each
23.97	Connecting Rod 280	1.00	Each
23.98	Connecting Rod 290	1.00	Each
23.99	Connecting Rod 300	1.00	Each
24	Connecting Rod 310	1.00	Each

24.01	Connecting Rod 320	1.00	Each
24.02	Connecting Rod 330	1.00	Each
24.03	Connecting Rod 340	1.00	Each
24.04	Connecting Rod 350	1.00	Each
24.05	Connecting Rod 360	1.00	Each
24.06	Connecting Rod 370	1.00	Each
24.07	Connecting Rod 380	1.00	Each
24.08	Connecting Rod 390	1.00	Each
24.09	Connecting Rod 400	1.00	Each
25	**Clavical Plates**		
25.01	3.5mm Clavicle plates (Right/Left) Titanium - 6 combi holes	1.00	Each
25.02	3.5mm Clavicle plates (Right/Left) Titanium - 7combi holes	1.00	Each
25.03	3.5mm Clavicle plates (Right/Left) Titanium - 8 combi holes	1.00	Each
25.04	3.5mm locking screws - 8mm to 22mm, self-tapping (2mm increments)	1.00	Each
25.05	3.5mm cortex screws - 8mm to 22mm, self-tapping (2mm increments)	1.00	Each
26	**DCS Plate (Titanium) - 95 Degree BarredAngle**		
26.01	DCS -6 holes	1.00	Each
26.02	DCS -8 holes	1.00	Each
26.03	DCS -10 holes	1.00	Each
26.04	DCS -12 holes	1.00	Each
26.05	DCS -14 holes	1.00	Each
26.06	DCS -16 holes	1.00	Each
26.07	DCS -18 holes	1.00	Each
26.08	DCS -20 holes	1.00	Each
26.09	DCS -22 holes	1.00	Each
26.1	DCS Lag Screw - 50 mm	1.00	Each
26.11	DCS Lag Screw - 55 mm	1.00	Each
26.12	DCS Lag Screw - 60 mm	1.00	Each
26.13	DCS Lag Screw - 65 mm	1.00	Each
26.14	DCS Lag Screw - 70 mm	1.00	Each
26.15	DCS Lag Screw - 75 mm	1.00	Each
26.16	DCS Lag Screw - 80 mm	1.00	Each
26.17	DCS Lag Screw - 85 mm	1.00	Each
26.18	DCS Lag Screw - 90 mm	1.00	Each
26.19	DCS Lag Screw - 95 mm	1.00	Each
26.2	DCS Lag Screw - 100 mm	1.00	Each
26.21	DCS Lag Screw - 105 mm	1.00	Each
26.22	DCS Lag Screw - 110 mm	1.00	Each
26.23	DCS Lag Screw - 115 mm	1.00	Each
26.24	DCS Lag Screw - 120 mm	1.00	Each
26.25	DCS Lag Screw - 125 mm	1.00	Each
26.26	DCS Lag Screw - 130 mm	1.00	Each
26.27	DCS Lag Screw - 135 mm	1.00	Each
26.28	DCS Lag Screw - 140 mm	1.00	Each
26.29	DCS Lag Screw - 145 mm	1.00	Each

26.3	Compression screw - 36mm	1.00	Each
26.31	4.5mm cortex screws - 20mm to 50mm, self-tapping (2mm increr	1.00	Each
26.32	5mm locking screws - 20mm to 50mm, self-tapping (2mm increm	1.00	Each
27	**Femoral interlocking nails (Right/Left)**		
27.01	Diameter 9 mm x Length 30 cm	1.00	Each
27.02	Diameter 9 mm x Length 32 cm	1.00	Each
27.03	Diameter 9 mm x Length 34 cm	1.00	Each
27.04	Diameter 9 mm x Length 36 cm	1.00	Each
27.05	Diameter 9 mm x Length 38cm	1.00	Each
27.06	Diameter 9 mm x Length 40 cm	1.00	Each
27.07	Diameter 9 mm x Length 42 cm	1.00	Each
27.08	Diameter 9 mm x Length 44 cm	1.00	Each
27.09	Diameter 9 mm x Length 46 cm	1.00	Each
27.1	Diameter 9 mm x Length 48 cm	1.00	Each
27.11	Diameter 9 mm x Length 50 cm	1.00	Each
27.12	Diameter 10 mm x Length 30 cm	1.00	Each
27.13	Diameter 10 mm x Length 32 cm	1.00	Each
27.14	Diameter 10 mm x Length 34 cm	1.00	Each
27.15	Diameter 10 mm x Length 36 cm	1.00	Each
27.16	Diameter 10 mm x Length 38cm	1.00	Each
27.17	Diameter 10 mm x Length 40 cm	1.00	Each
27.18	Diameter 10 mm x Length 42 cm	1.00	Each
27.19	Diameter 10 mm x Length 44 cm	1.00	Each
27.2	Diameter 10 mm x Length 46 cm	1.00	Each
27.21	Diameter 10 mm x Length 48 cm	1.00	Each
27.22	Diameter 10 mm x Length 50 cm	1.00	Each
27.23	Diameter 11 mm x Length 30 cm	1.00	Each
27.24	Diameter 11 mm x Length 32 cm	1.00	Each
27.25	Diameter 12 mm x Length 34 cm	1.00	Each
27.26	Diameter 12 mm x Length 36 cm	1.00	Each
27.27	Diameter 12 mm x Length 38cm	1.00	Each
27.28	Diameter 12 mm x Length 40 cm	1.00	Each
27.29	Diameter 12 mm x Length 42 cm	1.00	Each
27.3	Diameter 12 mm x Length 44 cm	1.00	Each
27.31	Diameter 12 mm x Length 46 cm	1.00	Each
27.32	Diameter 12 mm x Length 48 cm	1.00	Each
27.33	Diameter 12 mm x Length 50 cm	1.00	Each
27.34	Diameter 13 mm x Length 34 cm	1.00	Each
27.35	Diameter 13 mm x Length 36 cm	1.00	Each
27.36	Diameter 13 mm x Length 38cm	1.00	Each
27.37	Diameter 13 mm x Length 40 cm	1.00	Each
27.38	Diameter 13 mm x Length 42 cm	1.00	Each
27.39	Diameter 13 mm x Length 44 cm	1.00	Each
27.4	Diameter 13 mm x Length 46 cm	1.00	Each
27.41	Diameter 13 mm x Length 48 cm	1.00	Each
27.42	Diameter 13 mm x Length 50 cm	1.00	Each
27.43	5.0mm Locking Bolt 20 mm	1.00	Each

27.44	5.0mm Locking Bolt 22 mm	1.00	Each
27.45	5.0mm Locking Bolt 24 mm	1.00	Each
27.46	5.0mm Locking Bolt 26 mm	1.00	Each
27.47	5.0mm Locking Bolt 28 mm	1.00	Each
27.48	5.0mm Locking Bolt 30 mm	1.00	Each
27.49	5.0mm Locking Bolt 32 mm	1.00	Each
27.5	5.0mm Locking Bolt 34 mm	1.00	Each
27.51	5.0mm Locking Bolt 36 mm	1.00	Each
27.52	5.0mm Locking Bolt 38 mm	1.00	Each
27.53	5.0mm Locking Bolt 40 mm	1.00	Each
27.54	5.0mm Locking Bolt 42 mm	1.00	Each
27.55	5.0mm Locking Bolt 44 mm	1.00	Each
27.56	5.0mm Locking Bolt 46 mm	1.00	Each
27.57	5.0mm Locking Bolt 48 mm	1.00	Each
27.58	5.0mm Locking Bolt 50 mm	1.00	Each
27.59	5.0mm Locking Bolt 52 mm	1.00	Each
27.6	5.0mm Locking Bolt 54 mm	1.00	Each
27.61	5.0mm Locking Bolt 56 mm	1.00	Each
27.62	5.0mm Locking Bolt 58 mm	1.00	Each
27.63	5.0mm Locking Bolt 60 mm	1.00	Each
27.64	5.0mm Locking Bolt 62 mm	1.00	Each
27.65	5.0mm Locking Bolt 64 mm	1.00	Each
27.66	5.0mm Locking Bolt 66 mm	1.00	Each
27.67	5.0mm Locking Bolt 68 mm	1.00	Each
27.68	5.0mm Locking Bolt 70 mm	1.00	Each
27.69	5.0mm Locking Bolt 72 mm	1.00	Each
27.7	5.0mm Locking Bolt 74 mm	1.00	Each
27.71	5.0mm Locking Bolt 76 mm	1.00	Each
28	**Tibial interlocking nail (Right/Left)**		
28.01	Diameter 8 x Length 28 cm	1.00	Each
28.02	Diameter 8 x Length 30 cm	1.00	Each
28.03	Diameter 8 x Length 32 cm	1.00	Each
28.04	Diameter 8 x Length 34 cm	1.00	Each
28.05	Diameter 8 x Length 36 cm	1.00	Each
28.06	Diameter 8 x Length 38 cm	1.00	Each
28.07	Diameter 8 x Length 40 cm	1.00	Each
28.08	Diameter 8 x Length 42 cm	1.00	Each
28.09	Diameter 8 x Length 44 cm	1.00	Each
28.1	Diameter 8 x Length 46 cm	1.00	Each
28.11	Diameter 8 x Length 48 cm	1.00	Each
28.12	Diameter 8 x Length 50 cm	1.00	Each
28.13	Diameter 9 x Length 28 cm	1.00	Each
28.14	Diameter 9 x Length 30 cm	1.00	Each
28.15	Diameter 9 x Length 32 cm	1.00	Each
28.16	Diameter 9 x Length 34 cm	1.00	Each
28.17	Diameter 9 x Length 36 cm	1.00	Each
28.18	Diameter 9 x Length 38 cm	1.00	Each

28.19	Diameter 9 x Length 40 cm	1.00	Each
28.2	Diameter 9 x Length 42 cm	1.00	Each
28.21	Diameter 9 x Length 44 cm	1.00	Each
28.22	Diameter 9 x Length 46 cm	1.00	Each
28.23	Diameter 9 x Length 48 cm	1.00	Each
28.24	Diameter 9 x Length 50 cm	1.00	Each
28.25	Diameter 10 x Length 28 cm	1.00	Each
28.26	Diameter 10 x Length 30 cm	1.00	Each
28.27	Diameter 10 x Length 32 cm	1.00	Each
28.28	Diameter 10 x Length 34 cm	1.00	Each
28.29	Diameter 10 x Length 36 cm	1.00	Each
28.3	Diameter 10 x Length 38 cm	1.00	Each
28.31	Diameter 10 x Length 40 cm	1.00	Each
28.32	Diameter 10 x Length 42 cm	1.00	Each
28.33	Diameter 10 x Length 44 cm	1.00	Each
28.34	Diameter 10 x Length 46 cm	1.00	Each
28.35	Diameter 10 x Length 48 cm	1.00	Each
28.36	Diameter 10 x Length 50 cm	1.00	Each
28.37	Diameter 11 x Length 28 cm	1.00	Each
28.38	Diameter 11 x Length 30 cm	1.00	Each
28.39	Diameter 11 x Length 32 cm	1.00	Each
28.4	Diameter 11 x Length 34 cm	1.00	Each
28.41	Diameter 11 x Length 36 cm	1.00	Each
28.42	Diameter 11 x Length 38 cm	1.00	Each
28.43	Diameter 11 x Length 40 cm	1.00	Each
28.44	Diameter 11 x Length 42 cm	1.00	Each
28.45	Diameter 11 x Length 44 cm	1.00	Each
28.46	Diameter 11 x Length 46 cm	1.00	Each
28.47	Diameter 11 x Length 48 cm	1.00	Each
28.48	Diameter 11 x Length 50 cm	1.00	Each
28.49	Diameter 13 x Length 28 cm	1.00	Each
28.5	Diameter 13 x Length 30 cm	1.00	Each
28.51	Diameter 13 x Length 32 cm	1.00	Each
28.52	Diameter 13 x Length 34 cm	1.00	Each
28.53	Diameter 13 x Length 36 cm	1.00	Each
28.54	Diameter 13 x Length 38 cm	1.00	Each
28.55	Diameter 13 x Length 40 cm	1.00	Each
28.56	Diameter 13 x Length 42 cm	1.00	Each
28.57	Diameter 13 x Length 44 cm	1.00	Each
28.58	Diameter 13 x Length 46 cm	1.00	Each
28.59	Diameter 13 x Length 48 cm	1.00	Each
28.6	Diameter 13 x Length 50 cm	1.00	Each
29	**Bone Cement**		
29.01	Bone Cement with low viscosity, 20g	1.00	Each
29.02	Bone Cement with medium viscosity, 20g	1.00	Each
29.03	Bone Cement with high viscosity, 20g	1.00	Each
29.04	Bone Cement with low viscosity, 40g	1.00	Each

29.05	Bone Cement with medium viscosity, 40g	1.00	Each
29.06	Bone Cement with high viscosity, 40g	1.00	Each
29.07	Bone Cement with Gentamycin, low viscosity 20g	1.00	Each
29.08	Bone Cement with Gentamycin, medium viscosity 20g	1.00	Each
29.09	Bone Cement with Gentamycin, high viscosity 20g	1.00	Each
29.1	Bone Cement with Gentamycin, low viscosity 40g	1.00	Each
29.11	Bone Cement with Gentamycin, medium viscosity 40g	1.00	Each
29.12	Bone Cement with Gentamycin, high viscosity 40g	1.00	Each
29.13	Re-usable Cement Gun Set (Autoclavable)	1.00	Each
29.14	Accessories for cement gun	1.00	Each
30	**External Fixator Set**		
30.01	Tubular rod -300 mm	1.00	Each
30.02	Schanz pin 4.5 mm	1.00	Each
30.03	Universal clamp	1.00	Each
30.04	Tube to tube clamp	1.00	Each
31	**Steiman pic**		
31.01	1. 4.5 mm x 20 mm	1.00	Each

	OT Table with Split leg section fro General Surgery
Sl.No.	**Specification**
A	USFDA / ECE/ ISO /CDSCO/BIS approved
B	5 year warranty followed by 5 year CMC
C	Suitable customized storage cases for accessories/attach ments, wherever applicable, should be supplied in adequate numbers, even when not separately asked for. These should be from manufacturer of accessory only- non-customized cases from other manufacturers will not be accepted.
D	Tabulated Compliance statement should include your product's specific values/details for each pointand not merely 'yes' or 'no'
E	Institute reserves the right to have a live demo if required.
	General features
1	The quoted system should be based on electro hydraulic technology.
2	The table should either be eccentric or with central column. The table s with central column should allow sufficient motorized slide of at least 310 mm to permit full upper body imaging including the pelvis without having to move the patient (transitional facility controll ed by remote)
3	The table should be sturdy, mobile with padded divided (split leg) foot section & must have motorized control
4	All tables sections except the section attached to the pillar should be quickly detachable using easy latch mechanism to suit all surgical needs.
5	Head plates and leg plates should be interchangeable. .
6	The table should be made of high quality stainless steel with space to provide comfortable leg space to the surgeon while operating.
7	The base column should have telescopic cover of stainless steel and should prevent the ingress of fluid in the system.
8	The base column should have telescopic cover of stainless steel and should prevent the ingress of fluid in the system.
9	The table should have heavy duty antistatic swivel castors with central electric/ hydraulic locking through hand held controller for easy maneuverability. It should have self-leveling floor locks.
10	Brakes, wheels for 360 degree rotation or rotation for cleaning and avoiding equipments with motorized auto drive for efficient patient transport.
11	All table top section should be quickly detachable and inter chargeable as per need of surgery.
12	Should have facility to invest corselet tray through tunnel under table
13	Molded seamless mattress attached to top with pins (not Velcro) preferably.
14	Should have facility to change orientation of table (Normal and Reverse mode).
15	Should have single switch operated flex, reflex and 'O' position.
16	**Weight load capacity**

	Should have safe patient weight load capacity of at least 225 kg in all table positions. The STATIC patient weight capacity should be 400 Kg or more.
17	**Table top and mattress**
o	The table top should be made up of scratch-less X-Ray/C-arm translucent material.
o	Mattress should be double layered, more than 70 cm, ultrasonically sealed and anti-decubitus/antistatic, with easy Velcro free fixation/Velcro and should be easy to detach from the top.
o	The mattress should be easy to clean
o	The mattress should be latex and CFC free and 100% hygenic
18	**Power and Controls**
o	The table should be equipped with a completely independent electronic back up drive unit operated through the override panel in case of failure of Main drive.
o	Fully charged battery should be sufficient for weekly operative schedule i.e approximately for 80 operations.
o	The central column /base and handheld controller should indicate the charging status and table battery status.
o	All table positions like height, lateral tilt, kidney position, Trendelen burg and reverse Trendelenburg and flex/reflex and zero leveling should be obtainable using remote hand held controller without moving the patient.
o	Should have automatic 0 position switch on handheld controller.
o	Latest type of LCD/LED backlit screen on hand held controlled displaying each selected position of the table and similar features should be available on override control panel.
o	Fast “Memory” options for moving to previously stored position on Remote control.
o	10 free programmable memory positions for patient positioning
o	Remote must be wireless & can show the Graphical position of the Table
19	**Technical Specification: All Parameters should be within allowed ± 5% variation limits:**
o	Overall length: 200-210 cm.
o	Max. Width : Min. 550- 600mm (With side rails)
o	Minimum height: 600mm -760 mm
o	Maximum height: 1000mm -1010 mm
o	Side Tilt: 18 degree or more.
o	Trendelenburg: 25 degree or more.
o	Anti-Trendelenburg : 35 degree or more.
o	Power input to be 220-240Vac, 50HZ fitted with Indian plug
o	The quoted equipment should be having ISO/CE/FDA/CDSCO certific ation and CDSCO Licence .
o	All technical specification accepted in compliance statement must be supported by the printed literature from the manufacturer

20	Tabletop should be completely without x ray interfering cross bars an d should be radiolucent and scratch proof. The supplier shall provide full carbon components for 360 degree radiolucency for the above mentioned surgeries.
21	It should be compatible with C-arm.
22	The side rails should be metal free to be compatible with 3D C-arm capturing.
23	Mattress should be molded, seamless, anti-static, anti-decubitus, latex free & durable.
24	**Accessories**
1	Deleted
2	It should have on-table GI endoscopy (upper and lower) attachment.
3	It should have all attachments for mounting Thompson retractor.
4	Allen stirrups (preferably hydraulic). **-1**
5	Lloyd-davis stirrups (preferably hydraulic). **-1**
6	Brake pedal – should be single lever foot operated. **-1**
8	Anesthesia screen and pair of padded Armrest with clamps.
9	Pair of leg plates with padding
10	Deleted
11	Backlighted Hand control
12	Head Rest with Side Rails with adaptor **- 1Set**
13	Arm board with pad and clamp **- 1Pair**
14	Anesthesia screen with clamp. Mechanical cleaning of the clamp should be possible **-1Set**
15	Body strap with metal closure, washable - **1 each**
16	Double Joint, Abductable, with side rails, Leg Plates, pair **-1**
17	Deleted
18	Hand control-Wireless **-1**
19	Goepel Knee Crutch with Setting Clamp .-**1pair**
20	Pads for Back Buttock Support, Pubis/sternum support and Lateral Support Pads should have flexible positioning and can be rotated on the adapter. **-1 each**
21	Setting Clamps for support attachments- **1pair**
22	Infusion Stand with 4 metal hooks for holding infusion containers. Height adjustment: 875 – 1,300 mm complete with Standard clamp.Canbe set vertically in 15° angles using the radial adjustment. Can be mounted to a side rail. **- 1**
23	Tube Holder for secure fixation of the breathing tube complete with standard clamp.It should be flexible shaft enables infinite positioning and may be used for a variety of tube diameters.- **1set**
24	Multi-purpose plate for arm surgery with Radial Setting Clamp - 1 each, It should be Metal-free and radiolucent in the middle section and can also be maintained with Trendelenburg position. Support bar can be mounted on both sides of the table end.- **1 set**
25	Pillow for supine position - Material: Gel **- 1**
26	Sacral Support - Material: Gel **-1**
27	Heel Pad To support the leg at the ankle - Material: Gel- **1**
28	TUR Drainage set

29	Comprises: 1 guide frame, 1 plastic basin, 1 drainage tube, 1 rinsing bowl,1 sieve cap, 1 sieve, 2 tensioning bars - Mounting to OR table using guide rails- **1 set**
30	Shoulder Support complete with standard clamps Should support the shoulder area, especially in Trendelenburg position.- **1 pair**
31	Individually adjustable to patient's anatomy. Material of pad: PUR and can be mounted on side rails
32	Universal Positioner Gel Pad- **1**
33	Prone Head Rest, large - Material: Gel- **1**
34	Closed Head Ring Adult - Material: Gel- **1**
35	Leg Strap- **1**
36	Leg Resistant Cuff- **1**
37	Gel Body Roll- **1**
38	Arm rest with joint arm Arm posturing device, short, SFC,Pin-joint arm for body supports- **1 each**
39	Acessory Trolley
40	**Hydraulic Surgeons Chair -2 nos**
	Battery operated
	Length of 550mm & Width of 550mm
	Lifting capacity of 150 kg
	Height adjustment of 500 to 800 mm control with foot control switch
	Break /Lock must have manual lever control
	Multi position hand rest must be available
	Must have back support with angular adjustment
	Back support must have a gap of 100mm from seat
	E-bidder have to adhere to Government of India, Ministry of Finance, PPD division Public procurement order OM F.No.6/18/2019-PPD date d 23rd july,2020 inserting Rule 144(Xi)in GFR 2017 ,No 1 dated: 23/7/2020 and subsequent Orders No 2 & 3 or as amended from tim e to time

Picture Archiving and Communications System (PACS)
Radiology information System (RIS)

Sl.No.	Specifications
I	**General Requirements**
a	RIS shall support all the standard Modules ie. Patient Registration, Appointment/Scheduling, Modality Worklist, Radiologist Worklist and Reporting.
b	The system shall support scanning of hardcopy request forms and other documents and attach with a patient.
c	The system shall be integrated with HIS/ehospital platform . It shall be Dynamic and bidirectional integration.
d	System shall support workflow for radiology orders which do not require scheduling (ex. X-Rays).
e	The patient consent forms should be able to be scanned and attached into the system
f	The system shall have an ability to insert a flag for attention for an examination. The flag shall be visible in all various worklists. The user typed comments shall also be visible.
g	The system shall support sticky notes function. The sticky notes shall open as popup when a scan is opened.
h	The system shall provide instant messaging functionality for users to communicate via system.
i	It should be possible to view the details of personnel involved with the Order ie. who created the order, who scheduled/rescheduled it, scanning technician, draft radiologists and final report signoff radiologist.
j	If the hospital has EMR, the RIS shall be integrated with it so that with a click radiologists can see other details of the patient.
k	The system shall provide the section where all standard documents related to operations, policies; standard forms can be uploaded and kept for users to access it.
l	System shall support multiple department workflows where multiple department users can work without being able to access other department data. For ex. Front Office of one department shall not be able to schedule cases of other departments. Cross department access shall be limited and shall be available only to limited users.
m	System shall support setting up Master Data from the Admin interface ex. Procedures List, Reporting Templates.
n	System shall support transfer of orders from one department to another.
o	System shall support multiple user profiles which includes the following but not limited to

	1. Junior Resident 2. Senior Resident 3. Radiologist 4. Transcriptionist 5. Radiographer 6. Patient Service clerk & supervisor 7. Radiology Nurse 8. Administrator
p	The system shall allow creating user groups and assigning users to groups. It should allow managing access rights both at group and individual user level.
II	**Patient Registration & Service Request**
a	Shall allow Patient registration with few details as mandatory. System shall be able to use the Hospital generated Medical Record Number (UHID).
b	System shall be able to pull the patient details from the hospital HIS.
c	System shall allow marking Patient Arrival status in RIS.
d	The system shall support Patient Merge workflow.
e	System shall capture and display health alerts
f	The document scanner shall be integrated with RIS.
g	The system should support ability to order orders which should be sent to HIS.
h	Allow the creation of a protocolling worklist for radiographers or radiologists with options to select standard performing protocols and free text field to document additional performing instructions to radiographers or communications with clinicians that will be visible to the radiographer when performing the study.
i	System should be able to audit and track protocolling workload per user.
j	Support more than 1 level of vetting e.g. Radiographer or trainee performs vetting and with option to send to Radiologist to verify.
k	Requested procedures or Imaging Requests that need clarification can be flagged for follow-up from Request creation.
l	List of Requested Procedures or ISRs
m	Able to filter by Date/Time, Modality, Priority, Patient Type, Medical Service, Referral Location, Patient Class.
n	Option to search for list of Requested Procedures by Patient ID, Patient Name, exam order ID.
o	Print out Porter Slip with information like Patient ID, Patient Location
p	Ability to sort list by different fields and select specific fields for display.
r	Choice of giving an appointment or starting the procedure from the request list. For example:
1	For general Investigations, select procedure and start procedure. No need to book an appointment slot before starting the procedure.
2	For specialized Investigations like CT or MRI, book appointment, indicate arrival of the patient on appointment day, generate bill and continue workflow.
s	Able to restrict cancellation of confirmed/performed orders to defined, configurable users/group.

t	The system should support printing of Radiology Request orders created in RIS or electronic radiology orders from EMR with relevant clinical and health information.
III	**Appointment / Scheduling**
a	Graphical representation of booking slots with comments and/or colour code showing reservation of slots for different types of procedures.
b	Able to define slots in a room based on certain constraints e.g. urgent cases only, inpatient or outpatient. System should be able to use these constraints and rules to facilitate giving an appointment.
c	Appointment diary to display available slots according to the procedure time. This improves utility of resource and eliminates waste gaps in appt time slots. Visually the schedulers can identify appointment time slots readily.
d	Able to customize the number of booking slots available per day as duration of the procedures varies for different types of examinations. The system should allow reservation of appointment slots for specific procedures, by patient type (e.g. inpatient, outpatient), patient class, etc. This should be easily visible to assist users in scheduling.
e	Able to "suggest" an appropriate appointment date/time for patient based on certain rules and constraints, bypassing slots that do not meet the constraints for the patient.
f	Ability to separate appointment resources by department and yet enable crosschecking and alert if patients have the same exam/other already performed in own/other department recently or already has an appointment made in different department within a specified number of days.
g	Able to alert and prompt alternative appointments for multi-exam procedures requiring more than one procedure rooms.
h	Able to define specific appointment slots for viewing and scheduling for certain category of users. Able to restrict booking into certain appointment slots in the scheduling book.
i	Able to control rights for overbooking to authorized users. Configurable in terms of resource allowed overbooking, number of overbooking & types of procedures, etc.
IV	**Patient Check-in and Order Creation**
a	Support mapping of a specific procedure to different service code base on patient type, referring location, facility, performing department, procedure code etc. Example:
b	Able to assign unique numbers (accession and order numbers) to identify the procedures and provide the link of results/ to images in PACS.
c	Able to trigger charge or credit transaction to billing system(s) upon order entry or cancel or replace procedure respectively using HL7 protocol for communication.
d	Able to capture the reasons for cancellation of procedures or no charge procedures or waiver of professional fees for audit purpose.
e	Produce sticky labels with patient, visit, billing code and order related information upon check-in or order entry:

1	to show waiting/procedure room
2	to display accession/order number for identifying procedures for modality worklist and reporting
3	to paste on film envelope for film tracking and dispatching of films to GP referrals, non-resident patients, clinics, etc.
f	System should have an easy way to do adhoc re-reprint of additional patient labels.
V	**Service Recording and Tech Module**
a	Filterable Worklist for scheduled/ordered procedures based on room, modality or location e.g waiting area. Able to configure fields and filters based on user preference. The system should have an option to save the user-defined worklist.Ability to print and export list.
b	Be able to select multiple procedures from the worklist, and perform the same operation in one instance e.g start or complete procedure or assign reporting radiologist.
c	Track procedure duration based on procedure start and complete times
d	Track radiographer(s) who performed the procedure. Able to easily add additional operators.
e	Track radiologist(s) who performed the procedure.
f	Track other personnel‟s involved in the procedure e. g nurses, patient's caregiver.
g	Allow radiographers to enter technical comments for procedures performed to capture examination information e. g. Contrast usage, sequences performed, sonographic findings.
h	Able to order/cancel/remove procedures. There should be a security object that controls cancellation of procedures that have been started or have images or reports.
i	Exam status should include suspend and confirmed statuses or equivalent.
j	Able to trigger messages to EMR/HIS for order/cancel/remove of procedures when applicable using HL7 protocol for communication
k	MPPS from modality to RIS/PACS (including sequences) to plan examinations based on protocol.
l	Reuse protocols from previous examinations when planning follow-up examinations at the same modality and for the same organ.
m	To trigger a message to EMR/HIS upon examination started/completion.
n	To alert referring clinicians through email or SMS upon examination completion if applicable.
o	To allow radiographer to group/link 2 or more procedures to be reported together. Splitting of grouped procedures should also be possible prior to reporting.
p	Allow radiographers to update reporting priority.
VI	**Reporting**
a	Able to import patient history into the Radiology report.
b	An efficient way to assign a list of pending reporting tasks to a particular radiologist to report.
c	Able to view at a glance outstanding reporting tasks based on each worklist eg. MRI (2) i. e. 2 MRIs not reported.

d	Reporting templates and canned text should have both public and private options
e	Standard word processing capabilities with spell checking function, formatting e.g. bold underline, italic and medical dictionary.
f	Able to correct reports (alter original report text) after final/verified i.e remove original content but with history of original versions kept (versioning).
g	Able to amend reports after finalised/verified as addendum i.e additional text on top or bottom of original report but leaving the original report text untouched.
h	Allow specification and flagging of levels of abnormal reports.
i	Allow radiologist to alert referring clinicians for abnormal and amended report i.e., either through email
j	Flexibility to control printing of preliminary and final reports.
k	The printed radiology report should have the time stamp of when the report was printed.
l	Option to automatically utilize pre-defined fields of data captured in the acquisition notes or technical comments (input by radiographer) to pre-populate to the radiology report.
m	Cases reported by the resident should route to the radiologist's work-list for verification regardless of mode of report creation.
n	Cases awaiting verification by the resident will auto-route to the radiologist's work-list for verification after user specified time frame.
o	Allow more than one radiologist to verify a report (co-read).
p	Able to track both the reporting and verification radiologist and easily determine the person that needs to verify the report or perform an action that will allow the report to be finalized.
q	Able to print a verified radiology report with name(s) of reporting and verifying radiologists, date/time of verification in a format acceptable to theinstitution. If preliminary reports can be printed, specify if there are distinguishing factors that differentiate it from a verified report e. g a watermark.
r	Allow to print a verified report on an adhoc basis
s	Able to distribute verified reports by sending of reports by email.
t	Reporting module should have a lock feature that prevents radiologist from starting a report on an examination that has already been opened for reporting by another radiologist regardless of screen refresh.
u	If reporting module supports viewing of more than 1 patient's images at a time,then the module should have a warning feature that alerts the radiologist if starting to report or saving / verifying a report for a procedure when another patient's images are opened for viewing; e. g. Patient 1 images and report editor are open for reporting. Patient 2 images are opened for a quick review with clinician without closing Patient 1 report editor and or images. Subsequent with patient 2 images still open, radiologist wishes to Save or Verify patient 1 images,warning message should appear.
3	**System and Technical Requirements for Enterprise Digital Healthcare Platform**
I	**General Requirements**

	The below mentioned specifications of each component of hardware and software are the minimum required. However, may quote an equivalent or advanced version that is commercially available or likely to be commercially available at the time of purchase. Further the compatibility of the quoted items with each other and with the existing system if any is an essential requirement.
	The vendor should take an overall responsibility of both the software and hardware components including all licenses for complete maintenance for time of warranty. It is the duty of the vendor to visit the site and study the existing workflow that can be utilized for their proposed solution and quote in the tender (if anything extra required) for the optimum and consistent functioning of the propsoed digital solution
	It will be the responsibility of the vendor to demonstrate capabilities/functions quoted to the technical evaluation committee onsite if required.
a	Fully integrated Digital Solution for Radiology and High Acuity Care devices
b	Easily Deployable with simple web based interface.
c	Multimodality connectivity, advanced work list, image processing tools with electronic charting for Clinical devices
d	Should provide connectivity to Clinical devices like Critical care monitors, ventilators etc
e	ZFP module allowing access of images remotely with all tools using low internet bandwidth.
f	DICOM Film Print support.
g	CD /DVD writing support with embedded DICOM viewer.
h	Archiving Module.
i	HIPAA & HL7 Compliant
j	Stat reads highlighted and automatically takes priority.
k	Search criterion on various parameters like Patient ID, Name, Accession No, Date Hospital Name, Referring Physicians etc.
l	Compressed image support for faster downloads.
m	Prefect option to download priors automatically reducing waiting time for the radiologists.
n	Ability to load different studies, side by side for comparison.
o	PACS Solution should be Truly web based with all features like CD/DVD Writing, Film printing, Image viewer and Reporting module available through browser from any station. No installable software should be required to use these functions from any station.
p	It should be possible to import images from external CD/DVD directly into the system without any external software/workstation.
q	Report text search engine should be available.
r	Should support DICOM MWL integration with all modalities. It should be possible to view the DSA images in the subtracted mode either in cine or photo file modes.
s	Roaming profile – user definable settings.
II	**Image Processing Tools should be available in the Radiologist viewer**
a	Window / Level – Manual or Pre-sets.
b	Image Scroll on Mouse.

c	Pan and Zoom.
d	Flip, Rotate, Invert.
e	Crop – Elliptical, Rectangular or Freehand.
f	Cross Reference Lines.
g	Movie mode with speed control.
h	Measurement: Linear, Angular, Cobbs Angle tool
i	Annotations like text, pointer, line etc.
j	HU Value display – Point and average.
k	Multi-frame image display support should be available
l	Image display Matrix 1 x 1, 2 x 2, 3 x 3 etc.
m	Series Display 1 x 1, 2 x 2, 3 x 3 etc.
n	Image Linking – Interlink series for synchronized scrolling of images.
o	Spine labeling tool -Automatically labels Vertebral Bodies or Disc space with just a mouse click.
p	Magic Slice – Allows the radiologist to click on any part and see the corresponding slice.
q	MIP, MPR, 3D, Volume Rendering tool is required for every Diagnostic user and it must be browser based. Volume render application should be from same PACS OEM.
r	Curved Planar Reformats (CPR) tool is required for every Diagnostic user
s	Automatic Image Registration and Fusion tool is required for every Diagnostic user
t	Inbuilt chat module is required
u	Image export to JPEG/BMP/TIFF formats
v	Auto Edge detection on image
w	Ability to create Key series/merge 2 studies/split a study
x	Embedded MIP
y	Embedded MPR
z	Basic Measurements
	1. spine labeling 2. cobb angle 3. Leg length difference 4. horizontal alignment 5. vertical alignment
III	**Following Hanging Protocols Tools should be available in the viewer**
a	Provide easy access to a gallery of prepared hanging protocols from which the user can choose.
b	Support the option to create hanging protocols by drag and drop actions.
c	Support the functions to have both user and system level hanging protocols
d	Upon opening a study, provide the correct hanging protocol should immediately be used to display the images. This automatic selection should be based on:
	1. body parts 2. modality Types 3. procedure codes

e	Allow to create a display workflow based on hanging protocols. Each hanging protocol can contain one or more presentation groups and the user shall be able to easily and intuitively navigate through all presentation groups that are part of the hanging protocol. It shall be possible to have the system automatically select a correct hanging protocol and/or presentation group based on body part, modality type or procedure code
f	Support the functionality to have dedicated hanging protocols for comparison of studies
g	Allow the user to Interactively change the layout:
	1. viewport tiling 2. full screen layout 3. add/merge viewport
h	Allow for dynamic hanging protocols where:
	1. the renderer (3D, MIP/MPR, …) can be changed in each viewport on the fly 2. viewports can be added on the fly 3. Images can be added by drag and drop from the clinical sidebar 4. comparison with prior studies can be made
i	Within the image area, provide a list of all studies for the active patient. This list should allow the user to select additional studies to display without the need for major mouse movements
j	Support the creation and usage of Multi-modality hanging protocols
k	Provide auto combine of series:
	1. US single frame 2. CR/DX 3. RF
IV	**Following features should be available in the ZFP Diagnostic viewer**
a	FDA Approved for Diagnostic Reading
b	Basic Measurements
	1. Angle 2. Distance 3. Cobb Angle
c	MIP
d	MPR
e	Multi Monitor Support
f	Ability to see Images & Report
g	The ZFP Client should NOT be showing the Thin Slice Data to the Clinicians when they login to the PACS
h	But the ZFP Client should show all the Series data (Thick & Thin) to the Radiologist which are pushed to the PACS from the modality when the radiologist login to the PACS system
i	The ZFP viewer should be configred to display time-bound exams to the clinicians (ex. Exams for only last 6 months only without the thin slice sections) and this should be configurable
j	The mentioned functionality in point g, h & I should also be available in the Mobility viewer for Radiologist & Clinicians
k	Image data which is restricted to Clinicians can be made available to clinicians even if it is older than for example 6 months on adhoc basis post approval in the PACS system

	All user access (ex. login, study access, report access) should be saved into database as AUDIT TRAIL and this should be accessible/searchable by Administrator
	Vendor will provide applicable antivirus Software for the various clinician and Radiology terminals.
4	**Software Licenses**
	License requirement for RIS PACS Solution
	Unlimited Modality connectivity including for MRI, CT, PET, SPECT, NM, X Ray, US (as and when needed)
	RIS User Licenses (Reception/Technologists, Transcriptionist/Radiologist) for RIS Application
	Unlimited User License for Radiology Viewer
	Unlimited User License for Clinical ZFP FDA Diagnostic Approved Viewer with unlimited user license.
	Unlimited User License for PACS VNA (DICOM)
	Unlimited User License for Mobility Viewer on Tablet with unlimited user license for iPad/TAB viewing licenses
	3D post processing applications should be from the same OEM/Different OEM but seamlessly integrated and can be lunched from inside the same PACS application without closing it . Third party 3D post processing applications which will run independently / have to lunch from different icon outside the PACS will not be considered.
	3D post processing applications should have a common database with the PACS. There should be no separate storage needed for the 3D post processing applications
	The 3D post processing capability should be embedded inside the PACS viewer
	3D Post processing License for 150k Exams per year for and below application available on all Radiology Workstations - Pre Processing - Volume Rendering - Multi Modality Fusion
	Advanced 3D post processing Tools needed on Concurrent user basis which are embeded with PACS Viewer
	The 3D post processing capability should share the same Database as PACS and should not needs its own seprate storage
	High Acuity Care Integration Software
1	**GENERAL:**
	The system should be used to plan, implement, record, archive and analyze details of the patient care process in High Acuity Care Area of the Hospitals
	Support dynamic hyperlinks (www links) embedded to the application to open other applications with patient context such as imaging information systems or HIS without re-entering user ID or password.
2	**FUNCTIONAL REQUIREMENTS:**
	a. Ease of Use.

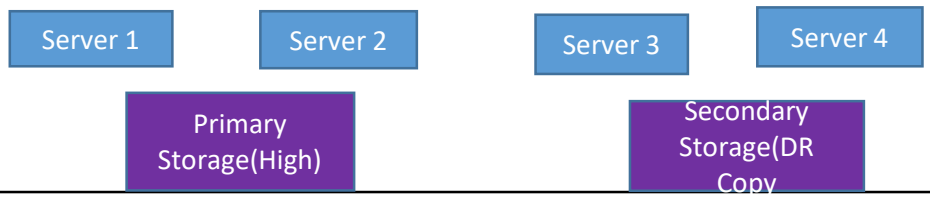
	The user must be able to make quick start of the system in case of emergency and not knowing the patient details. The quick start will start the default device data collection and prompt the user for patient group for choosing the right case configuration and protocols.
	Anaesthesia type specific graphical task lists for supporting anaesthesia workflow.
	The system should have the facility to flag
i)	warning messages if information input does not conform to the input expected and
ii)	inform the user that it cannot proceed if this mandatory field is not completed appropriately.
	The system must use drop down menus or similar to present to the users the valid choices for coded fields. These lists must be user definable.
	b. Look and Feel.
	The screens displaying clinical data must be clear and easy to look at, understand and tasks colour coded with finger operated touch screen.
	Data Entry Requirements – allow dropdown menus or lists, free text notes or comments, touch screen support , scroll wheel, alarm invalid dates and numbers, support data modifications and deletion of erroneous data, entry of progress notes displaying the authorship with the date and time of entry
	c. Automated Data Collection.
	Automated online data collection from patient monitors and ventilators, data displayed in real time graphically.
	It must be possible to automatically and simultaneously connect multiple devices to one patient including infusion pumps data (rate, volume, bolus dose).
	Support for device swapping during a case.
	Clinical staff should be able to rapidly disconnect or connect equipment to a patient without the need to power down any part of the equipment.
	The system should automatically detect connections and disconnections.
	It must be possible to manually enter all data fields, including those, which normally would be collected automatically.
	d. General Features.
	Possibility to view and edit several cases by one user in the same workstation.
	Capability to view data as a trend over time for the whole perioperative period.
	If a patient has had earlier procedures documented with the system, it should be possible to easily view their previous record(s).
	Records stored must be accessible by a variety of ways e.g. searches by hospital number, patient id, diagnosis coding, age, name, etc.
	Patient care information summary views, to get an overview.
	Support online automatic calculation of durations (e.g. anesthesia duration), drug and fluid totals and fluid balances.
	Support separation of drug and fluid totals and fluid balances according to phases (e.g. intraop, recovery) and support a combined summary of the totals and balances for the whole perioperative case.
	e. Patient Demographics.

	The system must be able to accept patient demographic data through an interface and to store it on the database to form the basis of the patient record.
	The supplier must indicate the minimum information required to admit a patient onto the system in an emergency and the system the system must allow preliminary and incomplete patient information tobe updated when actual details become available
	The system must allow adding new patients and cases to the system manually.
	f. Laboratory Data.
	The system must provide the facility to store details of laboratory data results, either received through an interface or documented manually and arrival of new laboratory data should be visually signaled.
	g. Support searching for a drug or fluid.
	Displays the dosage administered of any drug used in the anesthesia period and maintain a continuous cumulative total of individual drugs.
	Support manual entry of all information associated with blood and blood products.
	Support automatic calculation of the correct dosage and rate of a continuous medication infusion.
	Document fluid output, hourly and cumulative.
	The system should provide access to a drug directory from which users can select a drug for prescription, or record a patient‟s medication on admission. This should be an existing reputable database, which is regularly updated.
	h. Alarms and Data Validation.
	It must be possible to enter unlimited notes and the authorship of these notes must be clearly displayed.
	i. Point of Care Printouts.
	It should be possible to save the reports in electronic format (e.g. PDF) and should be configurable.
	Point of care printouts must include (but are not limited to): patient lists, anesthesia plan, anesthesia consent, patient instructions, anesthesia record, lab tests requests and reports and recovery record.
	j. Configurability
	List choices or similar data, default values, normal value ranges, data entry displays, point of care patient record printouts and patient list reports, retrospective statistical reports and colour codes must be configurable by the system administrator after initial setup and password protected.
	The tools for configuration must be an integral part of the system.
	It must be possible to see how a display or a printout looks like in the configuration tool (WYSIWYG).
	Archived patient records can be restored for reviewing and reprinting of the data.
	k. Statistical Report Generation with Reporting Tools.
	Data from different sources can be combined into the reports, e.g. data documented with the system and data from other information systems in the hospital.

	Provides ability to produce reports on demand and allows reports to be saved for future use.
	Provides on-line help functions without requiring the user to access a manual.
	Supports basic statistical functions (count, sum, average, min & max).
5	
	Hardware requirement for new Digital Healthcare Solution The proposed hardware should bed eployed and configured in a virtualized environment. For main data center- Two servers & one San storage with safe fail architechture ,For Dr -Two servers & one San storage
	Mobile WORKSTATION (hardware and software)-for Remote View /Tele Radiology /Bedside Diagnosis -10 nos
	The Bidder Must Supply DICOM Calibrated Portable device following features
a	The bidder must be OEM/authorized for the device
b	It should be CE Medical Device/FDA certified to use for Medical Diagnosis purpose (certification Must be attached in technical Bid)
c	It should support secure authentication
d	It should be remotely accessible with a screen size of 12 inch or more with 2 MP high resolution anti-glare display
e	It should have minimum 8 gb RAM Internal storage of minimum 16 GB and expandable upto 128gb
	Additional Specifications for Mobile WORKSTATION
	- It can View Analyze & must have features like Zoom/Pan, Measurements,3D reconstructions etc. - Must be integrated with Reporting Application with dictation tool& calibration applications - Must have1 or more USB port - Must be supplied with calibrated Stylus Pen - Must be Bluetooth & WIFI Enabled - Must be supply with rugged protective case - Must support ZFP viewer applications - Must have HDMI port for External Display must have Battery backup of minimum 3 hours
	THE VENDORS MUST HAVE THEIR OWN DICOM CALIBRATED WORKSTATION SOFTWARE (both client and web based)
a	Dedicated workstation software for 3D post processing
b	Dedicated workstation for mammography reading station that incorporates the complete diagnostic imaging and staging process. There should not be any switching between the workstation to perform mammography.
c	Dedicated ZFP (zero foot print viewer) required which should run on virtually any device irrespective to windows mac and android.
d	Dedicated 3d web based viewer for 3d visualization of radiology images with integrated double oblique MPR for trauma, oncology, curved MPR for vessel and spine imaging.
e	Dedicated zero foot print viewer web based viewer for PET/CT image fusion

f	Dedicated zero foot print fusion viewer with 2d volume measurements e.g SUV,VTI,Hnaging protocols, Mammography and Multimedia viewing.
	STITCHING
	THE VENDORS MUST HAVE THEIR OWN STITCHING TOOL
a	Merge – Should Create full-leg and full-spine images by merging several related radiographies into one image.
b	The stitching result must be saved in a new DICOM series.
c	The Stitching solution must works with every X-ray vendor and can be used as a standalone application with any PACS or can be integrated and interfaced with vendors viewer or workstation.
1	**PACS Workstation Diagnostic Monitor 4MP 30" Fusion display-2 no's**
	Fusion 4MP LED can be used as two seamless 2MP heads or one wide-screen 6MP display.
	Screen technology TFT AM Color LCD Dual Domain IPS-Pro and LED backlight.
	Active screen size (diagonal) 772 mm (30.4)
	Pixel pitch 0.256 mm, color and grey scale imaging.
	Features to improve and maintain image quality such as Ambient light compensation, Uniform Luminance technology and I guard sensor
	Maximum Luminance 1050cd/m2, DICOM calibrated at 600cd/m2 with Contrast ratio of 1500:1.
	Screen protection Protective, non-reflective glass cover
	Response time 18ms, Video input signals DVI-D Dual Link (2x), Display Port (2x)
	Display Card with support for 4 displays – Online QA software
	System should come with a touch pad and should have features like Spot view, dim view and profile setting function for Radiologist
2	**PACS Workstation Diagnostic Monitor 6MP 30" Fusion display-2 no's**
	Fusion 6MP LED can be used as two seamless 3MP heads or one wide-screen 6MP display.
	Screen technology TFT AM Color LCD Dual Domain IPS-Pro & LED backlight.
	Active screen size (diagonal) 772 mm (30.4")
	Pixel pitch 0.1995 mm, color and grey scale imaging.
	Features to improve and maintain image quality such as Ambient light compensation, Uniform Luminance technology and I guard sensor
	Maximum Luminance 1050cd/m2, DICOM calibrated at 600cd/m2 with Contrast ratio of 1500:1.
	Screen protection Protective, non-reflective glass cover
	Response time 18ms, Video input signals DVI-D Dual Link (2x), Display Port (2x)
	Display Card for proposed monitor
	System should come with a touch pad and should have features like Spot view, dim view and profile setting function for Radiologist
3	**PACS Workstation Diagnostic Monitor 5.8MP Color Mammo display system-1 no's**
	Screen technology LCD

	5.8 MP (2100 x 2800 pixels), aspect ratio 3:4 for each display in portrait mode, 3:2 overall, Pixel pitch 0.1545 mm
	Backlight warranty 40,000 hours @ 500cd/m2.
	Features to improve and maintain image quality such as Ambient light compensation, Uniform Luminance technology and steady grey
	Maximum Luminance 1000cd/m2, DICOM calibrated at 500cd/m2 with Contrast ratio of 1400:1.
	Screen protection Protective, non-reflective glass cover
	Response time 12.5ms, Video input signals DVI-D Dual Link, Display Port
	Display Card for proposed monitor
4	**PACS Workstation Diagnostic Monitor 2MP colour display-2 no's**
	Screen technology LED IPS-Pro.
	Active screen size (diagonal) 540 mm (21.3)
	Pixel pitch 0.27 mm, color and grey scale imaging.
	Features to improve and maintain image quality such as Ambient light compensation, Uniform Luminance technology
	Maximum Luminance 800 cd/m2, DICOM calibrated at 500cd/m2 with Contrast ratio of 1400:1.
	Response time 10ms, Video input signals DVI-D (1x), Display Port (1x)
	Display Card for proposed monitor
5	**PACS Workstation Diagnostic Monitor 3MP colour display-10 no's**
	Screen technology TFT LCD IPS.
	Active screen size (diagonal) 540 mm (21.3)
	Pixel pitch 0.2109 mm, color and grey scale imaging.
	Features to improve and maintain image quality such as Ambient light compensation, Uniform Luminance technology
	Maximum Luminance 900cd/m2, DICOM calibrated at 500cd/m2 with Contrast ratio of 1400:1.
	Screen protection Protective, non-reflective glass cover
	Response time 20ms, Video input signals DVI-D Dual Link, Display Port
	Display Card for proposed monitor
6	**PACS Workstation Clinical Monitor 21" display-10 no's**
	Screen technology TFT color LCD
	Active screen size (diagonal) 541 mm (21.3)
	Pixel pitch 0.270 mm, color and grey scale imaging.
	Features to improve and maintain image quality such as Ambient light compensation
	Maximum Luminance 440cd/m2, DICOM calibrated at 250cd/m2 with Contrast ratio of 1500:1.
	Video input signals DVI-D, Display Port
	Display Card for proposed monitor
7	**PACS Workstation-15 no's**
	Model - DELL 7810 or equivalent
	CPU - One Processor - Intel E5-2637v3
	Cores per Process - 8

	Memory - 16 GB
	Hard drive - 1TB SSD or better
	NIC - 1GB
	Display Card - ATIW2100
	Operating System - latest windows/IOS ,
	DVD - DVDRW media drive
	Power Supply - Single Power Supply
	Software License - Necessary software for integration
8	**Desktop PCs/ALL in one PC -5 nos**
	Intel processor with 4 or 8 Core, 8GB RAM, 1TB SSD, CD/ DVD
	20" Monitor, Keyboard, Mouse
I	**Specification for the Healthcare Digital Solution Servers**
	Servers
	Rack Server with Redundant Power Supply
	Dual Processor - Xeon 16 Core V4 or above
	128 GB RAM
	10x1.2 10K RPM SAS SSD with RAID-8 Support
	Quad Port PCI 1Gbps NIC
	Windows 2022 x64 R2 Standard Edition
	Must include DMZ switches 2 nos
II	**Specification for the Healthcare Storage**
	Configuration of Storage to be offered – Primary Storage
	Storage with Dual Controller and Dual port FC/iSCSI connectivity per controller 72x1.2TB 10K RPM SAS SSD with RAID-8 Support
	Dual Port 12 Gbps SAS Port
	12 Gbps Dual Port SAS Card for above Rack Servers
III	**Specification for the Healthcare Storage**
	Configuration of Storage to be offered – DR Storage
	Storage with Dual Controller and Dual port FC/iSCSI connectivity per controller
	24 x 4TB 7.2K RPM NL-SAS SSD with RAID-5 Support
	Dual Port 12 Gbps SAS Port
	12 Gbps Dual Port SAS Card for above Rack Servers
	CD/ DVD Publisher
	Rimage 7200 Cd/DVD
	Number of Recorders - 1/2
	External Output Bin Capacity - 100
IV	**Reference Solution Architecture**
	
6	**Terms and Conditions for proposed Healthcare Solutions**
1	The PACS application should be US FDA / CE certified (not more than 3/4 years old) and fully scalable RIS-PACS system.
a	Separate Certificate for Clinician Viewer (ZFP) of PACS

2	The system should have IHE certification.
3	PACS Solution should have been implemented in India or globally which includes two or more 500+ bedded hospitals.
4	Company should be present and operating in India for minimum 5 years or more.
5	The RIS-PACS vendor should have experience integrating the quoted solution to an HIS/ EHR solution for receiving orders and forming DMWL for modalities. It should integrate with the existing HIS solution present in the hospital. The solution should also have an ability to provide/ share the radiology reports based on parameters. List of minimum 5 such installations in India to be provided.
6	In addition to the FDA certificate for RIS-PACS application, the vendor should offer US FDA certified Zero Footprint viewer capable of displaying full fidelity (diagnostic viewing) DICOM images. The viewer must allow image access from any device (computer, IPAD, Tab, etc) using standard browsers eg. Mozilla, Safari, Internet Explorer. ZFP should be FDA diagnostic approved.
7	Vendor to provide PACS IHE Integration Statement for the proposed solution with supported Integration profiles as part of the bid.
8	Warranty: Vendor should provide a solution with 5 year warranty and subsequently5 years CMC
9	Lowest bidder financially is decided based on the cost of the solution inclusive of warranty of 5 years
10	All existing Radiology modalities should be linked to the proposed solution and vendor must ensure integration of any new radiological modality in future without any additional cost.
7	**Vendor Qualification Criteria**
a	The vendor should have a successful track of deploying PACS systems in the country. Vendor should be experience of 5years or more in PACS business in India
b	The vendor should have installed and managed a RIS & PACS Site for 5 Years or more for at least two hospitals in India
c	The vendor should have min installation base of 10 PACS systems with minimum 2 installations in more than 800+ Bed hospitals in India
d	Vendor should have 2 sites in India with load equal or more than 100K cases per annum.
e	Vendor should have done Enterprise PACS installation in India connecting minimum 2 hospitals / sites with the Central PACS.
f	Financial qualification criteria
	Should be a registered company in the country for last 5 Years
g	All the proposed IT solutions included in this tender should be from authorized OEMs .
8	**Turn Key for PACS Data Center**
a	42 U Server rack with dual PDU-4 nos
b	Switches with 48 port 100/1000 MBPS ports (preferably CISCO L2 Switches)
c	UPS - 20 KVA with 15 mins battery back up
d	Split AC or equivalent of 2 ton each
e	Civil Work for floor (Raised Floor, conduits for network etc.)
f	Furniture (Table, Chair, closet)
g	Finger based Biometric device
h	On Site engineer for 1 year.

i	Dicom Colour paper Printer-2 Nos
j	Film Printer with minimum 500 DPI-2 Nos
k	10 G Network switch all accessories
9	**Turn Key for PACS Reporting Room**
	Furniture for diagnostic workstations (Tables & Chairs) for 10 radiology workstations
	Networking for reporting room (2 network point of 1 GBPS per workstation)
	Switches - 48 Port 100/1000 Gbps switch
	Finger based Biometric device
	Music system for reporting room (Sony or equivalent)
	Electrical point with concealed wiring - 5 electrical points per workstation
	Ergonomic furniture for the reporting room including but not limited to high quality tables, mid back chairs, cove lighting, high quality gypsum false ceiling, exellenyt quality heavy duty doors, almirahs and lockers for doctors' use(kindly consult with the departmental team for any clarifications)
	Additional Specifications & terms and Conditions
A	**Service & technical Support**
1	The tenderer must provide an all-inclusive, fully comprehensive preventative maintenance service and breakdown service covering all equipment, hardware and software. This should cover, but not be limited to the following: ALL PARTS (including where appropriate, consumables, hardware, software, server and archiving system), labour, travelling, accommodation, service and maintenance. The preventive maintenance must also include all log check, tuning, quality check and quality assurance requirements, including all required calibrations. Software updates and upgrades and calibration sources, where applicable, to be included.
2	The tenderer shall guarantee a 99.5% uptime 24 hours a day, 7 days a week for the VNA-PACS system.
3	The vendor should provide support and maintenance services during 7 days / 24 hours service window.
4	All software upgrades shall be included in the SLA agreement. Including the following types of software upgrades: -All major upgrades to new versions. Including ones that offer functionality enhancements. Example v 5.0 to 6.0 -All minor upgrades within a version. Example v 5.1 to 5.2 -All patches -All other upgrades that are provided by the vendor.
5	The vendor shall provide a system that constantly monitors all key performance aspects of the proposed solution from a remote location. This monitoring system should allow the vendor to proactively anticipate the potential problem, guarantee the availability of the proposed solution and keep logs of incidents. System health check should also be done by physical verification periodically(minimum 4 times per year).
6	The monitoring solution and physical health check shall proactively check on system behaviour and abnormalities, (not limited to vendor’s portfolio): Applications.
7	Databases. Log file errors. File systems. Storage devices. Network devices. Backups. Any additional.

8	Presence of company engineer at Shillong during warranty and CMC for 24 x 7 support.
9	Network related to PACS and the Installation of Universal viewer features (Zero foot print viewer – FDA approved) in all other computer in different Ares /OPD in the hospital .
B	**User training**
1	Training for Consultants, Technicians and other officials nominated by NEIGRIHMS Authority .
2	Training for PACS administrator.
3	Detailed training for IT team on VNA & PACS architecture and management including database schema, structures, system passwords, system tuning, configuration, etc.
4	Documentation for the system.
C	**Access control**
1	Department Level Access: Users will be having limited access to see their own department data. Only limited users will have access to see across department access and this access can be granted only by the System Administrator.
2	Group Level Access: Every department should be able define the Research Groups. The research groups will be provisioned by System Administrator. A head will be assigned to each research group.
3	Research group head will be able to add more users to the group.
4	Scan should be able to be attached to one or more groups. Once scan is attached it will be visible to all members of that group.
5	Mechanism should be provided to attach scan of one department with research group of another department.
6	The System should support integration with AD and LDAP servers.
D	**Security features**
1	Login based session control.
2	SSL Encryption.
3	Audit trial
4	HIPAA complaint.
5	HTTPS support.
6	Daily backup of all relevant systems.
7	Scan signatures.
8	All image exports should be logged in the audit trail
9	Access rights should be granted based on user profiles defined by administrator.
10	Filter criteria provided for differentiating access by user profile (physician,receptionist,technologist...).
11	The solution should provide automatic “logout” feature so that user session will be terminated after a configurable timing window during which the user stays inactive.
12	Credentials should not be passed on the URL in clear-text on the URL.
13	The solution should be tested for SQL Injection vulnerabilities.
14	All data transmissions should be encrypted.
E	**Supported IHE integration profiles**
1	Scheduled Workflow (SWF).
2	Patient Information Reconciliation (PIR).
3	Consistent Presentation of Images (CPI).

4	Presentation of Grouped Procedures (PGP).
5	Access to Radiology Information (ARI).
6	Key Image Note (KIN).
7	Post-Processing Workflow (PWF).
8	Reporting Workflow (RWF).
9	Evidence Document (ED).
10	Portable Data for Imaging (PDI).
11	Basic Security (SEC).
12	Consistent Time Client (CT).
13	Cardiac Catheterization Workflow (CATH).
14	Simple Image & Numeric Report (SINR).
15	Radiation Exposure Monitoring (REM).
16	Cross-Enterprise Document Sharing (XDS-B).
17	Cross-Enterprise Image Sharing (XDS-I).
18	Patient Identifier Exchange and Query (PIX/PDQ).
19	Audit Trails Node Authentication (ATNA).
20	Authentication(EUA).
1	**Supply Installation, testing commissioning training & integration to the e hospital / HMIS to the entire PACS system**
2	**Networking & installation and Commissioning of Servers ,Work stations EtCs**
3	**Connectivity to all modalities must be the scope of the vendor**
4	**Any minor Electrical, Cabling required for installation must be in the scope of the bidder**
5	**Necessary networking if required in certain areas must be part of the bidder**
6	**Bidder must submit a detail plan to the institute before executing the work.**
	Committee Remark

Members	
	1. Dr. C Danial, Medical Superintendent -Chairperson
	2. Dr. A.J. Patowary - Co Chairperson
	3. Dr Star Pala -Member
	3. Dr. Donboklang Lynser -Addl. Professor, Radiology
	4. Dr. Cornerstone Wann -DMS
	7. Shri. Batskhem Lyngkhoi- - Medical Physicist
	8.Smt. Shailin Wahlang - Medical Physicist
	8. Biomedical Engineer -Member Secretary
	9.Dr. Atin Kumar, Professor, AIIMS Trauma Center- External Expert -

	Patient Warming System with Reusable Blankets
Sl.No.	**Specification**
1	Should be suitable for intra-operative applications as well as ICU.
2	Should consist of active warming arm-cum-shoulder section, pair of leg segments and abdominal
3	Segment to cover the entire body
4	Should be based on semiconductor polymer foil for precise warming of entire patient body during &after surgery.
5	Should have different segments like: -
i	Abdominal Segment -2
ii	Arm & Shoulder Segment -1
iii	Leg Segment-1
iv	Underbody Mattress optional
6	Control unit should be capable of warming minimum 4 segments at a time.
7	Control unit should have touch screen display to select & display temperature of all segments at a time.
8	Control unit should give audible confirmation when the devices are connected to the port and confirms the same on the Display
9	Control unit should automatically detect the number of segments which are connected to the unit and display the same on the screen.
10	Should offer precise digital temperature control with selectable temperaturerangeof 37 to43°Cfor Upper Body Sections and 35° to 40° for the underbody sections in steps of 1° C.
11	Control Unit should be able to adjust the connected devices separately depending upon the nature of surgery and condition of patient.
12	Should have facility to measure & display the real time core body temperature of the patient Continuously on the screen.
13	Should also have on screen graphical display of patient body temperature for the entire duration of surgery.
14	Should have facility to independently adjust he temperature of individual segment.
15	Should have a provision to connect whole body blanket & pediatric size blanket o the same control unit for future requirement.
16	Should have safety features such as Automatic check, precise temperature control between warming system and patient, Auto stop on detecting any problem like Over-Temperature, Failure To Reach Temp, Sensor or Cable Failure, Device Fold Detection.
17	Should have non latex, anti-bacterial coated, blood and fluid resistant covers.

18	Covers should be washable and replaceable. (autoclavable Optional).
19	The control unit should be light weight not more than 5 kg, small in size and easily attachable to IV rod/OT table with fixing claw.
20	Should have low energy consumption and noiseless operation.
21	The heating material in the blankets should radiolucent.
22	Should confirm to international quality and safety standards including European CE, Meets UL 60601-1 and IEC 60601-1 requirements for Class I, Type BF equipment.
23	Should provide the storage cart / stand for storage of the blankets in ICUs/Ots
24	Should have FDA / CE /BIS/CDSCO or equivalent approval.
25	Cost of all consumables /accessories /spares/Disposables are fixed for a period of ten years & should be quoted separately.
26	System & blankets must have warranty for 5 years.

	Instruments for Plysiology
Sl No.	**Specifications**
1	**Stethograph:**To recording human respiratory movement
1	60cm long and 2cms diameter corrugated impervious tube made of canvas with rubber one end closed other end open
2	Metal chain at both ends one chain with hook
3	Open end connected with pressure tube to tambour
2	**Plethysmograph** - to measure the changes in volume of Blood
1	26 / 30
2	Material – Aluminium
3	Size - 155 cm (H) x 100 cm (W) x 78 cm (D)
4	Weight - 39.1 kg
5	Feature - Easily Assembled
6	Is it portable – yes
7	Flow Range – 0 to 20 L/s
8	Flow Accuracy – 0.2 to 12 L/s
9	Resistance - 0.5 cmH2O/L/s (0.05 kPa/L/s) at 10 L/s
10	Volume- 20 L
11	Volume Accuracy - 3%
12	Mouth Pressure - 20 kPa
3	**Vitallograph--** To measure the forced expiratory volume and the forced vital capacity
1	Consist of metallic vessel inverted on jacket of water
2	A wide air passage going through center of jacket connected to tube with mouth piece, other end is connected to mouth piece by corrugated impervious tubing counter weight attached to chain running over pulley balancing weight of bell.
3	Capacity 6 Liters. Pointer or scale marked on wheel fixed over pulley
4	**Mosso Ergograph**-- To measure the optimum stage of muscular performance in human.
1	It should be of good quality
2	Mosso‘s Ergograph with metronome and weights
3	Ergograph containing the advantageous features of both bubios and mosso’s ergograph with weight set.
4	Horizontal Electric Kymograph with recording unit having automatic ratchet, recording systems follows the Dubois design and armrest, finger holder and straps.
5	Follows Mosso ‘s design complete with 1set of 5kg weight

	Pediatric ICU Bed with air mattress
Sl.No.	**Specifications**
1	**Bed should be equipped with following features:**
a	Must be heavy duty, top quality and fully electrically operated bed specially designed for high standard care.
b	Must have four section bedding area, made from ABS plastic removable parts - hygienical aspects.
c	The control panel a multipurpose control element for complete bed control shoule be located on bed panels/side rails.
d	The bed should equipped with automatic in-bed scale with memory indicate the actual weight of patient and provide the history of collected data with ny physical intervention of staff with accuracy of 500 gms.
e	The bed should have X-ray translucent mattress platform which enables in-bed X-ray examination or C-arm scanning with minimum effort. X-ray cassette holder is inserted from the left side of the bed/through mattress /accessible side X-ray slot.
f	The bed must have one touch CPR position for immediate release. Manual dual sided CPR levers to flatten the backrest. Release for back.
2	**Bed should be equipped with following features to prevent the patient fall with follwing features:**
a	Progressive split side rails with a safe gap concept and exceptional height provide excellent fall prevention and must have special protection for paediatric patient to avoid limb entrapment.
b	Intuitive control of the side-rails enable the quick access to the patient in any situation.
c	One point central braking facility must be there as a mandatory safety feature.
d	An audible alarm is activated if patient moved closed to the bed edge to warn the potential danger and possible risk of a fall.
e	Must have Night Light.
f	All the bed movements must be through control panel / side panel like weight / TR / RTR / back angle display at head side rail.
g	Bed should have Blow moulded ABS plastic four sectional fully removable curved mattress platform.
3	**Management of pressure Ulcers to patient**
a	Air/Gel Structure Mattress must from Same OEM to promote airflow up through the mattress direct beneath the patient and acts as prevention against pressure ulcers in the pelvic and sacral area.
b	BED & Mattress are from Same OEM to get better synchronization & service support. Emergency CPR release of the bed to be manual. Mattress Should come with air pump compatibility With Transport Static & Alternating mode.
4	**Bed should have following features for infection control**

a	The construction provides the unlimited access to all bed parts to be cleaned. The columns/ actuators / motors are sealed to avoid liquids leakage into inner structure.
b	The siderails, mattress platform covers and other components exposed to frequent pollution are designed in the flat and smooth style with minimum gaps to reduce the time for cleaning.
5	**Technical Parameters**
a	Outer dimensions (Side rails up) 215 cm X 105 cm
b	Mattress platform shorting / Extension 0 cm - 22 cm
c	Recommended Mattress Size 208 cm X 86 X 14 cm
d	Max Mattress height 20-25 cm
e	Bed height (32-42 cm)– (75-80cm) through actuator / motor
f	Maximum Backrest angle 65-70 Deg
g	Maximum thigh rest angle 20 deg or more
h	Trendelenburg / Anti–Trendelenburg Position : + 12° or more
i	Height of Side-Rails (Above Mattress Platform) : minimum 30 cm or more
j	Safe working load 250 Kgs
k	Patient weight load of minimum 150 kg
l	Battery back up with indicator of capacity and lifetime
m	Controls must be embedded in the foot end (Wired remote acceptable and covered under warranty & CMC with head end side rail LCD display of weight) for caregiver operation & side end for patient operation
n	Should have angle indicator for back & TR/RTR/digital display
o	Single button operated motorised cardiac chair position
p	Should have Bed exit alarm
6	**Accessories**
i	Two nos. of telescopic IV pole with weight carrying capacity of 12-15 kg each must be supplied along with each bed .These IV poles must be covered (replacement warranty) throughout the warranty & CMC period.
ii	Bed must have trays to keep patient reports.
iii	Bed must have a oxygen cylinder (of minimum capacity of 1.5m3) holder to keep oxygen cylinder during transporting of the patient.
iv	Bed must have inbuilt battery backup for all functions for at least 1 hour.
v	Bed must have Dual sided integral drainage bag rails with hooks
vi	2 nos of Patient Transfer Roller Board/Sliding transfer board (for quick and efficient patient transfers must be Constructed of high quality PP board inside,must be covered with special customized nylon material With washable cloth &easy to clean)must be supplied along with the total no of beds.
viii	Adjustable Bed Side Table- 1 nos must be supplied along with each bed.
1	Overall Size of top should be 810 mm x 352 mm W.
2	Fitted with gas spring mechanism shall have latch pressing mechanism for lowering down the table top: the raising of the top shall be done by merely lifting up without pressing the latch.
3	The gas spring shall be housed in aluminium extruded telescopic section for smooth sliding up and down from approx. 760 to 1050 mm.

4	Two sections top shall be fixed on 19 mm squire ERW tube frame Work.Fixed section is provided with rounded SS railing of mm dia rod on three sides.
5	Bigger section of the table top should be hinged & could be inclined to raise position options front side of bigger section of the top should be provided with raised PVC edge to prevent things from slipping off top.
6	Base of adjustable table should be made from 40 mm x 20 mm x 16 G rectangular tube welded to 40 mm x 75 mm x 5 mm thick channel connecting length 640 mm and should be fitted with four castor Wheel Dia 50 mm.
7	M.S. tubular part, Linkages, flats are to be In House, Pre-treated, Shot Blasting and Epoxy powder coated as per ISI standard, 50 to 60 microns.
viii	Bed side locker-1 nos must be supplied along with each bed
1	Over all approx. size: 40 cms x 40 cms x 82 cms H
2	Body consisting of 2 sides and back, is made from one piece of 20 G ms CRCA sheet. Fitted with laminated top with raised edges on four sides and pressed with PVC foil.
3	Drawer front and cabinet door also made from laminated material and pressed with PVC foil.
4	PVC foil used is of scratch-resistant and UV-rays resistant of 400microns thick. One drawer 90mm H x 355 mm W x 380mmD approx fitted with very smooth slides, is provided below the top.
5	Under the drawer is an open storage space and below it is a closed-door cabinet.
6	Door of the cabinet box is pivoted at top and bottom. Base of the drawer is fitted with castors of wheel dia 50 mm, all without brake.
7	Two buffers shall be provided at rear side of the locker box.
8	All MS parts are passed through 8 tank Pre-treated & powder coated process. SS parts finished with Matt Polish.
9	colour should match with other product.
ix	CPR board - 1 nos must be supplied along with each bed.
x	Optional Accessory: Traction pulley attachment for trauma cases.
8	**Documentation:**
1	User / Technical / Maintenance manuals to be supplied in English.
2	Log book with instructions for daily, weekly, monthly and quarterly maintenance checklist. The job description of the hospital technician and company service engineer should be clearly spelt out.
3	Cost consumables and accessories like PM Kit,Battery ,Hose pipe,Mattress Cover ,embeded panel (if physcically damaged),castors etc,which are not listed in BOQ & not covered under warranty(no spare parts will be considered as consumables /acessories) & CMC period has to quote in schedule XI as percentage value in the Technical Bid, or else will be consider to be cover throughout the warranty & CMC period.
4	Calibration and routine Preventive Maintenance Support as per manufacturer documentation in service / technical manual has to be done throughout the warranty & CMC period.

5	Compliance report to be submitted in a tabulated and point wise manner clearly mentioning the page / Para number of original catalogue / data sheet and the offer details has to submit in the technical bid. Any point, if not substantiated with authenticated catalogue / manual, will not be considered.
6	Certificate of inspection and quality control indicating the S / N for all non-consumable items with date at the time of installation.
9	**Environmental factors & safety**
1	Shall meet IEC-60601-2-52(Or Equivalent BIS) General Requirements of safety & should comply with 89/366/ECC; EMC-Directive. Certificate copy must be submitted in the technical bid.
2	The unit shall be capable of operating continuously in ambient temperature of 4-40 deg C and relative humidity of 15- 90 % .
3	The unit shall be capable of being stored continuously in ambient temperature of 10-50 deg C and relative humidity of 15 – 90 %.
10	**Warranty and Maintenance**
1	Warranty for 5 years followed by CMC for 5 years including Spares &service.
2	Mandatory 2 PMs / Year with unlimited breakdown calls has to be attended by the bidder/manufacturer throughout the warranty & CMC period at site.i.e. NEIGRIHMS, SHILLONG.
3	Duly signed Mandatory PM reports has to be submitted periodically, falling which necessary action will be initiated as per term& condition of the tender.

	Low Temperature Hydrogen Peroxide Gas Sterilizer
Sl.No	**Technical Specification**
1	**The Plasma sterilizer should be fully microprocessor controlled Plasma Sterilizer with universal data acquisition system with state of art Hydrogen peroxide gas plasma technology**
2	The Unit should be free floor standing with mobile on lockable castors
3	The regular and prolonged sterilization cycle time should be between 45 to 65 minutes and a fase cycle which is around 35 minutes
4	The sterilization temperature should be around 55 degrees Celeius.
5	It should be able to sterilize all kind surgical instruments, hollow tubes, and endoscopes rigid as well as flexible.
6	The Sterilizer Should be able to sterilize flexible lumen with inside diameter of 1mm and length of minimum 1200mm & 500mm (rigid) respectively. The sterilization claims should be backed by clinical testing
7	Should be able to sterilize single-through lumen PCD & hollow-type Trocar / cannula 2mm dia. and length of minimum 1200mm.
8	The equipment should be to sterilize Robotic systems (Claims backed by certificate from OEM of robotic system to be provided).
9	All cycle related parameters should be displayed on a touch screen
10	Sterilization chamber is made of stainless steel (AISI 316/304 grade).
11	The unit should have rectangular chamber with usable volume of 120 liters or more.
12	The chamber should have two sliding shelves systems to be selected for 1 or 2 shelves.
13	Door Should be vertical / horizontal opening type .
14	The concentration of Hydrogen Peroxide (H2O2) sterilant should be minimum possible for safe and optimum sterilization items.
15	Sterilant (H2O2) should be only in either closed cassette or Cartridge (no bottles) for better and accurate dispensing into the chamber.
16	The unit should have no toxic residuals with primary bye products being water vapor and oxygen.
17	The unit should automatically monitor all its operations with audiovisual alarms including fault identification
18	Should store the sterilization data by SD memory card/USB.
19	It should have an in-built thermal printer
20	It should be equipped with facility for monitoring on network computer
21	The Operation of the sterilizer should have no requirement of additional water supply source.
22	maintenance mode should be accessible from front screen for easy maintaining activity.
23	Electricity Connection should be supplied for 220-240V, AC. 50/60Hz, Single phase.
24	The plasma sterilizer should conform to the below mentioned norms and directives and certificates in support should be submitted
25	ISO 9001:2008 - Quality Systems

26	ISO 13485:2003 - Quality systems for medical devices
27	ISO 14937:2000 - all requirements for sterlization of medical products
28	Direct 93/42/EEC
29	The plasma sterilizer should confer to quality as per:
30	European CE/USFDA/BIS/ equivalent approgals
31	EN ISO 14937
32	The unit should be supplied with:
33	Automatic heat sealing machine - 1No
34	Appropriate UPS to run at least one cycle back-up-1No.
35	Sterilization cartridges - 100 cycles
36	Chemical indicators - 500 strips
37	BI indicators - 100 strips
38	BI incubator - 100 strips
39	Sterilization trays - 2Nos
40	Tyvek pouches for packing:-500mm-1 roll,300-1roll,150 mm-1roll
41	Printer paper roll:-5 rolls
42	PM Kit - 2Nos
43	The complete consumble to run at least 100 cycles should be provided along with the system
44	The quoted model as per specifications above should be installed and ensure satisfactory wo

rking

	Spirometer
Sl.No.	**Specifications**
1	Ultrasonic flow sensor for TOTAL infection control 23 / 30
2	Easy to operate
3	Calibration free
4	Highest accuracy
5	Measures upto 63 parameters including F/V loop
6	Auto interpretation
7	Runs from the USB port of any PC
8	Meets and exceeds ATS/ERS Criteria
9	Bio calibration check feature
10	Ready to use GDT interfacing possibility
11	In-and expiratory real time curve
12	Should not influence of humidity, barometric pressure, contamination
13	Should be Auto QC
14	Should be multillngual
15	Sensor never ever in contact with sample
16	No cleaning, no maintenance
17	Extremely high accuracy for low flows (Resistance free measurements)
18	No down time
19	Life time free software up gradation
20	Should be CE –FDA /BIS/IS/ISO13485/DCGI certification standard approved products
21	Laptop with i5 processor, 2GB RAM 500 GB Hard drives and 14 “TFT, with pre-loaded
	Additional Requirement:
1	Cost of all accessories, spares, consumables, disposables, cables, probes, etc should be offered by the bidder and the rates should be valid for a period of ten years
2	All bidders have to compulsorily declare the list with item wise cost of accessories and consumables not covered exclusively with the warranty and CMC of the offered system
3	The declaration of all accessories /consumables need to be detailed and shall be treated as per condition of contract and should be given in ATC Warranty as well as Comprehensive Maintenance Contract will be inclusive of all accessories /spares and Turnkey work
4	Bidders /Vendors have to supply 5% additional nuts, bolts, castor wheels, locks, keys, handles spring, PVC brackets and other minor accessories within the cost offered

5	Bidder should give a written declaration that no other consumables /accessories /spares are required for the offered system apart from the quoted items /list.
6	The cost of Accessories, Consumables not covered in warranty /CMC shall have to be offered in the techno –commercial bid at ATC and cost to be offered in percentage (against the item quoted) of FOB Price /Ex –Factory Price (Price Bid).
7	Should be CE –FDA /BIS/IS/ISO13485/DCGI certification standard approved products. Should confirm to all international safety standards, turnkey installation and with warranty and CMC as indicated and which shall be considered for the evaluation of the price bids.

	Surgical workstation
Sl.No.	**Specification**
	An integrated RF, with Argon surgical platform, which can dissect, coagulate and seal tissues during open and laparoscopic surgeries. System should comprise of below Type of Module Energies.
A	**RF Energy Platform -Electro surgery unit with Vessel Sealing**
1	The Electro surgical unit should be a 400 Watt generator with touch screen display
2	Unit should be plug & play 5/15A universal multi-functional sockets to accommodate any instrument
3	Unit should facilitate functions of monopolar, bipolar & vessel sealer with in-built regulated power supply adapter for bipolar resection.
4	Unit should have a Step wise guide suggesting appropriate setting configurations for every instrument and application with automatic identification of instruments.
5	The system should mea s ure ti ss ue i m pe da nc e ab o u t 20 million / sec or more f or better tissue effect.
6	Should have Power Peak System for better Tissue Effect and should have Voltage Control System.
7	System should have Wi-Fi /Lan compatibility for (future OR integration) on site update and upgrade.
8	System should have remote function in the foot pedal (both for monopolar and bipolar settings) to allow user to access multiple sub programs directly from the Sterile field.
9	Unit should have Monopolar cut mode for under water resection and fatty tissue.
10	Unit should have Soft Coagulation mode with quick start function for any open or laparoscopic application.
11	Unit should have Mode for optimized dissection in open or laparoscopic cases with limited tissueseparating properties and less smoke and carbonization.
12	The generator should work on a supply voltage of 100 – 120 VAC & 220 – 240 VAC , frequency should be in the range of 50 -60 Hz.
13	Power consumption at Maximum HF power should be 500 watts with maximum pulse power consumption of 1600 watts.
14	Should have a special Coagulation mode for vessel sealing with auto start function for highly vascularized tissue bundles and vessels up to 7mm diameter.
15	Unit should have an Auto Cut bipolar mode to facilitate bipolar cutting instruments. (open and Lap)
16	Unit should have the facility to store 1800 programs or applications.
17	Unit should have the facility to show the active instruments on the screen display
18	The generator should have an inbuilt feature of accessory assignment.

19	The unit should have bipolar Cut to facilitate bipolar for Saline Resection and fatty tissue.
20	The generator should be supplied with Argon plasma coagulation unit having forced APC, pulsed APC and precise APC modes
21	The generator should support Hydro jet to facilitate use of unique hybrid technology instruments for All Surgical Modalities.
22	Unit should small-area neutral electrode monitoring system / Neonatal monitoring system to blocked and the maximum output power of permissible current to avoid , undesired temperature rises.
23	All the mentioned above Units & Accessories should be Supplied & Should have Valid USFDA/European CE/BlS Certifications Marked.
B	**Argon Plasma Coagulation**
	For management of bleeding and devitalization of tissue abnormalities achieved by optimal coordination with RF generator
•	The Argon Plasma Coagulation system should have automatic parameters setting for various types of instruments and automatic depth controlled plasma regulation
•	Should have three different APC modes suitable for different indications
•	adjustment made using the effect settings/adjustment made using the parameter power settings
•	Should have Adjustable argon flow rate from 0.1L/min to 8L/ min in steps of 0.1 L /min with automatic regulation of selected flow rate.
•	Should have the facility to use Argon plasma coagulation and monopolar coagulation simultaneously
•	Should have automatic monitoring of flow rate and Argon supply and auto purge facility. It should have the facility to connect with central gas supply.
•	Should give visual display of argon gas bottle content and should give Acoustic alarm when bottle content reaches a minimum.
•	Should have facility for activation of unit by foot pedal of the Electro Surgical unit
•	Should have facility to use in endoscopy procedures.
•	Should have facility for Argon supported cutting and coagulation.
C	**Water Jet Tissue Dissection System**
	For management of separating the different tissue types with their varying elasticity and firmness with the help of adjusted water pressure based on the kinetic energy principle.
•	Should have pressure range:1–80 bars & Volume flow:1–65ml/min. It should indicate delivered fluid vol.
•	Should adapt any sterile saline solution bag (disposable) as separation medium
•	Should be integrated with Electro surgical workstation with other accessories and facility to connect Monopolar coagulation with the applicator
•	Should have facility to individually configure programs for different surgeries.
•	Water jet activation should be via footswitch and Remote facility for switching between two different user settings.

•	Should have facility for various applicators to be used in Laparoscopy, flexible endoscopy and open surgeries.
D	**Following accessories to be supplied with the Gastroenterology workstation -**
1	Footswitch with facility for swapping between programs – 2Nos.
2	Patient plate with equipotential ring -50Nos.
3	Reusable Patient Plate Adult -1
4	Filter integrated Argon Plasma Coagulation flexible probe (axial fire) – 10Nos.
5	APC Applicator open- 1
6	APC Applicator LAP- 1
7	Reusable LAP Vessel Sealer Fenestrated -1
8	Reusable Open Vessel Sealer -1
9	Reusable LAP Micro Bipolar Scissor -1
10	Pump Cartridges for Waterjet-5 Nos
11	OEM Workstation trolley with attached Irrigation unit – 1No.
12	Monopolar cable for Endoscopic instruments – 1 Nos.
13	Bipolar Cable Reusable -1
14	Open Vessel Sealer with Cutter -1
15	LAP Vessel Sealer with Cutter -1
16	OEM Make Argon Gas Cylinder for APC Unit with 5 Liters Capacity- 02,
	Price of Refilling/replacement of cylinders must be given in the financial documents with other consumables

Temperature Wi-Fi data logger with central monitoring system	
Sl.No	**Technical Specification**
1	Data transfer by wireless LAN
2	The stored readings can be analysed at anytime, anywhere, using an internet-enabled smartphone, tablet or PC
3	Limit value violations are immediately reported by e-mail, SMS & via App
4	WiFi data logger (wireless LAN) with display for measuring temperature, two connections for external NTC temperature probes
5	The data can then be accessed via any normal internet browser from anywhere in the world.
6	All functions programming like limit values, alarms, etc. are controlled via the internet.
7	No software installation is required
8	Cloud-based data storage
9	The WiFi data logger can be commissioned by the customer
10	Measuring cycle from 5 s to 24 h
11	Minimum memory should be 10,000 readings/channel
12	Notification requires for low battery & Radio link interrupted and power supply interrupted
13	Alarm options for Upper/lower alarm limits, Alarm delay and time control of alarms
14	Automatic reports in .pdf/.csv
15	Communication & measuring cycle should be 1 min. ... 24 h
16	The measurement values should be automatically transmitted to the Cloud by wireless LAN.
17	Dust and splash protected according to IP65
18	Standards DIN EN 12830, CE, HACCP
19	Operating Temperature range for external thermocouple probe (in ˚C) -50 deg C to 100 deg C

20	Must be supplied with NABL calibration certificates for each data logger
21	
	Central Workstation -1 no
	Wifi data logger -15 nos.
	NTC ribbon cable temperature probes = 30 nos.
	Advanced license for 36 months for SMS alarm
	Mains unit for continuous operation
	NABL Calibration Certificate
	Necessary civil/Electrical Point/Wiring, Lan Cabling /communication cabling needed or installation must be included in the scope of bidder

Emergency Recovery Trolley

Technical Specification
1. Stretcher Should have 2 section Radio lucent top (Head section/ Hip section /Leg section).
2. Should have height up/down adjustment by foot pedal operated hydraulic mechanism - on both sides of the stretcher.
3. Stretcher should have an emergency hydraulic pedal at foot end, to decrease the height in case of emergency.
4. Should have foot pedals operated hydraulic mechanism for Trendelenberg/Rev Trendelenberg positions.
5. Stretcher should also have an option of manual lifting from foot end, to achieve Trendelenberg position in emergency situation
6. Should have 4 corrnors buffers /rollers for safety, synthetic rubber covered and transport handles at head end (foldable when not in use)
7. All metal parts should be made of high grade Steel with powder coating.
8. Should have 4 swivel casters 200mm diameter, with central lock pedal (Steer/Free/Lock positions). Also should have 5th wheel located at the centre for swift/quick movements for 360-degree rotation of stretcher.
9. Should have Trendelenberg/Rev Trendelenberg inclination angle of 18 degrees & back raise angle of 90 degrees.
10. Should have gas spring operated back raise mechanism, and angle indicators on side rails.
11. Size of the stretcher should be Approx size 2100mm (L) X 750mm (W).
12. Height adjustment range should be 550-900mm approx. with deviation of max $\pm$5 %
13. Provision to mount Oxygen cylinder holder vertically at head end.
14. Provision on all 4 corners to fix high grade SS IV Poles.
15. Transfer board type Safety Side rails with double lock mechanism.
16. Stretcher side rail T -shaped mark for IV line fixation purposes.
17. Transfer board should help in patient transfer by horizontally fixed.
18. Storage space should be provided at bottom of the Stretcher for storing light weight items.
19. Should have provision for performing full length X-ray, should be able to slide X-ray cassette from all 4 sides.

20. Should have safe working load of 250 kg with third party certification from govt recognized lab/NABL accredited or any certified agency testing agency .
21. Stretcher should have foldable Transport handles at head end.
22. Trolley should be provided with - PU foam mattress with patient restraint belts, height adjustable SS IV pole, Oxygen Cylinder (B type)holder and Monitor Table (at foot end) for mounting equipment while transportation.
23. Quality & Safety certification for the quoted model must be attached in technical bid.
24.Compliance statement with the Additional Technical specification added inBuyer Added Bid Specific ATC
EMD

	Diagnostic Tympanometer
Sl No.	**Specification**
1	
	a) Diagnostic Tympanometry
	b) Reflex Decay with time base 15s, 30s, 45s and 60s.
	c) Eustachian Tube Function (Intact, perforated, patulous)
	d) Multiple Frequency tympanometry(To offer tympanograms at probe tones of 50Hz increments from 250-2000 Hz)
	e) Automatically calculated Resonant Frequency
	f) To be able to display the change/difference in component values(Y,B,or G)and phase between the start pressure and the peak pressure plotted as two graphs as a function of frequency.
	g) Acoustic Reflex Latency Test (ARLT).
	h) ESRT (Electrical Stapedius reflux Threshold) Compatible
	i) Wide band Tympanometry (226 Hz to 8000 Hz).
	j) To display absorbance/reflectance in WBT
2	The Tympanometry should have the following protocols like Diagnostic,Screening and should be user defined.
3	The System must have pre-programmed testing protocols.
4	System should have the facility for storing results in its internal memory
5	Probe Tone: 226 Hz, 678 Hz, 1000 Hz.
6	Admittance Measurements Range:
	1) 226Hz (-10 to +10 mmho)
	2) 678 Hz (-21.0 to + 21 mmho)
	3) 1000 Hz (-32.0 to + 32 mmho)
7	Pressure Measurements 0.2 10 cm3
	a) Range: Normal =+200 to -400 da Pa, Wide=+400 to -600 da Pa
	b) Sweep Rate: 12.5, 50.5, 200, 600 and 600/200 da Pa/sec and manual

	c) Maximum limits:- -800 da Pa and +600 da Pa (in 0.5 cc Cavity)
8	Reflex Measurements
	a) Stimuli: 250, 500,1K, 2K, 4K BBN, LBN & HBN
	b) Noise Signals: (3dB band Widths)
	c) Low band (LBN): 400 - 1600 Hz
	d) High band (HBN): 1600 - 4000 Hz
	e) Broad band (BBN): 400 -4000 Hz
	f) Intensity Range: 35 to 120 dB HL
	g) Step Size: 1dB, 2dB, 5dB
9	System should have built in Large and colour display with touch screen.
10	The System must have the following features
	a) Pre- programmed default parameters for each test mode.
	b) Ability to change default parameters.
	c) Ability sequence programmbility or manual sequencing.
	d) The Sensitivity Scales must automatically be determined basae on peak amplitude
	e) The Test tracings, ECV and Pressure Meter are displayed in real-time on the monitor
	f) Ability to overlay multiple (up to three) tracings.
	g) Ability to choose between autromatic or manual time tone presentations
	h) To Display the time interval between on set of acoustic stimulus and onset od stapedius contraction
	i) PeakPressurevaluefromthetympanogrammustbemaintainedforReflextesting&alsomustbecapable for the manual adjustment
	j) Able to automatically (or) manually seek and mark the threshold level.
11	Two- component Tympanometry
12	View tracings in B/G format for each frequency
13	Probe should be light weight.
14	The system should be a desktop model
15	The System should have NAOH- Compatibility for easy data management

16	The System should have option of external direct printing
17	The system should have HDMI out for external monitor
18	The system should have facility to connect wireless keyboard
19	System should have CE/USFDA/CDSCO/BIS or equivalent certification

	UGMC Skill Lab
Sl. No.	**Specifications**
1	**All-purpose Adult patient care simulator**
1	Should have contemporary aesthetic, easy to use, true mobility, wireless and tether less manikin
2	Should have two platforms in one (easy to convert from female to male) for teaching and training nursing students.
3	Manikin must have the following Clinical Skills Features: -
4	Anatomically accurate landmarks for realistic clinical skills practice
5	Realistic articulation to promote proper patient handling
6	Eyes and ears accommodate irrigation procedures or medication administration with real fluids
7	Open pliable nares allowing for nasal packing, insertion of nasopharyngeal airways, Nasal cannula and NGT placement
8	Open mouth allows for realistic oral and denture care, placement, securing and care of oral airways, endotracheal tubes and gastric feeding tubes
9	Realistic tracheostomy site allows for tracheostomy care and procedural suctioning with real fluids
10	Chest tube port for care and maintenance
11	Accommodates oxygen delivery methods with realistic chest rise with use of BVM
12	Gastric lavage and gavage with real fluids
13	Pulses include manually generated carotid pulse, (electronically generated brachial and radial pulse)
14	Subclavian hole for placement of triple lumen catheter for care (without fluid administration)
15	Configurable stomas for ostomy care and irrigation
16	Urinary catheterization with real fluid return
17	Enema procedures capable with real fluids
18	IM injections and medication administration via deltoid, gluteal and vastus lateralis muscles.
19	Articulating, easy-to-maintain, IV arm with replaceable IV pads allowing for IV placement, site care and fluid administration

20	Simulator should be designed in such a way that it can sit upright at his/her own to perform realistic examination as in case of a real patient.
21	It should have facility to fill and drain all fluids externally without need of opening any part to refill fluids to make it ready for next training.
22	Conversion Kit from Female to Male.
23	Modules: Breast gland examination, Fundus assessment module, Pelvic exam module, Interchangeable wound care, Module trauma care, Suturing module
2	**All-purpose paediatric patients care simulator**
1	Should have realistic anatomy and landmarks: mouth, tongue, oral pharynx, epiglottis, arytenoids, vocal cords, trachea, and esophagus.
2	The Simulator should have the following Key Features:
3	Airway management -compatible airway management devices include E.T., E.O.A., P.T.L., L.M.A., E.G.T.A., and Combi tube® insertion
4	Blood pressure arm -systolic and diastolic levels, heart rate, and sound volume
5	Defibrillation chest skin -compatible with all standard brands and types of defibrillators, monitors, and patient simulators
6	Femoral access -articulated leg requiring proper positioning, palpable arterial pulse (manual)
7	Intraosseous infusion -palpable landmarks such as the patella, tibia, and tibial tuberosity
8	IV arm -articulated at the biceps for antecubital and dorsal access
9	CPR -fully Articulated head, neck, and jaw
10	Palpable carotid pulse (manual)
3	**Adult Lumbar Puncture Simulator**
1	Model should be an excellent training platform for lumbar puncture, lumbar epidural, and cervical epidural procedures.
2	Should be excellent for blind insertion techniques or using ultrasound for guided lumbar puncture and spinal epidural procedures
3	Should have needle access as well as the placement of catheters

4	Model can be positioned in the upright or lateral decubitus position allowing users to accurately position the model for appropriate training scenarios
5	Model's external landmarks as the iliac crests can be palpated to initially orient the user to the proper access points
6	Palpation of the spinous processes should provide additional landmarks
7	In the model each spine tissue module should have realism and contains the appropriate spinal segment, skin tissue, ligamentum flavum, epidural space, dura, subarachnoid membrane, and subarachnoid space containing cerebral spinal fluid
8	Should be able to utilize for full procedural training including injecting local anaesthetics, introduce the needle to the epidural space and/or subarachnoid space, thread catheters, infuse simulated anaesthetics, and obtain manometer measurements
9	The cerebral spinal fluid pressures can be easily increased in order to simulate pathological scenarios during lumbar puncture procedures
10	Ultrasound can be used for identification of the optimal insertion points, angle of needle insertion, and determination of the depth to the ligamentum flavum, epidural space, and spinal cistern
11	Should have durable self-healing tissue
12	Soft part should be capable of at least 1000 procedures/pricks
4	**Knee for Injection & aspiration**
1	Model should be excellent for training clinicians in the psychomotor skills associated with ultrasound guided or blind insertion of knee injections and aspirations associated with osteoarthritis and rheumatoid arthritis
2	Model should optimize training with superb image quality; simulated tissue matches the acoustic properties of real human tissue
3	Should have self-healing tissue with tremendous durability – minimize the need for replacement parts and providing a low cost of ownership
4	Should have superior realism, reliability and durability
5	Models should be anatomically correct; constructed from a digital human file

6	Knee Model Anatomy should include: Knee ligaments, Distal Femur Bone, Proximal Tibia/Fib Bone, Patella, Patellar Bursa, Quadriceps Tendon, Femur Fat Pad, Quadriceps Fat Pad, Percutaneous Fat Tissue, Suprapatellar Space
7	Should have adjustable volume in the Bursa and Suprapatellar space to simulate various injections and aspirations
8	Should have easy to refill with ultrasound refill solution ports
9	MSK Knee Model should sits on platform with flex angle of 15 degrees
10	Should be light weight and easy to transport
11	Must have excellent imaging quality using any ultrasound system
5	**Female Catheterizatio n simulator**
1	It should allow practice, and assessment of the female bladder catheterization procedures.
2	Fluid must runs out on successful catheterization.
3	Bladder must be partial transparent.
4	The abdominal wall should be removable.
5	It should allow suprapubic catheter insertion.
6	Should have soft and movable labia for practicing disinfection.
7	Must have anatomically realistic pelvic structure
8	Should have non-slip feet.
9	Must have magnetic connectors for quick set-up and dismantling
10	It should be easy to clean
11	Must have a sponge on the inside that should prevent build-up of moisture.
12	Model Should Include the followings:
13	Catheterization set with transparent bladder
14	Bottle and tube connectors
15	Carry case
6	**Male Catheterizatio n simulator**
1	It should allow practice, and assessment of the male bladder catheterization procedures.
2	Fluid must run out on successful catheterization.
3	Bladder must be partial transparent
4	The abdominal wall should be removable.

5	Must have three different levels of narrowing of urethra can be set.
6	In the narrowest setting, catheterization is not possible, then it should allow suprapubic catheter insertion.
7	Should have soft and movable foreskin for practicing disinfection.
8	Must have anatomically realistic pelvic structure
7	**Intramuscular Injection of Upper Arm**
1	"The model's injection sites should Practice injections in the upper arm muscles safely on a realistic model."
2	"The model should be preferably transparent other than right arm that should be covered with life like skin for the injection training."
3	The structure of the upper arm should show in the model to teach proper injection. The outer skin should be specially processed to provide a very realistic simulation, and it leaves no injection marks to keep the model in good condition.
8	**Vein puncture training arm with circulation vein**
1	Should be an arm model to offer lifelike training for performing injection, infusion, venepuncture, phlebotomy, simulation and training of needle and catheters puncture procedure
2	The model should have accessible veins include the median, basilica and cephalic
3	Model should possess realistic skin to offer close to reality experience
4	After inserting the catheter correctly, students should experience a realistic flashback for placement confirmation
5	Ultrasound scannable for ultrasound-guided intravenous (IV) access
6	Replacement skin should be very durable and can offer at least 3000 punctures before replacement
7	Skin should be non-staining
8	Skin should be hypoallergenic
9	Includes two nos. of 1000 ml bags to use for simulating an IV drip and blood flow through the arm.

10	Model should have clear tubing to allow trainees to locate vessels solely by palpation
9	**Multipurpose injection trainer intradermal injection,subcutaneous injection and intramuscular tissue injection**
1	The training arm should provides complete venous access for IV therapy and phlebotomy, plus sites for intramuscular and intradermal injections.
2	It should an extensive 8-line vascular system allows students to practice venipuncture at all primary and secondary locations, including starting IVs and introducing Over the Needle IV Catheters
3	The venous system should simplifies setup with only one external fluid bag supplying artificial blood to all veins simultaneously.
4	The dorsal surface of the hand should includes injectable metacarpal, digital, and thumb veins.
5	The dorsal surface of the hand should includes injectable metacarpal, digital, and thumb veins.
6	Venipuncture can also be performed along the basilic, cephalic, accessory cephalic, and median antebrachial veins.
7	Intramuscular injections should be performed in the deltoid muscle and intradermal injection sites are located in the upper arm. Intramuscular injections into the deltoid muscle are enhanced by the soft, lifelike skin and by the natural bony landmarks in the region. Intradermal injections using distilled water will create characteristic skin welts at designated sites on the upper arm.
8	Model should has flexion of the wrist that helps students develop manipulation skills and the replaceable skin rolls as the veins are palpated, and a discernible "pop" is felt when entering the veins.
9	Under normal use it should, hundreds of injections may be performed before the veins or skin need to be replaced.
10	Should have complete replacement kits are available and easy to use
11	To extend the life of the veins, an aerosol sealant is available to seal punctures and prevent leakage.
12	Should have the following Complete Venous Access:

13	Basilic Vein.
14	Cephalic Vein.
15	Digital Vein.
16	Dorsal Metacarpal Vein.
17	Median Basilic Vein
18	Accessory Cephalic Vein.
19	Extensive Venepuncture System
20	Flexible Fingers and Wrist
21	Intradermal Injections
22	Intramuscular Injections
23	Median Antebrachial Vein.
24	Median Cephalic Vein.
25	Median Cubital Vein.
26	Replaceable Skin and Veins
27	Thumb Vein.
10	**Central venous catheterization simulator**
1	Model should be an upper torso ultrasound central line and regional anesthesia mannequin
2	Should have realistic external and internal anatomy for ultrasound guided or blind insertion training
3	Should be anatomically correct; cast from a live patient and constructed from a digital human file
4	Regional anesthesia anatomy should include: supraclavicular nerves, interscalene nerves, infraclavicular nerves and enhanced access of the posterior interscalene nerve block approach
5	The brachial plexus can be injected with simulated anesthetics to verify needle tip location and to practice the entire anesthesia procedure
6	Injected simulated anesthetics should be expelled allowing for repeated use
7	Must have venous anatomy includes: internal jugular vein (IJ), brachiocephalic vein, subclavian vein and axillary vein
8	Arterial anatomy includes: carotid artery, subclavian artery and axillary artery
9	Simulated superior vena cava, right atrium and right ventricle should allow clinicians to fully thread guidewires and catheters without resistance

10	Internal landmarks for superior realism include the trachea, manubrium and clavicle
11	Veins should be compressible using mild pressure while the arteries remain uncompressed
12	Model should be excellent for training clinicians in the psychomotor skills associated with ultrasound guided central line placement training
13	Arterial pulsations simulated using provided with pumping system
14	Positive fluid flow in the vessels; model is prefilled with red fluid in the arteries and blue fluid in the veins
15	Facility to refill fluid
16	Soft part should be capable of at least 1000 procedures/pricks
17	Excellent imaging quality using any ultrasound system.
11	**Intraosseous infusion & femoral access Leg**
1	IT should have features for intraosseous infusion practice include palpable landmarks including the patella, tibia.
2	It should have tibial tuberosity replaceable bones and skin.
3	It Should have a pressurized system to allow aspiration of fluid.
4	For femoral access, model should have features include -
5	o Palpable arterial pulse o Realistic flashback from pressurized venous system o Replaceable injection pad o An articulated leg that allows proper positioning.
6	15-gauge intraosseous infusion needle should included
12	**Prostate Examination Simulator**
1	Instructors should have the ability to teach techniques of prostate examination with no harm or embarrassment to real patients.
2	Every student can learn to detect beginning stages of prostate cancer and increase chances of patient survival.
3	Four separate prostate glands should be supplied with the torso, representing one benign gland.
4	Three stages of prostatic carcinoma in varying degrees of development should be supplied with the model .
5	Each gland should be inserted into the prostate torso to allow realistic practice in diagnosis by rectal palpation.
	It should have the following stages
1	STAGE A GLAND - Benign, slightly enlarged, but otherwise normal prostate gland.

2	STAGE B GLAND - A discrete, hard nodule is palpable in the upper right quadrant. This simulates a beginning stage of carcinoma.
3	STAGE C GLAND - The spread of carcinoma is demonstrated in this gland. The small nodule has increased in size and has become an external hard mass on the surface of the gland
4	STAGE D GLAND - This gland is totally replaced with carcinoma. The entire gland will feel hard and irregular.
13	**Multipurpose clinical centasis**
	Excellent for training clinicians in the psycho-motor skills associated with ultrasound guided thoracentesis procedures
	Ultrasound tissue module contains the chest wall superficial tissue, 6th, 7th, 8th, and 9th ribs and intercostal spaces, pleural cavity with lung and atelectatic lung, diaphragm, and superior spleen.
	Superb ultrasound imaging characteristics: extremely realistic in ultrasound imaging characteristics and feels like real human tissue
	Ultrasound tissue is ultra-durable; self-healing tissue offers a long life providing a low cost of ownership.
	Positive fluid flow offers users immediate feedback when pleural effusion fluid is accurately accessed.
	Pleural fluid that is removed during thoracentesis procedural training is easily refilled using a quick fill port – or automatically refilled using I.V. bag reservoir.
	Ultrasound tissues match the acoustic characteristics of real human tissue so when you use your ultrasound system on our training models, you experience the same quality you expect from imaging patients in a clinical environment.
	Excellent imaging characteristics using any ultrasound imaging system.
	Practice using ultrasound system controls.
	Extremely durable; use for repeated training.
	Model should be good for at least 1000 punctures.
14	**Episiotomy suturing trainer**
	Model should be a replica of female genitalia.
	It should be malleable, with that lifelike skin feeling of realism.

	Should be entirely made of realistic skin for extremely realistic training experience.
	Model should allow students to practice episiotomy suturing and haemorrhoid identification.
	Model should be made of realistic skin that is non-moulding and hypoallergenic.
	Should be easy to clean and long lasting
	Model Includes one of each simulator:
	Midline Suture Simulator
	Left Mediolateral Suture Simulator
	Right Mediolateral Suture Simulator
15a	**Simulator for Pelvic Examination,Gynaecological Simulator with IUD**
	Advanced Pelvic Examination and Gynaecological Simulator is ideal for all aspects of gynaecological education, training, and competency evaluation
	Model must include bimanual examination, speculum exam, and cytology sampling.
	Should have the interchangeable components that make up its unique modular system.
	Should allow you the flexibility of customizing your scenarios with use of included makeup, blood, and thickener.
	Additional specialized modules should also be available (STD, post-menopause, S.A.N.E., and pre-puberty).
	Starter unit should include following
	o Torso, normal genital pad o Normal pelvic organ block with vagina and rectum o Abdominal gel pad o Fabric abdominal pad o Abdominal overlay skin o Seven uterus/cervix pieces o Normal/normal with discharge option o Retroverted/cervicitis, o Cancer/cancer o Transparent IUD trainer o Post-menopause/herpes o Fibroids/polyp o Early pregnancy
	Five detachable ovaries

	o Normal, o Polycystic, o Small cyst, o Large adnexal mass
	Bladder insert
	Pelvic organ prolapse insert
	Baby powder
	Injury shades makeup wheel
	Primary colours makeup wheel
	Blood mix
	Hydroxyethyl cellulose thickener
	Syringe
	Lubricant
	Instruction manual
	Hard carry case
	It should be completely washable, disassembles for easy cleaning
15b	**Simulator for IUD Insertion**
	OPTION Simulator for IUD Insertion
	Model should be a hand-held model for the training of IUD device
	Model Should be a non-toxic rubberised model
	This should be anatomically accurate and fit for insertion for IUD device
	Model should have Coronal section of uterus, ovaries, and fimbriae
	Model should have Clear plastic window permits easy viewing of IUD
16	**Intra Aural Examination Trainer**
	The Intra-Aural Examination Simulator should have option to practice examination of the human ear. It should be specially moulded to exactly simulate external and internal physical appearance and dimensions, the plug-in removable ears are easily changed.
	It should have life-size full-colour prints on film, embedded at the tympanic membrane, provide the same realistic views experienced with a live patient.
	The lifelike, flexible texture of the ears requires the same manipulation when using the otoscope as required on a live patient. Realistic irrigation and cleaning exercises should be possible with the two tubes of synthetic earwax that are provided with the simulator.
	A supplementary set of four ears should available separately for advanced nursing and medical school training
	It should include the followings -

	Normal tympanic membrane (photo embedded)
	Mucoid otitis media (photo embedded)
	Serous otitis media with fluid level (photo embedded)
	Chronic otitis media with perforation (photo embedded)
	Normal tympanic membrane with slanted ear canal (photo embedded)
	Normal ear without photo for earwax removal exercise
	Two tubes of synthetic earwax image CD instructions
	Hard carrying case.
17	**Simulator for neonate care**
	Defibrillation shock can be delivered through manikin or simulator
	It should connect with defibrillator/external pacer to simulator using adapters
	Should have built-in circuitry allows you to defibrillate and pace directly into the ECG simulator and observe ECG rhythms through the PADS connector
	Select another rhythm to run immediately after defib discharge
	Pacing can be done on any manufacturer's defibrillator
	It should have battery saver feature for powers-off simulator automatically when not in use
	Should have 6 waveforms
	Should have 17 adult/paediatric rhythms
	Mandatory Features:
	o Airway, breathing, intubation, and ventilation o Birth anomalies o Chest tube placement o CPR o ECG simulation o Gastrointestinal (GI) tube o Interchangeable genitalia o Intraosseous infusion o IV hand and foot o Observation and measurement o Palpable manual pulse points in 7 locations o Patent umbilicus with venous and arterial access o PICC site in arm o Urinary catheterization
	It should come complete with:

	o Airways, 2 standard and advanced o Baby powder o Blood o Carry bag o Defibrillation chest o Intraosseous bones and skin o IV bag o IV skin and veins for hand and foot o Male and female genitalia o Myelomeningocele o Needles o Omphalocele o Umbilicus
18	**Infant IV Arm**
	The arm should represent of an infant with extremely realistic anatomical land mark
	It should be made of medical grade vinyl material
	Model should have life like skin that can mimic real skin
	Model should have Rubber tubing with appropriately small lumen and thin walls
	it should have cephalic and basilic vein
	The veins should be accessible as well as dorsal Venus's arch on the hand
	Model should have flashback of blood when the needle is properly inserted into the veins
	Model should be supplied with the basic necessary accessories
19	**Paediatric Lumbar Puncture Simulator**
	Simulator should represent a 10–12-month-old infant
	Model should be placed in a left lateral decubitus position with the neck and knees flexed, approximating the necessary fatal position.
	It should educate individuals on the skills used to collect samples of cerebrospinal fluid (CSF), measure cerebrospinal fluid pressure, or to inject medications intrathecally
	Embedded iliac crest should offers exceptional realism
	It should have removable spine, spinal canal and skin pad for making training simple and hassle free
	Lumbar puncture can be performed in the L3-L4, L4-L5, or L5-S1 spaces.
	The correct site can be located by palpating the iliac crest and spine.

	A small "give" will be felt as the spinal needle is advanced slowly into the proper space.
	Fluid will flow when the needle is in proper position.
	It should be anatomically correct and palpable
	Should have correct body positioning
	Lumbar pad can be easy to replace
	Should have realistic resistance
	Simulated CSF flows with successful puncture
20	**Suture practice trainer (Complete)**
A	**Advanced Surgical Suture Training Arm Model**
	The arm should have realistic anatomy for the suture training.
	it should look like a real female arm with all anatomical land marks.
	the model should offer practice of stiches as well as simulation of injection, removal of speeches and incisions
	It should allow a complete intervention beginning with an incision until the removal of the stitches in a safe and realistic setting
	Model should be good for the practice of stitches
	It should offer simulation of injection, removal of stitches and incisions
	model should be durable and each wound can be suture several times, making this trainer very economic and suitable even for longer skill training classes
	Model should allow punctures without injections
	Model should be made of realistic skin that is non-moulding and hypoallergenic
	Should be easy to clean and long lasting
B	**Advanced Surgical Leg Suturing Training Model**
	The model should be a replica of female foot.
	The artificial limb should be made of lifelike skin for the real simulation training
	Model should be designed for the practice of stitches with threads and staples
	It should be good for practice of incisions, removal of stitches and punctures without injection

	An entire procedure can be performed starting with an incision until the stitches are removed on the model.
	Model should mimic the effects of realistic skin
	Should be extremely durable
C	**Advance Suture kit**
	The model should be based upon a base board for easy working
	the model should offer a soft flexible 3-layer skin opens realistically when a incision is made
	It should be highly resistant to tearing - suturing
	Skin pad should be very durable
	The kit should include inserts for deep dermal suturing , tendon repair and purse-string suture.
	It should be compact portable and washable
	It should have non latex bands to hold the block with base plate
	Should have muscle block, deep dermal block, tendon block, purse-string insert, suture kit and carry bag
D.	**Suture practice trainers for training and evaluation**
	This pad should offer skills such as wound packing, injection, implantation and application of adhesives.
	Should be entirely made of realistic skin for extremely realistic training experience like pinch the skin for injections
	Should be non-staining
	Hypoallergenic
	Easy to maintenance
E.	**Suture evaluation simulator**
	Should be entirely made of realistic skin for extremely realistic training experience
	Should be non-staining and non-moulding
	Skin pads should offer realistic haptic feedback when practicing various suturing & stapling techniques.
	Should have realistic subcutaneous tissues
	Should be non-staining

	Hypoallergenic
	Easy to maintenance
21	**Tracheostomy & Cricothyroidotomy Simulator**
	Must have features:
	Should be lightweight and durable training device designed for efficient procedure training
	Should have palpable cricoid landmarks, laryngeal cartilages and tracheal rings provide
	Positive user feedback with easy identification of the sternal notch and the clavicle bone
	Should have correct technique verification with replaceable lung bag
	Neck skin should be rotated on the model allowing up to 20 incisions
	Should allow larynx insert 1 surgical cricothyroidotomy and 3 tracheostomy procedures
	All consumables should be quick and easy to interchange, perfect for a busy teaching environment
	Should have option to add subcutaneous fat tissue to simulate difficult tracheostomy or
	Should have practice option for cricothyroidotomy procedure
	Training Model Should Be Good for Below Trainings:
	o Needle and surgical cricothyroidotomy o Air jet ventilation o Percutaneous tracheostomy o Seldinger technique
22	**Nasopharyngeal Swab Collection Simulator**
	The model should a head with open nasal & oral cavities
	Training of how to properly executed NP swab insertion for respiratory infections according to the procedure
	Should train how to collect a Nasopharyngeal (NP) swab, amygdala, buccal, throat, nasal mucosa.
	Simulator should features true-to-life anatomy, including the tongue, uvula and teeth, providing a realistic training experience.
	Should have realistic skin feeling
	Should be non-staining
	Hypoallergenic
	Easy maintenance
23	**Upper Body Bandaging Simulator**
	Should allow Practice and demonstrate standard bandaging procedures.

	Should be used to demonstrate the attachment of prosthetic devices.
	Includes the two arms - one is amputated above the elbow, the other above the wrist.
	Both arms must be slightly extended in a patient-like position to facilitate bandaging.
	The compressibility of the material very closely duplicates actual experience with a patient.
24	**Lower Stump Bandaging Simulator**
	Should allow Practice and demonstrate standard bandaging procedures.
	The lower torso should be long enough to allow carrying the bandage around the body over the uninvolved hip at the level of the iliac crest.
	Should be used to demonstrate the attachment of prosthetic devices.
	The lower torso should be representative of a patient in a supine position with legs slightly abducted
	Model should come with one leg amputated below the knee, the other at midthigh.
25	**Composite Critical Care and Surgery Simulator**
	The Emergency/Trauma medical services Cut Suit should be especially suitable to accomplish these following goals in training.
	First, it allows medical providers to treat the three primary causes of death on the on a real human casualty; uncontrollable haemorrhage *with a blood distribution system, airway compromise, and tension pneumothorax
	System should have the following features:
	• The system can be worn during even intensely physical scenarios at the Point of Injury (POI)
	The system weighs should not be more than 12 kg
	• Clothing, uniform, body Armor, and equipment is usable over the Cut Suit
	The system allows for interaction with a live patient during the emergency assessment and treatment process.
	The skin is user repairable, allowing for multiple uses per unit
	User created and customizable wound patterns.
	Simulator must have the facility to do the following procedures on Trauma Cut Suit:

	• Extremity haemorrhage control with tourniquet application, arterial ligation/clamping, interna
	Compression (wound-void packing) *with a blood distribution system
	Surgical Cricothyroidotomy
	Bilateral anterior and axillary chest needle thoracentesis
	Bilateral surgical chest-tube thoracotomy
	Suturing and stapling of skin in all locations
	Peripheral IV access
	Sternal intraosseous IV access
	Peripheral IV medication administration
	Trauma cut suit must be supplied with Blood pumping systems and trauma kit.
	Blood Pumping System should be Hyper-Realistic medical training system to simulate human arterial and Venous haemorrhage in conjunction with simulated human injury products.
	The BPS should be self-contained and allows for 4 simultaneous bleeds controlled by a wireless fob with a 50-foot standoff.
	Each line should be controlled by the operator to simulate both venous and arterial bleeds. The BPS should be supplied with 2 femoral sleeves (1 with and 1 without pants), 2 brachial sleeves (1 with and 1 without bone), blast trousers, and 1
	Gallon of blood concentrate for up to 6 gallons of reconstituted blood.
26	**Intradermal Injection Simulator**
	This model should only allow administering of an intradermal injection.
	It should come with a strap that can be used to wear the pad in simulated scenario
	It should permit injections at 9 injection sites
	It should be including epidermis and the dermis layers that should behaves like real skin to ensure a realistic training experience.
	Intradermal injection should produce a bleb of liquid or air like real life experience if the fluid is properly injected that should appear like a wheal or blister on the skin's surface.
	Medication injected into the dermis should be absorbed slowly because of this skin layer's limited blood supply.

	It should be made up of skill that gives realistic skin feeling, Non staining, Hypoallergenic and mould free.
27	**Gluteal IM Injection Mode**
	Model should be ideal for practicing ventro gluteal injections
	Model should have bony structure so that students can feel the bone, which is used as a landmark for finding the correct injection location
	The interior of the model should contain a sponge, which prevents deterioration or mould generation, even after repeated injections
	Model should have self-healing skin for the realistic experience
	Model should be made of realistic skin that is non-staining and hypoallergenic
	Should allow users to inject fluid that can be removed through a hole on the underside of the model.
28	**Basic Life Support (BLS) System- Adult**
	Should give Real-time feedback on compressions/ventilations with app in mobile or tab
	Must Have Features-
	Easy to assemble, maintain and clean
	Reference points for hand placement and compressions
	Tilted head and chin lift for airway openings
	Simulates obstructed airway
	Visible chest rises when ventilated
29	**Basic Life Support (BLS) SystemPaediatric-**
	The manikin should be realistic half body torso of a child
	Should have visible anatomical landmarks include the sternum and the rib cage, plus substernal notch.
	The manikins should simulate the realistic head tilt and chin lift necessary for opening the airway.
	Should have a chest rise that demonstrates a successful rescue breath. System should feature easy installation of a single-use airway/face shield system
	Changing of airway/face shield system should be very quick.
	The use of the disposable, economical airway/face shield avoids crosscontamination and does not require cleaning, disinfecting, or disassembly.
30	**Basic Life Support (BLS) SystemNeonate**
	The manikin should be realistic full body manikin of a new-born
	Should have visible anatomical landmarks like a new – born baby
	Should be a foam-filled, latex free, one-piece bodies offer uni-body construction for virtually indestructible handling
	Should be rugged models that lasts for years

	Should come with replaceable face shields to prevent any cross contamination
	Should come with easily replaceable lung bags
	Should be good for realistic CPR
	Head lilt and chin lift can be done easily for the airway training
	Ventilation skill can be learned on the manikin
	Face shields can be cleaned easily by mild soap
31	**Multiple delivery position pregnancy Simulator**
	The simulator should be a replica of female pelvic.
	The mannequin should be made of medical grade vinyl
	The Obstetrical mannequin should be anatomically correct with full term new born and placenta,
	Model should offer realistic practice in multiple techniques such as procedure of emergency child birth forceps/vacuum
	Model should have disposable umbilical cords with clamps
	It should have easily replaceable extra vulva and powder to make simulated blood
	It should have a modular pregnant belly overlay with permanently installed fetus for training practice of the Leopold's maneuverer to determine the fetus lie by palpating its skull and kneecaps
	It should have a clear abdominal overlay to see positioning are all included.
	Model should be capable of imparting bellow training –
	Shoulder dystocia Normal delivery Forceps/vacuum delivery Fetal attitude Fetal station Fetal lie Cord prolapse Compound presentation Cesarean section incision locations
	The Mannequin should have lifelike pelvic cavity has prominent pelvic landmarks, located spinal column, angled birth canal, ileum, ischium, sacrum, sacro spinious ligaments, and greater sciatic notch.
	The mannequin should also offer advance life support in obstetrics training programs
	System should include bellow items-
	OB MANIKIN with soft carry bag
	Pelvis (Rigid)

	Obstetrical Vulva (anatomically correct)
	Obstetrical Transparent Overlay
	Obstetrical Pregnant Overlay (with permanently installed fetus)
	Obstetrical Opaque Overly
	Placenta
	Umbilical Cords (1 dozen)
	Polyback Mat (5 pack)
	Methyl Celluose
	FETUS (newborn)
	FETUS (premie)
	Umbilical Cord Clamps
	Blood Powder
	Air Inflation Bag
32	**Breast Examination and Palpation Simulator**
	The breast model should work fine as a table top advance training model
	It should be made of Soft Vinyl
	It should be designed for supine or upright examination
	The model should be correctly positioned in the supine position and
	allows access to both axillae
	The tissue density should vary within the simulated breast
	It should have tumors of varying sizes (1-4 cm diameter), shapes (round, oval, irregular wheal lar/stellate), and densities can be
	inserted by the instructor for an expanded
	combination of training scenarios
	The Tumors in model should have adenomas, cysts, malignant
	tumors, and enlarged lymph nodes
	It should feature palpable ribs, sternum and clavicles,
	and enlarged lymph nodes in the axillary and sub clavicular areas
	Model should have typical Peaud' orange ("orange peel skin") with inflammation,
	inverted nipple, skin dimpling, and asymmetry that also depicted on the incredibly realistic skin
	Training may also be done without the overlay skin
	It should include a rigid underbody, right and left breast
	inserts, overlay skin, 3 tumour sets (27 lumps)
	9 soft nodules to represent soft breast tissue
	1 hard lump to represent chest wall infiltration
	Baby powder
	Instruction manual, and hard carry case
33	**Enema trainer**
	The Enema Administration Simulator can be used for group demonstrations to teach enema procedures.
	It must use for realistically practice of administering an enema.

	The standard enema procedures can be performed using conventional enema apparatus - no special equipment is required.
	The upper buttock should be flexible so that the trainee must raise the buttock in order to locate and make insertion into the anus.
	A drain tube should be provided so that the fluid can be drained directly into a large container or sink, for continuous use.
	It should Include a hard carrying case, enema administration set, and teaching guide
34	**Adult airway trainer**
	The simulator should be Ideal for training in...
	Oral and nasal intubation
	Needle and surgical cricothyroidotomy
	Percutaneous tracheostomy
	Bag/mask ventilation
	Laryngeal Mask Airway (LMA) and supraglottic device insertion
	Combitube insertion"
	It should allow 20,000+ intubation cycles without fail and is supported by a 5-year airway guarantee
	Realistic larynx which features palpable cricoid landmarks, laryngeal cartilages and tracheal rings should be there to provide positive user feedback and easy identification of the sternal notch
	"It should have Inflatable tongue bulb to create tongue edema providing a variance during training "
	It must include user feedback through the visualization of stomach inflation and lung expansion
	It should also have optional subcutaneous fat tissue with blood that can be added to demonstrate a more difficult tracheostomy or cricothyroidotomy procedure
	It should be provided with two difficult airway options are available (if required)
	Its design should allow for all parts to be changed within insitution it self
	It should allow upgradation to an simultaor that allowsr bronchoscopy training techniques
	It should be delivered ready to use in a durable carry case for easy transportation and safe storage
	The package should include
	• 1 USB pen drive containing product user manual • 1 bottle of lubrication (100ml) • 5 larynx inserts (1 supplied on manikin & 4 spare) • 1 wraparound neck skin (supplied on manikin)"
35	**Child airway trainer**
	This training model should be Ideal for training in…
	Oral and nasal intubation
	Needle and surgical cricothyroidotomy
	Percutaneous tracheostomy

	Bag/mask ventilation
	Laryngeal Mask Airway (LMA) and supraglottic device insertion
	Combi tube insertion"
	"It should be certified to practice 20,000+ intubation cycles without fail and is supported by a 5-year airway guarantee
	Realistic larynx which should feature palpable cricoid landmarks, laryngeal cartilages and tracheal rings to provide positive user feedback and easy identification of the sternal notch
	It should have Inflatable tongue bulb to create tongue edema providing a variance during training
	The manikin should have user feedback through the visualization of stomach inflation and lung expansion
	Optional subcutaneous fat tissue with blood can be added to demonstrate a more difficult tracheostomy or cricothyroidotomy procedure
	It should have missed front tooth to illustrate realistic dentals of a 6-year-old
	It can be upgraded for bronchoscopy training techniques"
	It should include:
	• 1 carry case • 1 USB pen drive containing product user manual • 1 bottle of lubrication (100ml) • 5 larynx inserts (1 supplied on manikin & 4 spare) • 1 wraparound neck skin (supplied on manikin)"
36	**Learning management System with Following feature**
	LMS must have following features and Quoted must include all hardwa re/software/active and passive components including licencing
1	LMS and encrypted video streaming, record and playback high definition video and presentation, up to HD 720p
2	Create interactive, multimedia rich courses using content library with unlimited cloud storage • Share content through HTTPS/ REST protocol
3	Enhance course effectiveness with exhaustive assessment options, reports and analytics • Shared virtual whiteboard, updates its view for all attendees in real time
4	Supports You tube videos within live classes and content loading from Gmail, Google drive etc. in to the library
5	User/ Role Management and Customization at Administrative, Student and Teacher level - admin with the ability to limit the maximum number of participants and restrict or authorize the recording capabilities to a definite set of users

6	Supports multi-tenant architecture where users are registered per tenant - Instructor managed mute control for both audio & video - Instructor/Co-instructor can annotate on top of the shared content (like PDF,PPT and DOC) in the session
7	Additional registered co-Instructor are allowed with sufficient permissions, to schedule a session at any time with ability to share desktop using screen sharing, play a video file, conduct a poll during the session,access others content library, upload and share content from desktop, plot shapes like triangle, rectangle,cube, advanced Shapes like Flow charts, Chemistry, Maps and Grids, Emoticons etc. and rights to remove the unwanted attendee from the live session - Supports multiple students in single virtual classroom session
8	View attendee list in the live class also remotely control audio/video streams - Display names for each participant connected in the session
9	Discussion forum - 24x7 mentoring, peer to peer learning - Tests and assignments with automated instant results - Performance analytics and reports - Shared media player to share any audio/video file (streamed directly from the cloud) - Web based scheduling interface to schedule live sessions
10	Send SMS-invites, Email notifications about session scheduling, session reminder, etc. to all registered participants with a click of button
11	Live group and private chat - Shared code editor enabling the teaching of software languages - Create/delete new and bulk users through a CSV file
12	Get attendance report including total number of sessions conducted, each attendee’s login/logout time,total number of minutes attended, absentees etc. also retrieve and downloaded in excel format - Course certificate for learners
13	Upload and share multiple image formats like JPG, PNG etc. during the virtual classroom session
14	Time lapsed and time remaining option to extend the duration of the class from within the virtual classroom session
15	Provision to have a centralized directory by the administrator of all registered users - Registered users access based on administrator privileges - Access to virtual classrooms protected by username and password authentication so that before the Instructor/Co-instructor enters, participants are placed in a virtual waiting room.
	Network storage & playback option
1	live and record –
2	Minimum 5TB of cloud storage to store session recordings –
3	Upload files with minimum of 1 GB file size; add meta data(title,description, language) to each uploaded file
4	Delivered to students regardless of their locations on standard PCs/Laptops through standard WiFi & 4G internet connection
5	Scheduled sessions and Ad hoc sessions mode at the same time

6	5 or more simultaneous video streams and 20 simultaneous audio stream - Web based (web app) with automatic NAT firewall traversal (no extra hardware required), ICE, STUN, TURN protocols for secure connectivity over Internet.
7	Works in Google Chrome, Mozilla FireFox web browsers without any software downloads - Supports major operating systems like Windows, Mac and Linux
8	Cloud based online content library
9	updated and accessible
10	Class recording automatically available for web and mobile streaming within a certain duration of the class ending –
11	The media traverse over encrypted SRTP (Secure RTP) –
12	Store recording back in the content library automatically, download in mp4 format
13	Connect any endpoint which is connected to the internet using IP v4 or IP v6
14	Intelligent built in capability for dynamic bandwidth, resolution matching ,fallback to pure audio maintaining the continuity of the session in low bandwidth
15	Join session with authentication by the user over OAuth2.0, or other standard SSOs if desired
16	Record and playback High definition video and presentation, up to HD 720p; fast forward, rewind and skip video of recording during playback
17	Stream session recording via HLS in Chrome/Firefox - Admin/Instructor can save the recordings file on a local disk
	The system should be supplied with web-based Audio-visual System for briefing and debriefing system:
1	Should have all in one, compact, server appliance includes the hardware and software necessary for an integrated digital audio-video recording system.
	A total of 2 systems should be provided for
2	Each Server should have following specification
3	Should have One server appliance offers a 1:1 ratio between recording areas, simulator and recording appliances with the following built-in components:
	a) Should be able to simulate record up to 5 video sources per server (4 cameras + 1 monitor)
	b) Should be supplied with 2 cameras with each system
	c) Should have Input of 4 PoE IP cameras
	d) Should have Input of 1 VGA, DVI or HDMI video source
	e) Should have WiFi connection to simulators
	f) Should have Input for institution network cable
	g) Should have Built-in digital audio kit
	h) Should have Input for a secondary microphone

	i) Should have Built-in speaker to broadcast in-room intercom announcements
	j) Should have 1,000 hours of HD video recordings
	k) Should have pre-configured with briefing and debriefing software
	l) Each system should be supplied with a latest configuration PC
	m) Each system should be supplied with 52” HD LED Display
	Each server should have briefing and debriefing Software with following specification:
	Should have all in one web -based software application that includes all centre management features on one platform without requiring user licenses, site licenses or add-on software modules.
	Software features should include:
	a) Recording b) Review c) Reports d) Case Manager e) Activities f) Calendar g) Schedules h) Resource Manager i) User Manager j) System Manager k) Lightweight directory access protocol LDAP Integration
	Streaming
	a) Should be able to Live broadcasts with industry leading latency (<1sec) b) Should have facility to connect Up to 4 concurrently displays, and synchronized, camera streams, plus 1 simulator in each room c) Should be able to show live stream videos to any number of remote sites d) Widescreen HD video broadcast and recording, full screen mode e) On-screen PTZ controls: click on image to pan and tilt, drag image to zoom in and out; from multi or single room views f) DVR-type functionality to pause, rewind, and forward; even during live recording
	Record
	a) Full camera control (pan/tilt/zoom) from both live (single room) and a centre overview (all rooms) available in-browser from any client workstation b) Pause lives or recorded view and continue where you stopped (“time shifted live view”) c) Manually start / stop recording or set recording to occur, based on a schedule or on user actions d) Save and restore custom layouts of the simulation/exam room views including size and positioning of individual video streams per room

	Review
	a) Immediate access to recorded data in order to review complex recordings of all cameras, simulator and peripheral device feeds assigned to the room b) Access and control all recorded videos on one page (debriefing, deleting, downloading, renaming or reassigning videos)
	Assess
	a) Intuitive interface for creating custom checklists / rubrics for Learners, Faculty or SPs b) Faculty / Staff can complete user-customized assessment rubrics, while watching live or recorded video c) “What you see is what you get” content editor for the easiest, most streamlined, check list building process ever d) Learners can interact with a variety of the data entry (i.e. SOAP Note, Step II CS write-up, handoff note, etc.) e) Case evaluation, as well as, self and peer evaluations f) Control Learner data entry with timer g) Faculty / Staff can grade any write up or short answer question, submitted by Learners h) Standardized Patients can complete check lists, assessing the Learners, as well as each other Search, preview, and have the ability to reuse all questions
	Report
	a) Generate and export custom reports, covering both the group and individual performance, or use one of the many predefined report options b) Give Learners access to their reports at home or on campus c) Export data from system to work with outside of system (excellent system for researchers) d) Review Faculty and Standardized Patient performance reports for quality assurance and consistency e) Follow Learner progress in key skill is as, throughout their career, within your program
	Activities
	a) All activity cases, event dates, times, and rooms atone glance b) Define participant groups (Learners, Faculty, SPs) with a quick link to add new group c) Link Activities to Calendar events, for a first glance overview on the daily / weekly/monthly program d) Allow Faculty to submit booking requests for specific room / resources within the simulation centre, to be managed by centre administration e) Assign resources, activities and participants to onetime or recurring calendar events

	Manage
	a) User management tools; with the ability to define roles, access privileges, and group memberships b) Batch upload large groups of users at once c) Email notifications for Learners and SP's to choose preferred sessions, in times that are indicated / available for assessments d) Advanced scheduling capabilities, to automatically adjust station schedules and extend rotations, as SP and learner availability changes e) Pre-scheduled recording, start / stop times, and intercom announcements, to coordinate with a pre-defined exam schedule, for a fully auto mated recording system
	Track
	a) Track the use of simulation centre resources (rooms, simulators, personnel, etc.) by client b) Generate reports quarterly / by semester / yearly c) Generate and export utilization and allocation reports (tools to justify expansion, funding, etc.)
37	**Tube feeding trainer**
	The training model should offer proficiency in nasogastric and nasojejunal feed tube and gastrostomy device placement and management in adults
	This model should depict a male upper torso.
	The models feeding tube can be diverted into either the right or left lung, into the stomach, or through a dynamic pyloric sphincter into the duodenum
	It should have an open mouth and moveable head allow visualization of feeding tube curling in the back of the mouth during difficult placements
	The models divided nasal septum should allow use of nasal bridles
	It should be design in such a way that lungs, stomach, and small intestine can all accept fluids, allowing for aspiration and administering feed or medication
	Stomach aspirate pH can also be measured
	The fluids can drain easily when the session is complete
	It should have an option to remove the skin to reveal transparent internal anatomy and aid understanding
	It should include silicone lubricant, instruction manual, and rigid carrying case with wheels
38	**FAST Ultrasound Training Model**
	The model should be a full-torso, made of soft tissue that can be scanned with Ultrasound.
	Model should extend from head to mid-thigh

	The model should offer superb realism, for FAST ultrasound training. Should have ultrasound imaging characteristics of the structures in the thorax, right upper quadrant, left upper quadrant, abdomen, and pelvis. The model should have realistic techniques of learning like to apply the adequate transducer pressure for image acquisition, as well as how to navigate bowel gas and intercostal access. It should have adjustable internal bleeding levels allow learners to individually vary the training cenarios. This fully scannable upper and lower torso should offer extremely realistic internal bleeding that could be adjusted to simulate a wide variety of effusion states, including small, medium and large effusions or no effusions around the liver, spleen, heart, and bladder. It should offer the needle punctures in the pleural effusion areas for the real training The tissue must have self-healing properties Should not require any replacement parts
	ANATOMY:
	Liver Gallbladder Kidneys Spleen Heart Pericardial fluid Lungs Ribs
39	**Sticky Wounds Kit**
	The kit should comprise of more than 20 sticky wounds
	These sticky wounds are made entirely of gel like material for a life like appearance
	Can stick to any surface without adhesive
	These wounds can be applied to any mannequin or standardized patient
	These sticky wound pads should behave like Human skin and have good elasticity
	The set of artificial and realistic wound should be perfect for first aid , army ,health and safety, paramedic training, home care, nursing , bandaging, and hospital care training
	Sticky wounds should be stain- resistant and hypoallergenic
	Can be washed easily with plain water
	This kit of wound should have
	Traumatic cuts Traumatic abrasions Different stage ulcers Ulcer not categorized

40	**Breast FNAC Training Model**
	Feels and biopsies like human tissue
	Must Contains a variety of hyperechoic, hypoechoic, and echolucent masses
	Must Contains 14 masses of varying sizes – ranging from 4mm to 11mm
	Masses should be in central breast tissue and the Tail of Spence
	Should be durable; use for repeated training
	Self-healing tissue technology
	Synthetic tissue should never dehydrate
	Should have self-healing properties allowing for 1000+ punctures when used with an 18–21-gauge needle
	Can be used with any ultrasound imaging system with appropriate transducer
41	**IV arm for flow rate measurement**
	Training arm should provide complete venous access for IV therapy and phlebotomy, plus sites for intramuscular and intradermal injections.
	Must have features:
	It should have an extensive 8-line vascular system allowing students to practice venipuncture at all primary and secondary locations, including starting IVs and introducing over-the-needle IV catheters.
	It should have a venous system that simplifies setup with only one external fluid bag supplying artificial blood to all veins simultaneously.
	The Dorsal surface of the hand should include injectable metacarpal, digital, and thumb veins
	The antecubital fossa Should include the median cephalic, median basilic, and median cubital veins
	Venipuncture can also be performed along the basilic, cephalic, accessory cephalic, and median antebrachial veins
	Intramuscular injections may be performed in the deltoid muscle and intradermal injection sites are located in the upper arm
	Intramuscular injections into the deltoid muscle are enhanced by the soft, lifelike skin and by the natural bony landmarks in the region.
	It should included IV arm circulation pump that offers a continuous flow of blood in a semi-closed system.
	Includes:
	two pint bottles with simulated blood powder
	three fluid supply bags with pinch clamps
	a 2-oz. bottle of intradermal sealant

	3 cc syringe with needle
	12 cc syringe with needle
	22-gauge needle
	infusion butterfly
	latex adapter
	pinch clamp
	power adapter
	battery power adapter
	tubing assembly
	pump tube replacement
	tubing adapters
42	**Advance Life Support Simulator**
	The human patient simulator should comprise of a life like male mannequin, integrated with CPR analysis which must be compliant with American Heart Association's guidelines with correct hand placement, depth, and rate of compressions being captured with following specifications: .
	It should employ multiple models of validated human physiology including cardiovascular system, pulmonary system, neuromuscular system, and central nervous system.
	The models should allow the patient to exhibit clinical signs (e.g., spontaneous breathing, eyelid blinking) and monitored parameters (e.g., electrocardiogram, blood pressure) and should automatically respond to therapeutic intervention without any/ minimal input from the instructor
	Should have realistic aesthetic, easy to use, true mobility, wireless and tether less manikin.
	Should have Two Platforms (interchangeable genitalia) in one (Easy to convert from male to female) for teaching and training.
	3D Holograms of anatomy using AR Simulator with HoloLens
	AR should offer visualization the connection between the physiology and external physical changes in a patient in emergency scenarios
	Neurologic system:
	Should have realistic eyes with reactive pupils to display different state of pupil : Normal , Dilated and Blown
	Mannequin should have simulated eyes to indicate patient condition for these ailments (Keyhole, Jaundice, Blood shot eye, Cataracts, Haemorrhage and Droopy Eyelid pupils)
	Articulation:
	Should have realistic articulation Should have range of motion in hips, knees, ankles, shoulders Should have Cervical motion for practice of patient stabilization
	Airway:

	Should allow practice of following techniques:
	- Bag valve mask (BVM)ventilation - Orotracheal and nasotracheal intubation - Endotracheal, retrograde and fiberoptic intubation and placement of various airway adjuncts - Transtracheal jet ventilation - Needle and surgical Cricothyrotomy - Tracheostomy - Right mainstem intubation and detection - Stomach distention with esophageal intubation - Laryngospasm
	Breathing:
	It should have spontaneous breathing It should have bilateral and unilateral chest rise and fall It should have lung auscultation sites on anterior chest It should have upper airway sounds: Stridor and Gurgling It should allow practice of bilateral needle decompression
	CPR:
	It should be compliant with 2015 AHA guidelines and ERC guidelines It should have realistic chest compression depth and resistance It should have CPR performance metrics that detects hand placement,rate and depth of compressions, recoil, ventilations and ventilation:compression ratio
	IM Medication Administration
	It should have three intramuscular sites: Deltoid and bilateral Vastus lateralis
	Cardiac:
	It should have 4 lead ECG monitoring with real patient monitor It should have 12 –Lead dynamic ECG display It should be compatible with Defibrillation, cardioversion and pacing using live equipment via external defib box
	Circulation:
	It should have unilateral blood pressure measurement by auscultation and palpation It should have bilateral carotid and femoral pulses It should have unilateral radial and brachial pulses It should have variable pulse strength based on patient condition
	Sounds:
	It should have properties of auscultation of normal and abnormal heart, lung and bowel sounds It should have simulated stethoscope utilizing radio frequency technology for auscultation of Heart, Lung and Bowel. It should have bidirectional audio communication between manikin and operator
	Vascular Access:

	It should have Unilateral IV Cannulation at antecubital and dorsum of hand It should have ultrasound training module insert for IV Cannulation/PICC
	Urinary:
	Should allow practice of urinary catheterization without fluids
	Should allow practice of urinary catheterization without fluids
	Holographic Software:
	3D Holograms of anatomy using AR Simulator with HoloLens
	AR should offer visualization the connection between the physiology and external physical changes in a patient in emergency scenarios
	Should have below Simulated Clinical Scenarios inbuilt in the system
	o Myocardial Infarction o Pulmonary Embolism o Sepsis o Stroke o Subdural Hematoma o Tension Pneumothorax
	System Should Be Supplied With:
	1. Manikin 1 nos.
	2. Wireless simulated stethoscope 1 nos.
	3. Tablet with integrated software for running simulator and creating various patient scenarios 1 no.
	4. Simulated Eyes 1 no.
	5. Ultrasound training model insert for peripheral IV cannulation and infusion – 1nos.
	6. Consumables 01 set (IV Hand Injecting Site, IV Elbow Injection Site, Deltoid Injection, Thigh Injection adult, Full Length Sleeve, Neck band, Crico Tape, IV Replacement Tubing Kit)

	7. Trauma kit: Blood Pumping System for Hyper Realistic medical training system to simulate human arterial and Venous haemorrhage in conjunction with simulated human injury products. The blood pumping system should be self-contained and allows for 4 simultaneous bleeds controlledby a wireless fob with a 50foot standoff. Each line should be controlled by the operator to simulate both venous and arterial bleeds. The Blood pumping system should be supplied with 2 femoral sleeves (1 with and 1 without pants), 2 brachial sleeves (1 with and 1 without bone), blast trousers, and 1 Gallon of blood concentrate for up to 6 gallons of reconstituted blood.
	Turnkey work
	It Should include
	i. All modification, Alteration of Civil structure as per the requirement if lab Full Compliance
	ii. All the partition to be done with High density Ply woo with Mica finished upto 2.5 ft to 3 ft from the floor and above that must be 12 mm toughened itched
	glass
	iii.Signage for the entire area
	iv. Storage rack in each and every room as per the requirement & indicated in the layout with lock and Key facility
	v. Doors must be flush doors with glass in between
	vi. Blinds required for the entire area
	vii.Electrical & lights fittings must be of adequate no as per the requirement
	viii.The bidder has to submit the detail 3D drawing as well as the Items offered in the technical bid
	ix. 12 nos of CCTV camera
	x. Celeing mounted Camrea with LMS
	Large discussion Group Room
	1.It should accommodate 40+2 people at a time
	2.Must be supplied with 8 no folding table of Round/oval/Pentagon shape of reputed make.
	2.Must be supplied with 40no Student chair with armrest and cushion and two nos of executive chair .
	4.The room should have supplied with 1 no large 96” UHD interactive board Full Compliance
	5.Must include audio-visual system including Microphone, speaker and audio amplifier system which must be integrated with LMS for debriefing the skills and
	6. Sound proofing of the room is also included if required
	7.One podium
	Small discussion Group Room

	1.It should have a V shape conference table 8-10 people at a time .
	210nos of executive chair. Full Compliance
	3.The room should have supplied with 1 no large 65” UHD interactive board
	4.Must must be integrated with LMS for debriefing the skills and scenarios
	5.Should be supplied with a 4K video bar .
	OSCE Stations
	15 nos Modular workstation areas must be provides similar to the picture as shown below
	Must include electrical & lighting with 15 student chairs & work table.
	Demonstration Room
	1.It should accommodate 40+2 people at a time
	2.Must be supplied with 4no foldablenarrow longtable of rectangular shape of reputed make.
	2.Must be supplied with 40no Student chair with writing Self and cushion and two nos of executive chair
	4.The room should have supplied with 1 no large 96” UHD interactive board
	5.Must include audio-visual system including Microphone, speaker and audio amplifier system which must be integrated with LMS for debriefing the skills and scenarios
	6. Sound proofing of the room is also included if required.
	7.Must have adequate no of lockable Storage racks tostore the task trainers
	ALS Mannequin Room & other Full patient model mannequin
	1.Must have all the facility like ICU bed, and other furniture’s
	2.Must have control room
	3.Adequate no of work table, Executivechair, Control system must be a part of the system
	Furniture
	1.As mentioned above in room wise
	2.Chairs and table for reception Area
	3.Executive Table & chairs for Office room
	4.Stogare lockers for storage area
	5.Particle board /Engineered wood /Laminated board will not be acceptable
	6.Furnitures approved make Godrej / Midmark/ Featherlike / Nilkamal Etc with certified

High-end compact Color doppler Ultrasound (for Anesthesia purpose)

Sl.No.	Specifications
	The system should be state of art latest ultrasound technology and should be suitable for Cardiac,Vascular access, Abdominal, Lung, Nerve blocks, MSK and other point of care applications in anesthesia and critical care scenario. The specific minimum requirements for this equipment are as follows.
1	The equipment must be capable of operating in B Mode, Anatomical M-Mode, Color, Color Power Doppler (CPD), Pulsed Wave, TDI and Continuous wave doppler modes.
2	It must support pinless transducers' technology with linear array, curved array, phased array & TEE formats. The transducers should be easy to clean and disinfect, pls specify their immersion rating
3	The system shall have broadband architecture with an operating frequency of at least 1 to 19 MHz and should process a dynamic range that is at least 180 dB or more.
4	The system should have 15-inch or more medical Grade LCD/LED clinical display monitor with atleast 80 degrees wide viewing angle. The system weight should be less than 8 Kg and should be mounted on sleek stand which can be easily adjusted from vertical to horizontal position or vice versa as per end user requirement. There should be provision for proper cable management to avoid tangles and dragging of transducer cables when moving the system.
5	To prevent cross contamination and infection, the system should possess a sealed & spill proof soft keypad / 10 inch or more touch screen customizable user interface with limited sealed physical buttons which should be easy to clean and disinfect for use in OT & ICU environment. Please specify liquid ingress protection rating for system.
6	System reliability should be ascertained by architecture with latest operating system, which is not easily prone to failure, hang ups, data corruption, while in networking environment. (Please Specify the technology)
7	System must possess Tissue harmonic and Pulse Inversion technology on transducers offered or wherever required.
8	The system should have robust data security including an initial security set-up wizard that allows users to choose their security level for data protection.
9	Centerline marker facility on linear & curvilinear probe as well on monitor screen should be available for aiding during procedural guidance.
10	The system shall have the ability to function by 100-240VAC, 50-60 Hz or in-built battery power with the same degree of functionality. Inbuilt battery back-up of system should be at least one hour expandable up to three hours on trolley, without an externally powered UPS to handle critical and emergency situations.

11	The system shall go from the off status to active scanning in less than 40 seconds to address any emergency or critical care needs for interventional and procedures use.
12	The system and standard transducers should be sturdy and drop safe to absorb shocks / any accidental bang on hard surface in busy hospital environment.
13	System should reduce the speckle noise, improves contrast resolution, and provides ease of diagnosis on different applications with auto smart options for ease of use by multiple end users. Please specify the technology.
14	System should have advanced Auto needle visualization tool to eliminate the "hidden needle" in steep angle interventional procedures of vascular access, Biopsies, Small Parts, Musculoskeletal and Nerve examinations. (Please Specify the technology)
15	The system internal memory/hard disk should be at least 128 GB, to store images, clips or combination of the same.
16	The system should have onboard how-to videos (for imaging basics, system use etc.) and should have inbuilt educational video tutorials related to Acute care, procedures, Covid, Anesthesia, Pain Management, MSK etc for scan along learning of end users
17	The system shall have a dedicated acute care, vascular & cardiac calculations packages.
18	The system shall display at a maximum depth of 35 cm, and a minimum of 1 cm
19	The system should have a color compare mode for real time side-by-side comparison of structures in 2D and color mode.
20	The system shall provide the user with a 8X live zoom function that increases the region of interest, without affecting the quality of the image.
21	The system shall be DICOM 3.0 compliant and allows for saving the DICOM configuration via USB, so they are easy to replicate or restore
22	Medical Grade B/W Thermal printer must be supplied along with the system
23	An Ergonomically designed low foot print height adjustable trolley to accommodate Ultrasound system, Printer & other accessories from same OEM must be provided along with the system for easy transport of the system to different area inside the hospital .
24	**Transducers:**
a	Multi-frequency Linear array transducer with operating frequency range of 5-14 MHz for arterial, nerve, venous, Breast, Carotid, musculoskeletal and superficial examinations in adults.
b	Adult curved array transducer with approx. 60 mm footprint and operating frequency of 1-5 MHz for abdominal, MSK, Nerve, spine, gynae and lung imaging.
c	Adult Phased array transducer with frequency range of 1-5 MHz for cardiac lung, TCD & abdominal examinations.
25	The manufacturer shall provide a five-year standard warranty on the system and Transducers

26	The system manufacturer shall additionally provide onsite product training and access to ultrasound education website for end users during installation.
27	Optional Transducers & accessories (to be quoted separately in financial document):
a	Multifrequency, small footprint curved array transducer with 35 mm footprint and operating frequency of 3-10 MHz for Abdomen, Gynecology, Lung, Nerve, MSK, Spine examinations.
b	Multifrequency broadband small footprint Linear transducer nearly 20 mm wide and operating frequency range of 5-19 MHz for Arterial, Lung, MSK, Nerve, Ophthalmic, Superficial, Venous, PIV applications.
c	Broadband multi-frequency Linear array transducer with footprint b/w 35-40mm wide and operating frequency range of 3-12 MHz for arterial, nerve, venous, musculoskeletal, lung and superficial examinations.

	Fully automated urine analyser
Sl. No.	**Specification**
1	Instrument should be Fully Automated, walk away, Integrated Urine Analyzer, integrating both Urine Chemistry and Urine Sediment analysis.
2	Instrument should be based on modular platform with facility to add any further required unit in future.
3	For Chemistry, it should provide Parameters like Glucose, Protein, Blood, Bilirubin, Urobilinogen, pH, Ketones, Nitrite, and Leukocyte. There should be option to use strips with additional parameters like Microalbumin and Creatinine.
4	Instrument Strip Feeder should have Storage of 300 test strips
5	The instrument should also provide Parameters including Specific Gravity, Turbidity & Colour.
6	For Sediment analysis the instrument must be based on Fluorescence Flow cytometry / Auto Image Evaluation Module for measurement of Parameters such as RBC, WBC,Epithelial Cells, Cast and Bacteria with differentiation of types of Epithelial cells.
7	There should be facility to analyze selective samples for Digital Imaging.
8	Digital imaging should only be used to analyse morphology of particles/ cells and not for quantitative estimation OR Can be used for qualitative as well as quantitative estimation
9	The system should provide scatter grams and histograms for easy interpretations.(Real microscopic H P F images or auto labelled microscopic images for easy interpretations-Optional)
10	The system should provide additional RBC Morphology Information like Dysmorphic, Isomorphic.(Ghost RBCs & Acanthocyte Flagging -Optional)
11	The system should be using only Uncentrifuged Native Urine samples for Analysis to avoid Centrifugation loss.
12	Software should be User friendly with programmable QC Files for Sediment and Chemistry. Instrument throughput should be minimum 270 samples / hour (chemistry) & 80 samples / hour (sediment analysis).
13	Instrument should be capable of analysis in Automated Sampler Mode with capacity of 80 sample tubes and Internal Barcode for Sample Identification.

14	Instrument should have flexibility to analyze sample in STAT mode for Sediment analysis.
15	The firm should have Controls /Third party controls available for both chemistry and sediment analysis.
16	The system should have facility for body fluid analysis .
17	In body fluid mode the system should provide all required parameters like RBC, WBC, Epithelial Cells (EC), Mononuclear Leucocytes, Polymorphonuclear Leucocytes, Total Nucleated Cells (TNC) & Bacteria for body fluid
18	Body fluid sample volume requirement should be 0.5 - 2ml(Optional)
19	Instrument should be provided with advanced data management software or work area management with capacity to store patient results for up to 1,00,000 patients with back storage along with QC data storage .
20	The system should have facility for Results Output to Printer or Transmitted to LIS / HIS.
21	Should have European CE or US FDA certification or BIS approved
22	The calibration, IQ, OQ and PQ of the instrument should be performed at the time of installation and certificates should be provided.
23	To be supplied with Branded computer system with at least Core i7 processor, 8GB RAM, 1TB HDD, DVD R/R, 21” or better LED Monitor, Genuine Windows 10 or more, A4 size laser printer and appropriate bar code reader.
24	UPS backup adequate for the duration of one cycle of processing should be provided.
25	Start-up kit for at least 200 tests should be provided free of cost.
26	Appropriate work bench/ stand should be provided for the instrument.
27	Document supporting track record and satisfactory performance from institutes of national importance (minimum one) should be provided.
	Additional conditions:
28	Price for (30,000 number of tests / year) will be considered for price evaluation for 10 years (i.e. 30,000 X 10 year- 5 yr warranty and 5 yr CMC)
29	Instrument throughput for chemistry analysis should be Minimum 270 samples per hour and throughput for sediment analysis should be Minimum 80 samples per hour

30	Declaration of supply of reagents, consumables and all other accessories related to the system including warranty and CMC period must be attached
31	Five (5) years warranty and Five (5) years CMC should be provided with fixed cost consumables etc for entire life cycle with Maintenance kit free of cost
32	Start-up test kit for at least 200 tests should be provided with the system including all consumables, reagents, solutions and other related stores
33	The calibration, IQ, OQ and PQ of the instrument should be performed at the time of installation and certificates should be provided.

Urology Laparoscopic Instruments ,PCNL Instrument & Rigid scope		
Sl No.	**Specification**	**Quantity**
1	Adult Cystoscope	1 Set
1	Straight Forward 0 degree Telescope, diameter- 4mm, Autoclavable, Length 30cm, fiber optic light transmission incorporated.	2
2	Forward 12 degree Telescope, diameter- 4mm, Autoclavable, Length 30cm, fiber optic light transmission incorporated.	2
3	Forward oblique 30 degree Telescope, diameter 4mm, Autoclavable, Length 30cm, fiber optic light transmission incorporated	2
4a	Cystoscope-Ureteroscope Sheath (17/17.5 Fr) with obturators and 2 LUER-lock connectors (± 5% in calibre)	1
4b	Cystoscope-Ureteroscope Sheath (19/19.5 Fr) with obturators and 2 LUER-lock connectors (± 5% in calibre)	1
4c	Cystoscope-Ureteroscope Sheath (22/22.5 Fr) with obturators and 2 LUER-lock connectors (± 5% in calibre)	1
4d	Cystoscope-Ureteroscope Sheath (25 Fr) with obturators and 2 LUER-lock connectors (± 5% in calibre)	1
5	Telescope bridge with 1 & 2 instrument channel	2
6	Rigid Optical Grasping forceps, double action jaws for stent removal compatible with 22/22.5 Fr or smaller sheath	1
7	Biopsy Forceps 7Fr each with double action jaws, flexible, length 35 - 40cm	1
8	Scissors of 7-9 Fr, Single action jaws, flexible, length 35 – 40cm	1
9	Resectoscope Sheath with LUER-Lock stopcock, including connecting tubing for in & outflow, 26Fr, oblique short beak , inner sheath with ceramic insulation, continuous flow (inner sheath should be rotating type)	1
10	Standard obturator & Visual obturator each with channel for flexible instruments.	2
11a	Monopolar Working element – Passive action	1
	(Working element where cutting by means of a spring, the thumb support is movable and in rest position the electrode is inside the resectoscope sheath i.e. Passive action or with inward movement of loop with fingers i.e. Active action)	
11b	Monopolar Working element – Active action	1

	(Working element where cutting by means of a spring, the thumb support is movable and in rest position the electrode is inside the resectoscope sheath i.e. Passive action or with inward movement of loop with fingers i.e Active action)	
11c	Bipolar Working element – Passive action	1
	(Working element where cutting by means of a spring, the thumb support is movable and in 1 rest position the electrode is inside the resectoscope sheath i.e. Passive action or with inward movement of loop with fingers i.e. Active action)	
11d	Bipolar Working element – Active action	1
	(Working element where cutting by means of a spring, the thumb support is movable and in rest position the electrode is inside the resectoscope sheath i.e. Passive action or with inward movement of loop with fingers i.e. Active action)	
12	Cutting loop, angled Monopolar for the working element in point no 11a.(Thick and Thin loop)	3
13	Cutting Loop, angled Bipolar for the working element in point no 11b. (Thick and Thin loop)	3
14	Coagulating electrode ,with ball shaped end Monopolar	2
15a	Collings Knife electrode – Monopolar	3
15b	Collings Knife electrode – Bipolar	3
16	Button electrode bipolar	3
17a	Roller electrode –Monopolar	2
17b	Roller electrode – Bipolar	2
18a	High frequency Cables for Monopolar cautery (minimum 3 meter)	4
18b	High frequency Cables for bipolar cautery (minimum 3 meter)	4
19	Sachse Urethrotome sheath,21 Fr with channel (± 5%)	1
20	Obturator for urethrotome sheath.	1
21	Supplementary Sheath, side open for introduction of balloon catheter, to slip on urethrotome sheath	1
22	Sachse cold knife, straight	3
23	The quoted equipments must be approved by-:	
	(1) US FDA/ European CE/BIS/CDSCO o Equivalent	
	Declaration from principal manufacturer that quoted items are brand new	
	All above equipment should be from same OEM	
	Individual item rate for all items, valid for 5 years after issuance of supply	
	All attachments required to obtain full functionality of the above	
	Adapter for the connecting light source from Wolf/Storz/Olympus must be	
	High frequency cable for connection with electrosurgical generator should	
24	Indigenous accessories to be supplied	
	Flexible Biopsy Forceps 7Fr or less, double action jaws, length 35-40cm	10

	Flexible Scissors, 7-9 Fr, Single action jaws, length 35-40cm	5
	Disposable Ellick evacuator, bottle type (complete set with appropriate connector tubing and compatible adaptor for attaching to resectoscope)	10
	Disposable Toomey syringe, 60 cc, with tip adaptors	10
	Filiform urethral dilator set, 10-22Fr	5
	Ureteric access catheters, 6 Fr	10
	DJ stent, open ended, 6Fr, 26 cm	5
	DJ stent, open ended, 4.8Fr, 26 cm	5
	TURP Y-connector tubing	10
	Self-Sealing Cap	5
	Nickell's adaptor for female cystoscopy	5
	Suprapubic metallic trocar cannula set	5
	Otis urethrotome set	5
	Autoclavable Instrument Tray (appropriate size to fit entire	2
2	Pediatric cystoscope set:	1 set
1	Telescope - Autoclavable 134 °C/ 273 °F, with enlarged image and brightness Size 1.9 mm, 0°& 30°	1
2	Telescope 00 and 300 , 1.9 mm & Miniature Telescope00 , 1.2 mm with working length 20 cm	2
	Cystoscope sheath sizes 7 Fr & 9Fr with obturator and adaptor.	2
	Coagulating electrode 3Fr length 53 cm	2
	Pediatric resectoscope 9Fr with obturator	2
	Telescope bridge with instrument channel	2
	Working element (positive and active cutting action)	2
	Monopolar cord length 300 cm	2
	Cutting loop	2
	Biopsy Forceps & Grasping forceps 3Fr	2
	Fiber optic light cable 250cm long	2
	Cold light LED 175W with 30000 Hours Working Life	1
3	Telescope - Autoclavable 134 °C/ 273 °F, with enlarged image and brightness Size 2.7 mm, 0° & 30°	1
4	Sheath with obturator with fixed irrigation channel with stop cock, Size 11 Fr. - for diagnostic use with 0° telescope	1
5	Sheath with obturator with fixed irrigation channel with stop cock, Size 13 Fr. –with instrument port	1
6	17 Fr universal/compact cystoscope with integrated bridge and forward-oblique telescope	1
7	14 Fr Cystoscope Sheath and Bridge	1
8	Resectoscope Sheath with obturator with fixed irrigation channel with stopcock with distal end insulated, Size 11-13 Fr	1
9	Resectoscope Adaptor (Bridge) for examination without instrument port	1

10	Resectoscope compatible working element with passive cutting action	1
11	Sachse Urethrotome sheath, 10 Fr with channel	1
12	Coagulating electrode for resectoscope with telescope of 2.7 mm, angled 90° retrograde, Hook electrode set of 6	1 set
13	Compatible cutting loop electrode for resectoscope working element	10
14	Compatible HF Cord	2
15	All above equipment should be US-FDA or European CE with 4 digit	
	Declaration from principal manufacturer that quoted items are brand new	
	All above equipment should be from same OEM	
	Individual item rate for all items, valid for 5 years after issuance of supply	
	All attachments required to obtain full functionality of the above	
	Adapter for the connecting light source from Wolf/Storz/Olympus must be	
16	Indigenous accessories to be supplied:	
a	Flexible dormia basket compatible with 13 Fr cystoscope	5
b	Disposable Ellick evacuator, bottle type (complete set with appropriate connector tubing and compatible adaptor for attaching to resectoscope)	5
c	Disposable Toomey syringe, 60 cc, with tip adaptors	5
d	Filiform urethral dilator set, 8-16Fr	5
e	Ureteric access catheters, open ended, 3 Fr & 4 Fr	10
f	DJ stent, open ended, 6Fr, 16 cm & 20 cm	10
g	DJ stent, open ended, 4.8Fr, 16 cm	10
h	TURP Y-connector tubing	10
i	Self-Sealing Cap	10
j	Suprapubic metallic trocar cannula set & Autoclavable Instrument Tray (appropriate size to fit entire set)	1
3	PCNL Instruments Set (Standard size) -26 Fr	2 sets
1	Wide-Angle Straight Forward viewing Telescope 0 to 12°, with parallel eyepiece, autoclavable, with instrument channel and fiber optic light transmission incorporated.	
2	Scope should have large field of view	
3	Scope should have large working channel 12 Fr or more.	
4	Rotatable operating sheath compatible with telescope.	
5	Working length of 220-250mm	
6	Should be supplied with	
	a. Hollow obturator to be use with rotatable sheath. – 1	1
	b Adaptor to be required to connect outer sheath of resectoscope to connect Ellick evacuator or Tommey syringe. – 1	1

	c. Grasping Forceps for stone fragments and coagula, fenestrated jaws, length up to 40 cm –2	2
	d. Grasping Forceps for large stone fragments and coagula, alligator jaws and spring handle, length 34 - 40 cm	2
	e. Grasping Forceps for large stone fragments, 3 expanding jaws and small fixation spikes, length 34-40 cm	2
	f. Sealing membranes, sealing cap 2 Sheaths(different size) for Supine PCNL Set which are long in length	5
7	The alken serial metal dilator set(one set) should include	
	a. Three Parts Initial puncture needle set of Five	
	b. 2 rigid and 2 flexible guide rods	
	c. Telescoping coaxial metal Dilators, entire set from 9Fr to 30Fr.	
	d. Dilatation cannula should be 3mm for introduction of safety guide wire.	
8	Indigenous accessories compatible with 26Fr PCNL Set	
	a. Grasping Forceps for stone fragments and coagula, fenestrated jaws, length 38 cm	5
	b. Grasping Forceps for large stone fragments and coagula, alligator jaws and spring handle, length 34-40 cm – 15	5
	c. Grasping Forceps for large stone fragments, 3 expanding jaws and small fixation spikes, length 34-40 cm – 15	5
	d. Ureteric access catheter, open ended, 6Fr – 30	5
	e. Three parts Initial puncture needle – 30	10
	f. Two parts Initial puncture needle – 30	10
	g. Perc-encircle type basketing forceps –	10
	h. Angulating Perc-encircle type basketing forceps –	10
9	All accessories supplied should be compatible with the supplied nephroscope and as a preference should be from the same company except indigenous accessories	
4	PCNL Instruments Set (Standard size) -24 Fr	2 Sets
1	Wide-Angle Straight Forward viewing Telescope 0°, with parallel eyepiece, autoclavable.	1
2	Scope should have large field of view	
3	Scope should have large working channel 12 Fr or more.	
4	Rotatable operating sheath compatible with telescope.	
5	Working length of 190-220mm	
6	Should be supplied with	

	1. Hollow obturator to be use with rotatable sheath. – 1	1
	2. Adaptor to be required to connect outer sheath of resectoscope to connect Ellick evacuator or Tommey syringe. – 1	1
	3. Grasping Forceps for stone fragments and coagula, fenestrated jaws, length up to 40 cm – 2	2
	4. Grasping Forceps for large stone fragments and coagula, alligator jaws and spring handle, length 34 - 40 cm – 2	2
	5. Grasping Forceps for large stone fragments, 3 expanding jaws and small fixation spikes, length 34-40 cm – 2	2
	6. Sealing membranes, sealing cap – 10	10
	7. 2 Sheaths(different size) for Supine PCNL Set which are long in length	2
7	The alken serial metal dilator set(one set) should include	
	1. Three Parts Initial puncture needle set of Five	5
	2. 2 rigid and 2 flexible guide rods	4
	3. Telescoping coaxial metal Dilators, entire set From 9Fr to 30Fr.	1
	4. Dilatation cannula should be 3mm for introduction of safety guide wire.	
8	**Indigenous accessories compatible with 24Fr PCNL Set**	
	1. Grasping Forceps for stone fragments and coagula, fenestrated jaws, length 38 cm	5
	2. Grasping Forceps for large stone fragments and coagula, alligator jaws and spring handle, length 34-40 cm	5
	3. Grasping Forceps for large stone fragments, 3 expanding jaws and small fixation spikes, length 34-40 cm	5
	4. Ureteric access catheter, open ended, 6Fr	10
	5. Three parts Initial puncture needle	10
	6. Two parts Initial puncture needle	10
	7. Perc-encircle type basketing forceps	5
	8. Angulating Perc-encircle type basketing forceps	5
9	All accessories supplied should be compatible with the supplied nephroscope and as a preference should be from the same company except indigenous accessories	
5	PCNL Instruments Set (Standard size) -22 Fr	2 sets

1	Wide-Angle Straight Forward viewing Telescope 0 to 12°, with parallel eyepiece, autoclavable, with instrument channel and fiber optic light transmission incorporated	
2	Scope should have large field of view, angle of view 6 ˚or more	
3	Scope should have large working channel 10 Fr or more	
4	Rotatable operating sheath compatible with telescope	
5	Working length of 220-250mm	
6	Should be supplied with	
	a. Hollow obturator to be used with rotatable sheath – 1	1
	b. Adaptor to be required to connect outer sheath of resectoscope to connect ellick evacuator or Tommey syringe.	1
	c. Grasping Forceps for stone fragments and coagula, fenestrated jaws, length 34-38 cm	2
	d. Grasping Forceps for large stone fragments and coagula, alligator jaws and spring handle, length 34-38 cm	2
	e. Grasping Forceps for large stone fragments, 3 expanding jaws and small fixation spikes, length 34-38 cm	2
	f. Sealing membranes, sealing cap – 10	10
	g. Cleaning brush - 2	2
	h. Light guide adaptors so that the nephroscope can be connected to any existing branded light source of the hospital.	1
7	The alken serial metal dilator set(one set) should include	
	a. Three Parts Initial puncture needle set of Five	
	b. 2 rigid and 2 flexible guide rods	
	c. Telescoping coaxial metal Dilators, entire set From 9Fr to 30Fr	
	d. Dilatation cannula should be 3mm for introduction of safety guide wire.	
8	Indigenous accessories compatible with 22Fr PCNL Set	
	a. Grasping Forceps for stone fragments and coagula, fenestrated jaws, length 34-40 cm	5
	b. Grasping Forceps for large stone fragments and coagula, alligator jaws and spring handle, length 34-40 cm	5
	c. Grasping Forceps for large stone fragments, 3 expanding jaws and small fixation spikes, length 34-40 cm	5

9	All accessories supplied should be compatible with the supplied nephroscope and as a preference should be from the same company except indigenous accessories	
6	Mini PCNL Instruments Set	2 sets
1	Nephroscope should have a size of not more than 12 Fr.	
2	Nephroscope should have an automatic pressure control system so that stones once broken up to size of 4mm should come out automatically when used with pressure irrigation.	
3	Straight and large working channel should accommodate instruments up to 5 Fr.	
4	The angle of view should be 12 degree or more	
5	It should have an angled eye piece	
6	Should have Single and continuous flow system	
7	Scope should be supplied with non fitting/Lockable sheaths which should work as amplatz sheath as well.	
	a. Each sheath should have a one step dilator	
	b. Sheaths should have an option in length	
	c. 3 sheaths along with one step dilators should be supplied of the following specifications 15/16f, 16.5/17.5, 21/22f	
	d. All three sheaths should be supplied with long length sheaths for supine PCNL and for bariatric patients.	
8	16.5/17.5 and 21/22 Fr sheath, dilators should have a central channel for guide wire and a distal curved channel for placing a safety guide wire along with a central main guide wire.	
9	It should be supplied with	
	a. 5 Fr grasping forceps double action jaws – 2	
	b. 5 Fr biopsy forceps double action jaws – 1	2
	c. 5 Fr scissor single action jaws should be supplied – 1	1
	d. An applicator consisting of sheath and rod so as to use with haemostatic agents like floseal and surgiflow – 1	1
	e. Dilatation cannula should be 3mm for introduction of safety guide wire.	
10	Indigenous accessories	
	a. 5 Fr grasping forceps double action jaws – 15	5
	b. Angulating per-encircle type basketing forceps – 15	5
	d. 5 Fr biopsy forceps double action jaws	5
	e. 5 Fr scissor single action jaws should be supplied	3
	f. An applicator consisting of sheath and rod so as to use with haemostatic agents like floseal and surgiflow	1
	g. Ureteric balloon dilator	10
	h. Ureteric access catheters, open ended, 6 Fr	10
	f. Three Parts Initial puncture needle	10

11	All accessories supplied should be compatible with the supplied nephroscope and as a preference should be from the same company except indigenous accessories	
12	Must have US FDA / European CE Certificate /BIS except Indigenous accessories	
7	Laparoscopic Instruments	1 Set
	Must be same make of the Other Items of Sl 1 to 6 Quoted with Its barcode / Qr Code /Cat no must be engraved / Etched on the Instruments for easy identification	
1	Veress Pneumoperitoneum needle with spring-loaded blunt stylet, LUER-lock, length 10 cm.	4
2	Veress Pneumoperitoneum needle with spring-loaded blunt stylet, LUER-lock, length 13cm	4
3	Trocar size 13 mm, consisting of Trocar with pyramidal tip & cannula, insufflations stopcock, length 11.5 cm, multifunctional valve size 13 mm	6
4	Trocar, size 11mm, with pyramidal tip cannula without valve with insufflations stop-cock, length 10.5 cm with multifunctional valve and Reducer 11/5	6
5	Trocar, size 6 mm, with pyramidal tip cannula without valve with insufflations stop-cock, length 10.5 cm with multifunctional valve	6
6	Trocar size 3.5 mm, consisting of Trocar with pyramidal tip & cannula, insufflations stopcock, length 5 cm, with LUER- lock connector for insufflations, Silicone Leaflet Valve.	4
7	TERNAMIAN, Endotip cannula size 6 mm, consisting of multifunctional valve, cannula with thread, with insufflations stopcock, length 10.5 cm.	4
8	TERNAMIAN, Endotip cannula size 11 mm, consisting of multifunctional valve, cannula with thread, with insufflations stopcock, length 10.5 cm.	4
9	Double reducer 13/10 mm and 13/5 mm	4
10	Reducer 11/5 mm	6
11	Reduction Sleeve , reusable, instrument size 3mm, trocar cannula size 6 mm.	4
12	Click-line KELLY dissecting and Grasping Forceps, rotating, with connector pin for unipolar coagulation, size 5 mm, length 36cm, “tiger-jaw”, 2x4 teeth, single action jaws, consisting of plastic handle with rachet, outer tube, insulated, forceps insert.	4
13	Dissecting and grasping forcep rotating with connector pin for unipolar coagulation, size 5 mm, length 36cm double action jaws, consisting of plastic handle with rachet, outer tube, insulated, forceps insert.	4

14	Dissecting grasping forcep rotating with connector pin for unipolar coagulation, size 5 mm, length 36cm double action jaws, consisting of metal handle with haemostat style rachet, outer tube, insulated, forceps insert.	4
15	Dissecting grasping forcep rotating with connector pin for unipolar coagulation, size 5 mm, length 36cm single action jaws, consisting of metal handle with haemostat style rachet, outer tube, insulated, forceps insert.	4
16	Dissecting grasping forcep rotating with connector pin for unipolar coagulation, size 10 mm, length 36cm, right angle double action jaws, consisting of plastic handle without rachet, outer tube, insulated, forceps insert.	4
17	Dissecting grasping forcep rotating with connector pin for unipolar coagulation, size 10 mm, length 36cm double action jaws, consisting of: metal handle without rachet, outer tube, insulated, forceps insert.	4
18	Dissecting grasping forcep rotating with connector pin for unipolar coagulation, size 10 mm, length 36cm double action jaws, length of jaw 40 mm, for organs, consisting of metal handle without rachet, outer tube, insulated, forceps insert.	4
19	Kelly Click-line Dissecting and grasping forcep rotating with connector pin for unipolar coagulation, size 3.5 mm, length 30 cm double action jaws, consisting of plastic handle without rachet, outer tube, insulated, forceps insert-For use with Trocar 3.9 cm.	4
20	Click-line Dissecting and grasping forcep rotating with especially atraumatic fine serration, rotating, size 3.5 mm, length 30 cm single action jaws, consisting of plastic handle without rachet, outer tube, insulated, forceps insert-For use with Trocar 3.9 cm.	4
21	Laparascopic MARYLAND Right angle dissector 5mm and 10 mm, with working length 36 cm, Tip/jaw 23mm,with Monopolar handle, rotating.	4
22	Click line hook Scissors, rotating, with connector pin for unipolar coagulation, size 5mm, length 36 cm, blades curved, double action jaws, length of blades 12 mm, consisting of insulated handle without rachet, outer tube, insulated, forcep insert	4
23	Click line METZENBAUM Scissors, rotating, with connector pin for unipolar coagulation, size 5mm, length 36 cm, blades curved, double action jaws, length of blades 12 mm, consisting of insulated handle without rachet, outer tube, insulated, insert.	4
24	Scissors insert, scissors curved, length of blades 12 mm, double action jaws, size 5 mm, length 36 cm.	4

25	Click line BABCOCK Grasping Forceps, rotating with connector pin for unipolar coagulation size 5mm length 36 cm double action jaws , with plastic handle, without rachet, outer tube, forcep insert	4
26	RoBi Grasping forceps rotational with connector pin for bipolar, size 5 mm length 36 cm, CLERMONT-FERRAND Model, with especially fine atraumatic serration, fenestrated jaws, double action jaws with consisting of Ring handle, outer tube, insulated, forcep insert.	4
27	Take-apart MANCHES Bipolar coagulating size 5mm length 36cm,width of jaw 3mm,with spring handle, outer tube, forcep insert	4
28	Take-apart MANCHES Bipolar coagulating size 3mm length 30cm,width of jaw 3mm,with spring handle, outer tube, forcep insert	4
29	Bipolar HF cord with 2 x 4 mm banana-plug to coagulator, length 300 cm	4
30	Click line Claw Forceps rotating 10 mm, length 36 cm, 2x3 teeth, single action jaw, consisting of metal handle without rachet, outer sheath, insulated, sponge holder insert.	4
31	Surgical sponge holder for atraumatic dissection of tissue layers, size 5mm length 30 cm, consisting of handle, outer sheath, insulated, sponge holder insert.	4
32	Suction & irrigation tube, anti reflex surface with two-way stop-cock for single hand control, size 5 mm, length 36 cm.	4
33	CUETO Needle, U-shaped, for subcutaneous ligature of Trocar incisions, length 14 cm.	10
34	Aluminium container for sterilization and sterile storage.	3
35	Sealing cap, for use with trocar size 3.5mm	4
36	Sealing cap, for use with trocar size 6 mm.	4
37	Sealing cap, for use with trocar size 11 mm.	4
38	Sealing cap, for use with trocar size 13 mm.	4
39	Needle holder straight jaws axial ring handle with ratchet size 5 mm length 33 cm for use with suture material 2/0-4/0 needle size RB (Ethicon)	2
40	Needle holder convex / concave slim jaws curved left axial ring handle with ratchet size 5 mm length 33 cm for use with suture material 3/0 needle size RB-1 (Ethicon)	2
41	Transurethral Bougie 18 fr, with working channel 9 Fr, for anastomosis during laparoscopic prostatectomy	4
42	BERCI Fascial closure instrument for subcutaneous ligature of trocar incisions, size 2.8 mm, length 17 cm.	4

43	Laparoscopic clamp, long version, length of jaws 10 cm, depth of jaws 2.5cm, straight sheath, size 10 mm, length 30 cm, with axial ring handle, ratchet with security locking device	4
44	Electro cautery machine 400W capable of Monopolar & bipolar coagulation and blended cut compatible with Laparoscopic equipment with US FDA /European CE/CDSCO/BIS Approved and IEC Certified	1
45	Hemolock Clip applicator: LARGE	4
46	Hemolock Clip applicator: EXTRA LARGE	4
47	Hemolock POLYMER Clip applicator: LARGE	4
48	Hemolock POLYMER Clip applicator: EXTRA LARGE	4

Flexible ureterorenoscope set ,flexible cystoscope, semi rigid ureterorenoscope,Flexible Nephroscope & rigid Scope with complete visualisation tower and accessories

Sl No.	Specification	Quantity
1	Full HD Medical Grade Monitor Scereen size of 50 inch or more :-1 no	1
	The monitors should have following Specification :-	
a	Facility to be connected to 4K UHD and FHD video sourcre.	
b	Color Space – BT.2020 emulation	
c	Aspect ratio: 16:9 or better	
d	Effective Resolution: 3840 X 2160 Pixels	
e	Inputs: 1 x DP 1.2 , 2XDVI-D ,2 x 3G-SDI / 1X 12G SDI,2 x HDMI 2.0	
f	Outputs: 1 x DVI-D ,2 x 3G-SDI/1X 12GSDI,2 x HD M I 2.0	
2	4K UHD Camera Control Unit (CCU)	1
a	The system should be Digital endoscopic video camera with maximum Resolution of 3840 X 2160 pixels and progressive scan to guarantee genuine 4K.	
b	The system should have facility of 3x Digital Zoom Lens or more	
c	System should have facility to offer various visualization modes for surgery and diagnosis by shifting the color spectrum likeBLUE & GREEN light/NBI/ for recognition of the finest tissue structures and their differentiation	
d	The CCU should be complete with all accessories so as to connect 4K UHD , FHD, process and display the signals in their native resolution	
e	Picture in Picture of visualization modes	
f	Automatic adjustment of light intensity of light source.	
g	Pixels: 3840 X 2160 Pixels	
h	Video output: 1 Display Port 1.2 ,1 x DVI-D output, 1 x 12G-SDI output, LAN connection, 4 x USB connection	
i	Should have compatibility for selecting 4K and Full-HD output	
ii	Necessary adoptors for Rigid and Flexible endoscopes must be provided along with the camera heads	
3	**4K UHD Camera Head**	**1**
1	Pixels: 3840 X 2160 Pixels	
2	Microprocessor controlled	
3	Lens: Integrated Zoom Lens, f = 15-18mm	
4	Color Space: BT.2020 emulation	
5	Must have different Control buttons to control the camera functions/presets from sterile zone (at least one of them freely programmable).	
6	The surgen should not feel any heatoutput from the Camera head during long procedures.	
7	Suitable for Rigid & Flexible endoscope	

8	Must be compatible to technology like NBI/Shifting the color spectrum likeBLUE & GREEN light with Contrast Enhansement	
9	Must be Compatible with H2O2 sterilisation Process	
10	Light weight with weight less than 200 gms	
11	Cable length of minimum 300 cm	
12	Necessary adoptors for Rigid and Flexible endoscopes must be provided along with the camera heads	
4	**Light Source 300W LED with Fiber optic cable -1no**	**1**
1	Cold Light Fountain 300W led or More LED	
2	Lumens: 2000 and above	
3	Color Temperature: approximately 6000K	
4	Should have touch display which provides an intuitive & user-friendly interface that directly displays relevant data	
5	Lamp life of approx. 30,000 hrs (or more)	
6	4.8 mm Fiber Optic Cable and 300 cm long -2 nos	
7	Certified To: IEC 601-1 & UL 544 CE According to MDD, protection class 1/CF	
5	**Endoscopic Trolley (from the same OEM)**	**1**
1	Endoscopic Trolley comaptible with the above system from the same manufacturer should be provided having the following:	
2	Epoxy Coated	
3	all necessary electrical connections incorporated in the trolley	
4	Must have ergonomically desiged space to arrange all the laproscopic systems as well as proper handles for easy movements	
5	Good size locable dual castors having controls for straight movement	
6	Must have adequate no of Power points with Switch with safety features	
7	Must have a power cord of minimum 3 meter length.	
6	IRRIGATION UNIT	1
1	Pump for irrigation and suction.	
2	Maximum irrigation pressure 400 mm Hg.	
3	Suction pressure 0.75 bar.	
4	Control from control panel and / or foot pedal.	
5	Overflow protection on suction bottles.	
6	Accessories should include silicone tubings-2nos , bacterial filter -5 nos and bottles with cap	
7	4K TELESCOPES	
	Compatible Telescopes with the 4K system should be quoted with dimensions as below:	
i	10mm, 0 Degree 29 cm or more working Length – 1 each	1
ii	10mm, 30 Degree of 29 cm or more working Length – 1 each	1
iii	5mm , 30 Degree of 29 cm or more working Length – 1 each	1
8	Flexible ureterorenoscope set	**1 set**
A	The flexible ureterorenoscope should be advanced chip on tip technology and it should have following features:	
1	Forward viewing with 80-90 degree field of view	

2	Depth of Field: 1.5-50 mm	
3	Outer diameter of shaft and distal tip 8.5 fr or less	
4	Working length 67 cm	
5	Inner working channel diameter of 3.6 fr or more	
6	Angulations Up 270o/Down 270o or more	
7	Should be compatible with existing camera modules available with the department. It should be the responsibility of the vendor to confirm such equipment or to upgrade it as necessary, inclusive in the tender cost with no additional costs being necessary to make the	
8	Ureterorenoscope functional	
9	Should be waterproof and fully immersible in solution and adhering to sterilization methods with ETO, FO gas, Steris & Sterrad.	
10	Necessary Camera Control Unit must be included in the offer	
B	**Should be supplied with:**	
	a. Leakage tester	1
	b. Cleaning brush	1
	c. Compatible flexible tip less Nitinol Basket	2
	d. Compatible Biopsy Forceps	4
	e. Compatible Grasping Forceps	2
	f. Case for storing the instrument	2
	g. Pressure compensation cap	2
C	**Indigenous accessories to be supplied:**	
	Flexible dormia basket compatible with ureteroscope	5
	Flexible tipless engage-type basket compatible with ureteroscope	5
	Flexible tipless encircle-type basket compatible with ureteroscope	5
	Flexible cold-cup biopsy forceps compatible with ureteroscope	5
	Flexible stone holding forceps compatible with ureteroscope	5
	Ureteric balloon dilator	10
	Ureteric access sheath 10/12 Fr, 35 cm	5
	Ureteric access sheath 12/14 Fr, 35 cm	5
	Ureteric access sheath 10/12 Fr, 45 cm	5
	Ureteric access sheath 12/14 Fr, 45 cm	5
	Teflon ureteral dilator set, 6-18 Fr	5
	Ureteric access catheters, open ended	5
	Ureteric access catheters, open ended	5
	DJ stent, open ended, 6Fr	5
	DJ stent, open ended, 6Fr	5
	DJ stent, open ended, 4.8Fr, 16 cm	5
	TURP Y-connector tubing	10
	Self-Sealing Cap	10
	Autoclavable Instrument Tray (appropriate size to fit entire set)	2
10	**Flexible cystoscope**	1
A	The flexible cystoscope should be advanced chip on tip technology and it should have following features:	
1	Positive and contra-positive deflection mechanism	
2	Angulations should be between 200 – 220 degrees for Up and for Down 100 – 140 degrees	

3	Distal end should be around 11–12 Fr or less for better insertion	
4	Electro-Surgical / laser compatible	
5	Compatible with existing camera head and light source of Karl Storz/wolf/ Olympus	
6	Instrument Channel should easily accommodate at least 2 mm endo-therapy accessories.	
7	Distal & Insertion tube diameter should be around 4.5 to 5.5 mm	
8	Working length should not be more than 40 cm	
9	Detachable light guide connector to accommodate other make Light Guide Cable	
10	Leakage testing facility	
B	**Should be supplied with following accessories:**	
1	Grasping forceps for stone fragments	1
2	Biopsy forceps (fenestrated)	1
3	ETO Cap (Venting Cap)	1
4	Channel Cleaning Brush	1
5	Leakage Tester	1
C	**Indigenous accessories to be supplied:**	
1	Flexible dormia basket compatible with cystoscope	5
2	Flexible tipless basket compatible with cystoscope	5
3	Flexible cold-cup biopsy forceps compatible with cystoscope	5
4	Flexible stone holding forceps compatible with cystoscope	5
5	Teflon urethral dilator set, 6-30 Fr	5
6	TURP Y-connector tubing	10
7	Self-Sealing Cap	10
8	Autoclavable Instrument Tray (appropriate size to fit entire set)	2
11	**Adult semi rigid compact ureterorenoscope (7Fr)**	**2 sets**
A	**Should have following features**	
1	Atraumatic one step conical tip design	
2	Autoclavable with offset eyepiece and fiber optic light transmission incorporated	
3	Direction of View should be 12 degree	
4	Distal End Outer Diameter should be 7 Fr	
5	Working length should be of two sizes	
6	a) length 40 - 45 cm	
7	b) length 31 - 34 cm	
8	Working channel diameter should be 5-6 Fr	
9	Built-in maintenance free stop cocks	
B	**Should be supplied with following accessories:**	
1	Durable detachable quick release bridge for irrigation with two lateral irrigation ports and two working channels	2
2	Self-Sealing Cap	10
3	Pressure compensation cap to reduce leakage from laser/basket insertion sites:	2
4	Stone grasping forceps alligator jaws, 60 cm	2
5	Stone grasping forceps triprong	2
6	Cup Biopsy forceps	2

C	**Indigenous accessories to be supplied:**	
1	Autoclavable Instrument Tray (appropriate size to fit ureteroscope)	2
2	URS alligator forceps (largest compatible with ureteroscope	5
3	URS triprong forceps (largest compatible with ureteroscope)	5
4	URS cup biopsy forceps (largest compatible with ureteroscope)	5
5	Ureteric balloon dilator	5
6	Ureteric access catheter, open ended, 5 Fr	5
7	Ureteric access catheter, open ended, olive tip, 5 Fr	5
8	Double lumen ureteric access catheter, 7 Fr	5
9	Pathfinder ureteric pressure irrigation system	5
12	**Pediatric semi rigid ureteroscope set with accessories**	**2 sets**
A	**Should have following features**	
1	Atraumatic one step conical tip design	
2	Autoclavable with offset eyepiece and fiber optic light transmission incorporated	
3	Direction of View should be 5-7 degree	
4	Distal End Outer Diameter should be 4.5/5 Fr or less	
5	Working length should be of two sizes	
	a) length 40 - 45 cm	
	b) length 31 - 34 cm	
6	Working channel diameter should be 3-3.5 Fr	
7	Built-in maintenance free stop cocks	
B	**Should be supplied with following accessories:**	
1	Durable detachable quick release bridge for irrigation with two lateral irrigation ports and two working channels	2
2	Self-Sealing Cap	10
3	Pressure compensation cap to reduce leakage from laser/basket insertion sites:	2
4	Stone grasping forceps alligator jaws 3Fr	2
5	Stone grasping forceps triprong 3Fr	2
6	Cup Biopsy forceps 3Fr	2
C	**Indigenous accessories to be supplied:**	
1	Autoclavable Instrument Tray (appropriate size to fit ureteroscope)	2
2	URS alligator forceps (largest compatible with ureteroscope 3Fr	5
3	URS triprong forceps (largest compatible with ureteroscope) 3Fr	5
4	URS cup biopsy forceps (largest compatible with ureteroscope) 3Fr	5
5	Ureteric balloon dilator	5
6	Ureteric access catheter, open ended, 3 Fr	5
7	Ureteric access catheter, open ended, olive tip, 3 Fr	5
8	Double lumen ureteric access catheter, 3 Fr	5
9	Pathfinder ureteric pressure irrigation system -	5
13	**Flexible Nephroscope**	**1 set**
A	**Should have the following features:**	
1	Allows endoscopic monitoring and therapy with pneumatic and laser energy source.	
2	Large Angle of view 110 deg - 120 deg and deflectable distal tip for better orientation	

3	Direction of view 00	
4	Working length 37 cm with distal tip diameter of 15.5 Fr	
5	Working channel inner diameter 6.5-7 Fr	
6	Sheath size 15.5-16 Fr	
7	Deflection of distal tip range 2100-1200	
8	Total length 73cm	
B	**Following accessories are to be included:**	
1	Case for fiberscope	1
2	grasping forceps 5 Fr for small fragments	5
3	Single action jaws	5
4	Biopsy forceps 5 Fr with single action jaws length 73 cm	5
5	Pressure compensation cap for ventilation during gas sterilization	1
6	Leakage tester with bulb and manometer	1
7	Cleaning brush 6Fr flexible long for instrument channel	1
8	LUER-adapter with seal	1
9	Stone basket 5 Fr length 60 cm consisting of 3-ring handle, basket coil.	1
10	Coagulating electrode 4 Fr length 73 cm.	1
11	Additional terms and Condition	
	All the Imaging Equipments & instruments are from same manufactures /OEM to avoid compatibility issues an to get better service support through out the warranty & CMC	
	Prices of all equipments/Instruments/Consumables/Acessories must be quoted and consider as Rate contract through out the CMC & Warranty period of the tender)	
	Price of all itmes mentioned in the BOQ must be consider for price evaluation	
12	Standards, Safety and Training	
1	Should be FDA/CE/UL/ BIS /CDSCO approved product.	
2	Manufacturer should have ISO certification for quality standards.	
3	Comprehensive training for users and support services till familiarity with the system.	
4	Electrical safety conforms to standards for electrical safety IEC 60601-1 (Or equivalent International / National standard) general requirement for Electrical safety of Medical equipment	
5	The equipment complies with the requirement of the Medical Device Directive of class I equipment and Electromagnetic compatibility; all supporting documents must be provided	
13	Documentation:	
1	User / Technical / Maintenance manuals to be supplied in English.	
2	Log book with instructions for daily, weekly, monthly and quarterly maintenance checklist. The job description of the hospital technician and company service engineer should be clearly spelt out.	

3	Cost of spare parts, consumables and accessoriesand not mentioned in the BOQ and which are not covered under warranty & CMC period has to quote in schedule XI as percentage value in the Technical BidList of consumables with price frozen for 10 years , or else will be consider to be cover throughout the warranty & CMC period	
4	Calibration and routine Preventive Maintenance Support as per manufacturer documentation in service / technical manual has to be done throughout the warranty & CMC period.	
5	Compliance report to be submitted in a tabulated and point wise manner clearly mentioning the page / Para number of original catalogue / data sheet andthe offer details has to submit in the technical bid. Any point, if not substantiated with authenticated catalogue / manual, will not be considered.	
6	Certificate of inspection and quality control indicating the S / N for all non-consumable items with date at the time of installation.	
7	All the technical specifications accepted in the compliance statement must be supported by Original Literature from the firm/O.E.M with Highlighting, Numbering & flagging in the compliance statement	
14	Environmental factors	
1	Shall meet IEC-60601-1-2:2001 (Or Equivalent BIS) General Requirements of safety for Electromagnetic Compatibility or should comply with 89/366/ECC; EMC-Directive.	
2	The unit shall be capable of operating continuously in ambient temperature of 30-40 deg C and relative humidity of 15- 90 % .	
3	The unit shall be capable of being stored continuously in ambient temperature of 10-40 deg C and relative humidity of 15 – 90 %	
15	Warranty and Maintenance	
1	Warranty for 5 years followed by CMC for 5 years including Spares &service.	
2	Mandatory 2 PMs / Year with unlimited breakdown calls has to be attended by the bidder/manufacturer throughout the warranty & CMC period at site.i.e. NEIGRIHMS, SHILLONG	
3	Duly signed Mandatory PM reports has to be submitted periodically, falling which necessary action will be initiated as per term& condition of the tender	

Radiofrequency Generator With Vessel Sealing And Bipolar Resection	
Sl.No.	**Specification**
1	It should be an integrated system with 300W output generator anda single LCD touch screen for Monopolar,Bi-Polar, Vessel Fusion and Under-water Bipolar Resection in Saline integrated in one generator.
2	The system must be micro-processor controlled which should identify the tissue type with a real time feedback system, and adjust the power to get the desired surgical effect on the tissue
3	The Power Efficiency Rating of the generator should be more than 96 %.
4	System should have 2 monopolar output, 1 Bipolar output and 1 Vessel Sealing output
5	The system having 2 monopolar outputs, both working simultaneously, at one time 2 cautery pencils should work together.
6	The Monopolar output must have Cut,Blend, ,Soft Coag, Fulgurate and Spray mode
7	The Bi-Polar must have Low, Standard and Macro mode with AutoBi-Polar control with Bipolar current ammeter.
8	The system should be able to be used with ablation procedures and instruments.
9	System should have separate monopolar, bipolar & Vessel Sealing foot pedal.
10	System should have adequate internal memory for storage of programs and error data for atleast 500 cases
11	The system should be able to store settings and minimum 10 different program settings.
12	The system should have one different Vessel Fusion output which should be able to seal and divide artery, veins along with tissue bundle up to and including 7mm in diameter, and fused vessels should be able to withstand more than 3 times of normal systolic blood pressure(i.e. approx. 300mmhg).
13	The Vessel seal system should be of minimum of 300W at a rated load of 20 ohms
14	The vessel sealing system should have simple audio visual feedback display from the generator. This should include:
a	System should have System Error Indicator
b	System should have System status indicators such as Self test, ready for use, ready for sealing/seal cycle complete, sealing in process
c	Seal cycle incomplete/Complete alert
d	System should have usage limit indicator
e	System should have instruments status indicator.
15	The vessel sealing system should support both open and laparoscopic hand instruments

16	The vessel sealing hand instruments should have cutting independent of sealing
17	There should be an option of enabling or disabling the footswitches
18	The system should have demo mode facility / recall facility to recall the last setting used by user.
19	System should have bipolar resection with saline facility in-built in the integrated in main unit software without any interfacing cable
20	Selectable range of bipolar cut initiation, should have 5/6 combinations of cutting and coagulation settings.
21	System should be compatible of polyhesive /adoptive contact quality monitoring system.
22	System should have audio-visual alarm facility, to indicate any breakage of direct contact between the patient and patient plate.
23	All open surgery including head and neck and thyroid can be precisely controlled with very less thermal spread by using sealing technique.
24	Integrated seal with choice of cut of 10 mm and 5 mm should be there.
25	Vessel sealing instrument should have nano-coated jaws and should be having curved tip for dissection purpose.
26	Vessel sealing instruments should not work under auto-cut.
27	Both Footswitch and hand control mode should be available.
28	System should be Compatible with Argon Coagulator and smoke evacuator and CUSA
29	The system should be upgradable and should have RS232, USB, Ethernet port/wireless for on field software downloads, upgrades and serviceability.
30	Mounting Cart manufacturer by the original principal manufacturer, to be provided with the equipment.
	• Accessories :
1	Bipolar Foot Switch - **1Nos.**
2	Monopolar Foot Switch - **1 Nos.**
3	Universal Active Adapter - **2 Nos**
4	Vessel sealing Footswitch - **1Nos**
5	Disposable Hand Switching Pencil - **1Box(10 pcs)**
6	Dispo sable Patient Plate - **1Box(5 Pcs)**
7	Bipolar Cable(Reusable) - **5Nos**.
8	Monopolar Cable(Reusable) - **3Nos**
9	Cushing Bipolar Forcep Long & short Straight - **2Nos.each**
10	Curved Maryland Jaw vessel sealing instrument 37cm - **5Pcs** Disposable /2 pc reusable
11	Straightjaw Blunt Tip vessel sealing instrument 37cm - **5Pc**s Disposable /2 pc reusable
12	Open surgery Small vessel sealing instrument - **5Pcs** Disposable /2 pc reusable

13	Open surgery Curved Maryland Jaw vessel sealing instrument 23cm - **5Pcs** Disposable /2 pc reusable Bipolar Resection
14	Bipolar Resection Foot Switch - **1Nos.**
	Term & Conditions
31	System should be USFDA/BIS/European CE approved.
32	The Vessel sealing instruments should also be USFDA/BIS /CDSCO/BIS Approved
33	The Manufacturer/Agent should quote the latest model available in the market. (Undertaking to be given by the Manufacturer).
34	Warranty & CMC – **5 years.**

Visual Field analyzer	
Sl No.	**Specifications**
	The system should have following features:
a	High quality Goldman standard automated full field Perimetry of International standard with bowl size radius =30cm.
b	Computer & Monitor should be integrated in the perimeter No external computer).
c	Stimulus size I, II, II, IV & V.
d	Background illumination 31.5Asb.
e	Maximum temporal range 80Deg.
f	Suitable for central 30,neurological tests as well as full field testing.
g	Central field test patterns 30-2, 24-2,10-2, Macula.
h	Peripheral field test pattern 60-4,Nasal Step, custom test.
i	Threshold test strategies full threshold, SITA standard, SITA Fast, Full threshold, Fast Pack, SITA-SWAP.
j	Screening field test P-60, FF-80, FF-120, FF-240, Nasal Step for periphery.
k	Screening test strategies Two zone, Three Zone and Quantify Defects.
l	Glaucoma hemi field test, Heijl -Krakau blind spot monitor
m	Video eye monitoring,Gaze Tracking monitoring system,
n	Vertex Monitoring and Head Tracking
o	Touch screen on CRT Monitor, Keyboard & provision of external monitor & Keyboard.
p	Internal hard disk drive.
q	Stimulation duration 200ms, wavelength Broad band visible light
r	Stimulus/Background colour White on White.
s	SWAP (Blue on Yellow) perimetery, Auto Pupil Measurement
t	Kinetic testing & Custom Kinatic testing.
u	Motorised chinrest, Motorised table,Laser Jet Printer
v	Glaucoma Progression Analysis (GPA) Software for Monitoring disease progression. With visit wise graph & Visual Field Index (VFI).
w	RelEye monitor
x	Automated liquid Trial Lens (AutoTLC).
y	Forum Software for Archiving & Offline analysis of patient data &GPA analysis etc.
z	HFA DICOM Gateway.

	Flexible Video Endoscope For Bronchoscopy & Endotracheal Intubation
Sl.No.	**Specification**
1	Flexible Intubation Endoscope with CMOS chip on tip for digitally transferring the image to the screen. There should be NO Optical image fiber bundles. Intubation endoscope should display Full Frame 4:3 Imaging and not the circular image.
2	For Adult outer diameter of scope should be ranging 5.5-5.8 mm with working length of 60 cm or more or more. Up and down tip deflection should be same ranging 140-210 degrees. Working channel should be 2.0 -2.4mm and it should take ETT from 6 sizes onwards.
3	For Pediatric outer diameter of scope should be ranging 3.8- 4.1 mm with working length of 65cm or more. Up and down tip deflection should be same ranging 130-140 degrees. Working channel should be 1.4 -1.6mm and it should take ETT from 4.5 sizes onwards.
4	Flexible Intubation scope should display good quality picture by connecting it with 7inch or more TFT monitor
5	TFT monitor/Screen should have feature control buttons on the Adult with outer diameter of scope should be ranging 5.2- 5.6 mm with working length of 65cm or more. Up and down tip deflection should be same ranging 130-140 degrees. Working channel should be 2.2 -2.5mm and it should take ETT from 6.0 sizes onwardsscreen with HDMI output for connecting to a big screen.
6	Automatic/ manual white balance facility should be available
7	Monitor Should have a facility to connect flexible scope directly without any special coupler or accessory and at the same time there should be a facility to connect video laryngoscope and can be interchanged with the toggle button present in the monitor.
8	Two scope can be connected at same time and can be interchanged with the toggle button present in the monitor
9	Monitor should run on battery, when fully charged should work for more than 100 minutes
10	Documentation of Video & still images should be possible with operating buttons on the scope to be recorded on SD card and USB pen drive present in the monitor
11	It should be light weight, high resolution & potable reusable flexible scope
12	TUBE HOLDER should be a part of standard accessory.
13	One ergonomically designed Trolley to hang Scope as well monitor should be provided
14	Grasping and biopsy forceps must be a part standard accessory
15	Airway Guide (cum Bite block) for Oral bronchoscope should be provided with the set.
16	Set should include- Suction Adaptors, Cleaning brush & Leakage tester as standard accessories
17	All equipment should be from same manufacture to avoid compatibility issue and intubation scope should be reusable.
18	Suitable for following applications
o	Bronchoscopy

o	Endotracheal Intubation
o	Foreign body removal
o	Bronchial Lavage
o	Inspection of the Airways
o	Dilatation Tracheotomy
19	It should have USFDA / European CE / CDSCO / BIS or equivalent approval for medical use .

HD Video Endoscopy system with Adult(Therapeutic) (UGI & LGI) with Paediatrics (UGI scope)		
Sl.No.	**Specifications**	**Quantity**
1	**Monitor**	1
1	Should be High Definition Medical Grade Monitor	
2	Should be of 26" or more in size	
3	Should have provision for accepting DVI/HDMI, RGB, S-Video and Composite Video Signal	
4	Aspect ratio: 16: 10/16:9 or better	
5	Effective Resolution: 1920X1080	
2	**Light Source Multi LED (4 or more)**	1
1	Cold Light Fountain Multi Light LED(4 or more)	
2	Lumens: 2000 and above	
3	Color Temperature: approximately 6000K	
4	Equipped with NBI/BLI/FULL I scan(OE) capability with high intensity LED light source equivalent to 300W Xenon	
5	Lamp life of approx.10,000 hrs or more.	
6	Compatible for waterproof one touch connector	
7	Equipped with automatic light adjustment forced air cooling, regulated air feeding pump and fan with low noise	
3	**Video Processor**	1
1	It should be a separate or Integrated model & Compact, light weight (10-15kg) and ergonomically designed	
2	Should be compatible with Analog, HD-SDI / DVI output & 16:9 & 16:10 output for a HDTV monitor should be available.	
3	Equipped with high resolution HD Imaging output.	
4	Compact, light weight and ergonomically designed	
5	NBI/BLI /Full i-scan(OE) capacity for compatibility with NBI/BLI /Full i-scan Video scopes.	
6	Recording of both still images	
7	Processor must have structure & edge image enhancement feature	
8	Portable Memory & USB Slot for image recording External memory USB (2GB)	
9	Automatic IRIS control & automatic white balance	
10	Picture in Picture display & Index function ability	
11	Electronic Zoom upto 1.5X. Or better	
12	Equipped with memory back up for settings	
13	Should have pre freeze function for image stabilization	
4	**High-Definition Gastro videoscope –**	1
1	Should have built in latest HDTV/Megapixel compatible CMOS sensor with Close observation capacity up to 2 mm.	
2	Should be equipped with auxiliary water jet function for flushing (mucosal cleaning).	

3	Should have LCI (Linked Colour imaging) / TXI - Image Enhancement Endoscopy facility which can help for localization and H Pylori infection detection and advance imaging.	
4	Suitable for BLI/BLI-Bright/ NBI/ISCAN-OE real time optical chromo endoscopy system.	
5	Should have Electronic Zoom function up to 2X or more.	
6	In built scope identification , white balancing memory	
7	Fully immersible in disinfectant solution (no need to attach water resistant cap) & one touch connectivity with Contact free technology.	
8	Field of view : 140° or better	
9	Observation range : 2.0mm-100mm	
10	Bending capability : Up 210° /Down 90° Right 100°/Left 100°	
11	Distal end diameter : 9.2 mm or less	
12	Insertion tube diameter : 9.3 mm or less	
13	Working channel diameter : 2.8 mm or more	
14	Working length : 1100 mm or less	
15	Total length : 1400 mm or less	
5	**High-Definition colonovideoscope -**	1
1	Should have built in latest HDTV/Megapixel compatible CMOS sensor with Close observation capacity up to 2 mm.	
2	Should be equipped with auxiliary water jet function for flushing (mucosal cleaning).	
3	Should have advance imaging like LCI (Linked Colour imaging) /TXI - Image Enhancement Endoscopy facility	
4	Suitable for BLI/BLI-Bright/ NBI/ISCAN-OE real time optical chromo endoscopy system.	
5	Should have Electronic Zoom function up to 2X or more.	
6	I n built scope identification memory chip for monitor display of scope's m o d e l no. serial no., white balancing memory, no. of connections/cumulative uses etc.	
7	Fully immersible in disinfectant solution (no need to attach water resistant cap) & one touch connectivity with Contact free technology.	
8	In built scope identification , white balancing memory	
9	Should have superior handling capability with adaptive/Passive bending & High/advanced force transmission.	
10	Field of view : 170° or better	
11	Observation range : 2.0mm-100mm	
12	Bending capability : Up 180° /Down 180° Right 160°/Left 160°	
13	Distal end diameter : 12.8 mm or less	
14	Insertion tube diameter : 12.8 mm or less	
15	Working channel diameter : 3.8 mm or more	
16	Working length : 1700 mm or less	
17	Total length : 2000 mm or less	
6	**High Definition Paediatric Gastro video scope –**	1
1	Should have high-definition image quality.	

2	Should have advance imaging like LCI (Linked Colour imaging) /TXI - Image Enhancement Endoscopy facility	
3	Suitable for BLI/BLI-Bright/ NBI/ISCAN-OE real time optical chromo endoscopy system.	
4	Should have Electronic Zoom function up to 2X or more.	
5	In built scope identification , white balancing memory	
6	Fully immersible in disinfectant solution (no need to attach water resistant cap) & one touch connectivity with Contact free technology	
7	Field of view : 140°	
8	Observation range : 3.0mm-100mm	
9	Bending capability : Up 210° /Down 90° Right 100°/Left 100°	
10	Distal end diameter : 5.8 mm or less	
11	Insertion tube diameter : 5.9 mm or less	
12	Working channel diameter : 2.2 mm or more	
13	Working length : 1100 mm or less	
14	Total length : 1400 mm or less	
7	**Trolley(From same OEM)**	1
1	Suitable erogonomically designed Trolley to mount monitor, scopes, light source and all accessories.	1
8	**latest Configured Computer(Reputed brand like DELL/HP/ACER with minimum 12th Gen Core i5/ 8GB/ 512GB SSD/ Win11 and 26 inch mor more monitor with DVD RW**	1
1	Should be supplied with suitable computer system with the software & hardware facility for recording at least two sources at atime and reporting	
2	Suitable capacity of online UPS with minimum 30 mins battery backup must be supplied along with the system	
9	**Color Printer**	1
10	**Accessories should be supplied along with machine(must be from reputed brand like Olympus/Fujinon /Pentex/Cook /Boston Scintific etc)**	1
1	Biopsy Forceps (5 No.) Compatible with each scope	15
2	Grasping Forceps (2 No.) Compatible with each scope	6
3	Hot Biopsy forceps (2 No.) Compatible with each scope	6
4	Electrosurgical snare (2 No.) Compatible with each scope	6
5	Bipolar Probes (1 No.)	3
6	Cleaning Brushes (2 No.) Compatible with each scope	6
7	Injection Needle (2 No.) Compatible with each scope	6
8	Reusable Rotable Clip fixing Device Long (1 No.) Compatible with each scope	3
9	Single Use Clip (100)	100
10	Extra Air water Buttons (2 sets with each scope)	6
11	Extra Suction buttons(2 sets with each scope)	6
12	Water Bottle	2
13	Leakage Tester	2
14	All necessary accessories as part of standard assembly to make unit fully functional. Should provide all equipments and accessories.	

15	In case of any breakdown, loaner scope should be provided within 3 days of breakdown call registration	
11	**Standards, Safety and Training**	
1	Should be FDA/CE/UL/ BIS /CDSCO approved product.	
2	Manufacturer should have ISO certification for quality standards.	
3	Comprehensive training for users and support services till familiarity with the system.	
4	Electrical safety conforms to standards for electrical safety IEC 60601-1 (Or equivalent International / National standard) general requirement for Electrical safety of Medical equipment.	
5	The equipment complies with the requirement of the Medical Device Directive of class I equipment and Electromagnetic compatibility; all supporting documents must be provided.	
6	Operating voltage AC 240V.50/ 60 Hz	
12	**Documentation:**	
1	User / Technical / Maintenance manuals to be supplied in English.	
2	Log book with instructions for daily, weekly, monthly and quarterly maintenance checklist. The job description of the hospital technician and company service engineer should be clearly spelt out.	
3	Cost of spare parts, consumables and accessories and not mentioned in the BOQ and which are not covered under warranty & CMC period has to quote /Upload " financial Document " as percentage value in the Technical BidList of consumables with price frozen for 10 years , or else will be consider to be cover throughout the warranty & CMC period.	
4	Calibration and routine Preventive Maintenance Support as per manufacturer documentation in service / technical manual has to be done throughout the warranty & CMC period.	
5	Compliance report to be submitted in a tabulated and point wise manner clearly mentioning the page / Para number of original catalogue / data sheet and the offer details has to submit in the technical bid. Any point, if not substantiated with authenticated catalogue / manual, will not be considered.	
6	Certificate of inspection and quality control indicating the S / N for all non-consumable items with date at the time of installation.	
7	All the technical specifications accepted in the compliance statement must be supported by Original Literature from the firm/O.E.M with Highlighting, Numbering & flagging in the compliance statement.	
13	**Environmental factors:**	
1	Shall meet IEC-60601-1-2:2001 (Or Equivalent BIS) General Requirements of safety for Electromagnetic Compatibility or should comply with 89/366/ECC; EMC-Directive.	
2	The unit shall be capable of operating continuously in ambient temperature of 30-40 deg C and relative humidity of 15- 90 % .	
3	The unit shall be capable of being stored continuously in ambient temperature of 10-40 deg C and relative humidity of 15 – 90 %	
14	**Warranty and Maintenance**	
1	Warranty for 5 years followed by CMC for 5 years including Spares &service.	

2	Mandatory 2 PMs / Year with unlimited breakdown calls has to be attended by the bidder/manufacturer throughout the warranty & CMC period at site.i.e. NEIGRIHMS, SHILLONG	
3	Duly signed Mandatory PM reports has to be submitted periodically, falling which necessary action will be initiated as per term& condition of the tender .	

	Walk in Laboratory Cold Storage Room against buy back
Sl.No	**Technical Specification**
1	**Section Includes : Furnish and Install Walk-in Cold Room, include all insulated walls, ceiling, doors, mechanicals refrigeration systems, controls, gages, internal lighting, other ancillary items required for a complete and operational walk- in**
	Refrigeration System :
2	It should have Ozone-friendly refrigerants The refrigeration plant should have complete auto operation No attendant should be required for the same. All safety requirements are to be incorporated. Should have an air defrosting system.
3	Capacity : Should be 15,000 liters Refrigeration Capacity for temperature of 2 degrees to 8 degrees Celsius inside the split type unit.
4	Technical Specifications : (Room Size : L = 17FT, B =9ft, H=11.6ft) : (Approx.)
5	The Walk-in Cold Room shall be made from prefabricated modular panels with tongue and groove arrangement. Wall ceiling and floor PUF insulated panel thickness = 80 mm.
6	Walls and ceiling panels from inside of cold room should be provided with brush finish stainless steel sheet of 304 food grade of Min.22 gauge with cam lock arrangement and outer side will be pre painted GI Steel Sheet finish. Front wall, Corner panel shall be SS/SS Finish.
7	The floor panel shall be prepainted GI Sheet PUF Panel with Cam lock arrangement backed by min 9 mm thick water proof marine plywood with Min 1mm Aluminum chequered plate shall be laid as final finish.
8	The Door of Size 34 x 78 inches approx.. Should be provided with the door frame.The door shall be insulated with 80 mm thick PUF and both sides of door should be brushed finished stainless steel sheet 304 food grade of Min/ 0.04mm.The handle and hinges constructed from cast alloy or equivalent metal with chrome finish.
9	Heavy duty hinges with cam rise arrangement should be provided with chrome finish for reduce friction and wear on the door and door gasket and the door should be an air tight seal with noiseless operation and proper venting

10	Glass window approx.. size (15’ x 15”) made up of approx..25 mm thick vacuum sealed toughened glass enclosed with powder coated frame for good aesthetics and resistance against corrosion. The view port should be supplied with apporx.50 watt anti condensation heater.
11	Polyurethane insulation bonded to metal surfaces for maximum rigidity No metal or wooden braces must be provided where locking facility can be used and bracing to be done with finished SS bends made from factory not on site.
12	Cam locks should be permanently foamed in place in all the tongue and groove arrangement of panels. All the cam locks to be covered by snap caps for neat appearance and improved satitation.
13	Safety release inside the Walk in Cold Room shall be provided to prevent entrapment
14	Illumination of Walk in Cold Room shall be carried out with the vapour proof incandescent light fixture @1 watt/ft2. The control for some lights should be form outside the cold room.
15	The unit shall have in built line accumulator and removable side panels for easy maintenance
16	Required insulated copper piping from indoor unit to outdoor unit, panel fitting machine installation, Nitrogen testing gas charging testing and commissioning includes in this work.
17	The outdoor unit shall be fitted with hermetically sealed compressor(Make :Kirloskar Copeland, Voltas, Danfoss, Blue Star) having condenser coil, condenser motor etx. Capable to maintain temperature 42 Deg C(+2 Deg C).
18	Air Cooled condensing/evaporator unit capable to provide minimum 15,000 BTU/Hr of refrigeration by using suitable refrigerant.
19	High and low pressure switches etc. MCBs etc. for condenser/evaporator fans protection
20	The room should be equipped with four (4 tier – cantilevered shelving to either two or three walls. Each shelf should be slatted to allow good airflow. The shelves should be capable of holding an evenly spread 70 kg load. Shelving should be manufactured from galvanized steel coated with polyester finish and can be easlily cleaned.
21	Provision of two Nos. 15 amp and 5 amp switch socket inside the cold room.
22	Power Supply : 440 V, 50 HZ, 3 Phase
	Control panel:
23	It should have Digital thermostat for displaying the working temperature and maintaining accurate, stable and optimum storage conditions within the chamber
24	It should have cloud based digital display data logger units

25	Calibration certificate of Data logger at the time of supply(every 6 months)
26	It should have an alarm system for high and low temperature
27	Display should be LCD/LED
28	Overload protector Controller
29	Auto changeover for the refrigeration system which allows alternate use of refrigeration system when system is in break down
30	Temperature control should be Microprocessor based Controller PID Controller (HMI_PLC :Optional)
31	It should have a facility for expandable memory It should come with 5 years warranty
32	It should have USB ports for printer or computer connectivity
33	Documents to be provided at the time of delivery: User's Manual Service Manual List of minimum spares Installation instruction
34	Onsite Comprehensive Training The bidder should provided onsite comprehensive training of lab staff on operation of equipment, support services till service satisfaction
35	Manufacturer Certification Manufacturer should have ISO 9001 certification
36	Firm should be liable to provide the breakdown service within 24 hours
37	Firm should submit the list of users along with 5 performance certificate from the users from institution of national repute.

	Walkin Cold Room
Sl.No	**Technical Specification**
1	**The walk-in-Cold Room shall be made from prefabricated modular panels with tongue & groove arrangement**
2	Wall, Ceiling and Floor PUF insulated panel thickness-80mm
3	Walls and ceiling panels from inside of cold room should be provided with brush finish stainless steen sheet of 304 food grade of Min. 22 gauge with CAM lock arrangement and outer side will be Pre-Painted GI Sheet finish. Front wall, Corner panel shall be SS/SS Finish.
4	The floor panel shall be Pre-Painted GI sheet PUF panel with Cam lock arrangement backed by min 9mm thick water proof Marino plywood with Min.1mm Aluminium chequered plate shall be laid as final finish
5	The door of size of 34 x 78 inches approximately. Should be provided with the door frame. The door should be insulated with 80mm thick PUF and both sides of door should be brush finish stainless steel 304 food grade of Min.0.04 mm. The handle and hinges constructed from cast alloy or equivalent metal with chrome finish
6	Heavy duty hinges with cam rise arrangement should be provided with chrome finish for reduced friction and wear on the door and door gasket and the door should be an air tight seal with noiseless operation and proper venting.
7	Glass window approx size (15'' x 15'') made up of approx. 25mm thick vacuum sealed toughened 3d glass enclosed with powder coated frame for good aesthetics and resistance against corrosion. The view port should be supplied with approx. 50 watt anti condensation heater
8	Polyurethane insulation bonded to metal surfaces for maximum rigidity. No metal or wooden braces must be provided where locking facility can be used. In case of panel cutting to fit into site requirement, panel cutters are to be used and bracing to be done with finish SS bends made from factory not on site.
9	Cam locks should be permanently foamed in place in all the tongue and groove arrangement of panels. All the cam locks to be covered by snap caps for neat appearance and improved sanitation.
10	Safety release inside the Walk-in-Cold room shall be provided to prevent entrapment.
11	A digital temperature indicator with LED/LCD screen shall be provided at the outside of the cold room.
12	Temperature controller-solid state digital controller with LED/LCD screen.

13	Illumination of the Walk-in-Cold room shall be carried out with the vapour proof incandescent light fixture @1 watt/ft2. The control for some lights should be from outside the cold room.
14	Refrigeration capacity for maintaining 4 ℃ inside the cold room (+/- 2 ℃) with split type unit.
15	The refrigeration system in itself should be an Air defrosting system
16	The unit shall have in built line accumulator and remavable side panels for easy maintenance.
17	Required insulated copper piping from indoor unit to outdoor unit, panel fitting, machine installation, Nitrogen testing, Gas charging, testing and commissioning includes in this work.
18	The outdoor unit shall be fitted with hermitically sealed compressor (Make: Kirloskar Copeland, Voltas, Danfoss, Blue Star) having condensor coil, condensor motor etc. capable to maintain temperature 42 ℃ (+/- 2 ℃)
19	Air cooled condensing/evaporator unit capable to provide minimum 15,000 BTU/hr of refrigeration by using suitable refrigerant.
20	High & Low pressure switches etc. MCBs etc. for condenser/evaporator fans protection.
21	The room should be equipped with four (40 tier-cantilevered shelving to either two (20 or three (3) walls. Each shelf should be slatted to allow good airflow. The shelves should be capable of holding an evenly spread 70 Kg load.
22	Provision of two Nos. 15 amp & 5 amp switch socket inside the cold room.
23	The manufacturing unit should be ISO certified.

	Instruments for Physiology and Blood Bank
Sl.No.	**Specification**
	NMC requirement –Department of Physiology
A	**Vitallograph:**
1	Length from top of pulley to the base of the outer cylinder 36 inch
2	The length and diameter of the outer chamber 16 inch x 7 inch
3	The length and diameter of the inner chamber 16 inch x 6 inch
4	The volume of the chamber is 5 liters
5	Maximum meter reading is 6500 cc.
6	The pulley string is made of small circular metallic beads.
7	The material used is of higher quality
8	To be installed by company personnel at client site
9	5 years warranty
10	Robust after sale service
B	**Mosso's Ergograph:**
1	Length and breadth 26-27 inch x 9-10inch of the wooden base
2	Arrangement for fixing the fingers and forearm in the apparatus holders with strong and standardized pulley cord and finger cord.
3	Steady Side finger holders for fixing the lateral fingers which can be regulated
4	The pulley cord with load at one end attached to a sliding plate
5	Built in automatic rachet recording system, Complete with one set of 5 kilo weights.
6	The mechanism for chart drawing includes a provision for attaching to the kymograph and recording system and pencil holder.
7	To be installed by the company personnel
8	5 years warranty
9	Robust after sale service
10	Kymograph with paper
C	**Stethograph:**
1	Corrugated rubber tube for recording chest excursion 60 cm – 75 cm long with 2-cm inner diameter
2	Marey's tambour(diameter 22, 24, 26 28 mm) convert changes in air pressure into movement of the stylus connected with ink holder for recording on the kymograph
3	Stainless steel capillary lever
4	¼ in hollow stem
5	To be installed by the company personnel
6	5 years warranty
7	Robust after sale service
8	One extra corrugated chest excursion to be provided with each set
9	Kymograph with paper
	Department of Transfusion Medicine and Blood Center
D	**Digital pH meter:**

1	Should provide simultaneous read-out of pH and temperature, preferably in an LCD display.
2	pH range : From 0 to 14
3	pH resolution to 3 decimal places.
4	1,2, or 3 point calibration
5	Automatic or manual buffer selection.
6	Automatic temperature compensation and slope control or 80 to 120%.
7	Should have connection to printer or PC or infrared communication and storage up to 30 results.
8	Should provide glass combination electrode, electrode stand and holder, Automatic Temperature Correction (ATC) probe, buffer for pH 4,7 & 10, appropriate power plug and wire and dust cover.
9	Electrical characteristics:
10	Input voltage 220/240 V50 Hz, single phase, AC supply.
11	Additional requirements:
12	5 yearswarranty and 5 years CMC
13	Temperature recording chart paper for the period of AMC & CMC should be supplied free.
14	All equipment should specify design, installation, operational and performance qualifications.
15	Firm must submit validation and calibration reports which should have traceability to applicable national and international standards at installation and annually.
16	Complete with comprehensive set of spare parts including a spare compressor, etc. and a suitable capacity voltage stabilizer should be supplied.
17	The make, rating, model, description, specifications, price, quantity of each item should be furnished separately.
18	Necessary catalogues, technical write up in English should be attached with the offer both in hard and soft copies.
19	Performance, efficiency and other factors such as distortion etc., as applicable should be furnished.
20	Complete construction, details in respect of material specification, thickness, finish etc. should be furnished.
21	Certifications should show compliance with:
a	Product certification: CE class IIA or BIS or WHO-GMP or CDSCO or US FDA.
b	Quality certification: ISO 13485 and ISO 9001: 2008.
c	Electrical safety: IEC/EN 61010-1.
22	Log book with instructions for daily, weekly, monthly and quarterly maintenance checklist should be provided. The job description of the Blood Centre Technician and the company Service Engineer should be clearly spelt out.
23	Arrangements for demonstration and training on operation of the equipment should be provided and the items required or expenditure incurred should be borne by the supplier.
E	**Double Pan Component Balance:**
1	Should be two pan balance.

2	Should have digital display of weight and other parameters.
3	Accuracy ± 2 grams.
4	Should have two independent weight sensors, which display individual weight of each bucket with accuracy
5	It should have individual display monitor to display the weight of each bucket with blood bags.
6	Visual or audio alarm should get on as soon as the two plates get balanced.
7	Weight Measurement: Should be able to measure weight till 3 Kg.
8	Should be appropriate to weigh and balance blood holding baskets of standard size.
9	Weight to balance should not be more than 5 Kg.
10	Original Literature of equipment should be submitted.
11	User list should be provided with satisfactory report for the last three years from three Licensed Blood Banks with details.
12	Make in India BIS certified or European CE or US FDA certification specific for the product should be submitted.
13	5 Years AMC and 5 years CMC should be provided.
14	Firm will have to supply the stabilizer if required along with the equipment free of cost
15	Firm should also provide the relevant calibration certificate for the equipment from any NABL accredited Lab and perform annual NABL accredited calibration for the duration of warranty mandatory and AMC mandatory
16	Demonstration of performance of equipment is compulsory in nearby area failing to which will be disqualification.
17	Electrical: The equipment should be able to run on the existing electrical provisional and mobile application through rechargeable batteries.
F	**Digital Analytical Balance**
1	Capacity: approx. 2000 g
2	Minimum display: 0.01 g
3	Linearity: ±0.01 g
4	Taring range: 0 to capacity
5	Ambient temperature: 5 to 42 degree celsius
6	Unit conversions: all the components units and the conversion to be present
7	Data Output: RS 232 interface
8	Pan size: approximately 170 x 130 mm
9	Dimension: approx. (150 -200 x 200 -230 x 50-60)mm
10	Power source: 6 AA batteries or better (to be provided) and AC power supply (adapter provided)
11	5 year warranty
12	Should provide relevant calibration certificate from any NABL accredited lab and perform annual NABL accredited calibration for the duration of warranty mandatory

Decahead Microscope with high end optic with HDMI multi output photographic Camera	
Sl.No.	**Specifications**
1	Optical system: Infinity corrected system Focus.
2	Vertical stage movement 25mm per coarse stroke Vertical stage movement 1micron per fine stroke Stage rotation of 270 degrees with Stage Lock and Stage Tension adjustment.
3	Illuminator: Built-in-Koehler illumination for transmitted light 12V,100W halogen bulb (precantered) Light Intensity adjustment centrally located so both hands can be used to increase and decrease light,
4	New Eco Switch for Energy saving to switch off the Light when user moves away from the microscope, Light pre-set switch for photography.
5	Blue Built-in filters, Neutral density filter 6 and Neutral Filter 25 Revolving nosepiece:
	Interchangeable Reversed Septuple Nosepiece with DIC slot Objectives: Plan 2x, 4x, 10X, 20X, 40X, & Plan Fluor 100XOil
6	Observation tube: Wide field Trinocular head with Field no. 22 mm or more with three Light path selection of 100:0, 20:80 and 0:100
7	Stage: Ceramic-coated coaxial stage with right hand low drive Control with X and Y axis Tension adjustment Condenser: Swing out condenser (N.A 1.1), for 2X -100X
8	Teaching Attachment: For 1+ 9 persons Head with eyepiece of Field no. 22 or more, LED arrow pointer with variable intensit and with Green / Red colour selection
9	The standalone camera shall come with a CMOS sensor that provides an ultra HD/4K| 8 Megapixels) resolution image.
I	The camera shall provide automatic exposure, automatic gain and automatic white balance adjustment. Image enhancement functions, such as active sharpening and denoising shall happen on the camera without reducing the 4K live image frame rate.
II	The gain shall be adjustable from 1-22x and a shading correction possibility shall be available which is stored. The 4K live image shall be displayable with 30 frames per second.
III	A live HDR mode shall be available. The pixel size of the camera shall be below 2 micron to provide best image resolution when working with low magnification objectives.

IV	The camera shall provide an On Screen Display (OSD), that allows to control the camera without an extra controller/computer or software. Or / an additional laptop/computer with requisite software loaded for viewing should be provide for teaching purpose.
V	In the OSD, camera parameters and the image file name shall be selected and adjusted via keyboard and mouse. Images shall be stored conveniently on a USB flash drive. The camera interfaces must include HDMI and USB 3.0.
VI	The camera shall support both, the operation in stand-alone mode and in combination with a computer and software. The camera shall provide multiple set up possibilities to use it in a wireless mode
10	The HD camera should have facility to connect to any projector (via HDMI, USB, etc) or separate laptop with necessary software to be provided.
11	The equipment should be USA- FDA/European- CE /BIS/CDSO/ISO approved
12	5 years warranty and 5 yrs CMC

	Flexible Video Endoscope for Bronchoscopy &Endotracheal Intubation & Video laryngoscope
Sl.No.	**Specifications**
1	Flexible Intubation Endoscope with CMOS chip on tip for digitally transferring the image to the screen. There should be NO Optical image fiber bundles. Intubation endoscope should display Full Frame 4:3 Imaging and not the circular image.
2	For Adult outer diameter of scope should be ranging 5.5-5.8 mm with working length of 60 cm or more or more. Up and down tip deflection should be same ranging 140-210 degrees. Working channel should be 2.0 -2.4mm and it should take ETT from 6 sizes onwards.
3	For Pediatric outer diameter of scope should be ranging 3.8- 4.1 mm with working length of 65cm or more. Up and down tip deflection should be same ranging 130-140 degrees. Working channel should be 1.4 -1.6mm and it should take ETT from 4.5 sizes onwards.
4	Flexible Intubation scope should display good quality picture by connecting it with 7inch or more TFT monitor
5	TFT monitor/Screen should have feature control buttons on the Adult with outer diameter of scope should be ranging 5.2- 5.6 mm with working length of 65cm or more. Up and down tipdeflection should be same ranging 130-140 degrees. Working channel should be 2.2 -2.5mm and it shouldtake ETT from 6.0 sizes onwards screen with HDMI output for connecting to a big screen.
6	Automatic/ manual white balance facility should be available
7	Monitor Should have a facility to connect flexible scope directly without any special coupler or accessory and at the same time there should be a facility to connect video laryngoscope and can be interchanged with the toggle button present in the monitor.
8	Two scope can be connected at same time and can be interchanged with the toggle button present in the monitor.
9	Monitor should run on battery, when fully charged should work for more than 100 minutes.
10	Documentation of Video & still images should be possible with operating buttons on the scope to be recorded on SD card and USB pen drive present in the monitor
11	It should be light weight, high resolution & potable reusable flexible scope.
12	TUBE HOLDER should be a part of standard accessory.

13	One ergonomically designed Trolley to hang Scope as well monitor should be provided. Grasping and biopsy forceps must be a part standard accessory.
14	Airway Guide (cum Bite block) for Oral bronchoscope should be pprovided with the set.
15	Set should include- Suction Adaptors, Cleaning brush & Leakage tester as standard accessories.
16	All equipment should be from same manufacture to avoid compatibility issue and intubation scope should be reusable.
17	Suitable for following applications
o	Bronchoscopy Endotracheal Intubation
o	Foreign body removal
o	Bronchial Lavage
o	Inspection of the Airways
o	Dilatation Tracheotomy
18	It should have USFDA /European CE /CDSCO/BIS or equivalent approval for medical use.
	Specification of Video Laryngoscope
I	The system should allow clear view of laryngeal inlet during intubation under video guidance without manipulation of neck.
II	It should consist of following features:
i	Blades: The system should have reusable Macintosh laryngoscope D-Blade (for adult 3 Sizes (One each) or pediatric use -1 size, as per the requirement) with integrated camera chip with closed metal finish and LED light illumination.
ii	Each Blade should have inbuilt camera and light source with antifogging mechanism and visualization through fluid should be possible.
iii	The blade should be specially designed for difficult airway (intubation) for patients with limited mouth opening & should have an angulation of 80 degrees.
iv	Blades should be fully immiscible in disinfection solution and should also be compatible with gas plasma sterilizer.
v	The blades should be compatible with above mentioned display unit
vi	Guide Rod: - SS made guide rod with atraumatic tip Compatible to above mentioned D blade with integrated tube holder must be included in the offer.
vii	It should be supplied with necessary connecting cable.
viii	Should be US FDA/CE /CDSCO/BIS certified.

	Modular LAB furnitures
Sl.No.	**Specifications**
	MANDATORY REQUIREMENTS
1	Test Report: Welded Cabinets should be tested for SEFA 8M from SEFA approved Lab and should be listed in SEFA's website also should be tested for EN 14727 by NABL approved Lab. And, adaptable work bench should be tested for SEFA 10 by SEFA approved Lab and should be listed in SEFA's website and also should be tested for EN 13150 by NABL approved Lab
2	Membership Certificate: The bidder/parent company should possess the key professional staff, at least one, in his organization with good knowledge of codes and standards like SEFA, OSHA, EN 14175, ASHRAE 110 and NFPA 45. Such professionals should have a valid membership of SEFA and in addition membership of any of the international governing standards.
3	ISO 9001-2008, ISO 14001-2004, BS OSHAS 18001-2007 (For Design, Development, Manufacturing, Supply, and servicing)
4	Machinery details
	The Manufacturer should have their own factory for metal and wood working. Complete detail of machinery, equipment & tool with technology capabilities available in the manufacturing unit to be submitted along with the photos.
	The bidder should submit at least 4 photographs duly indicating production flow of item quoted / similar items.
	Photographs showing raw materials and finished goods of similar nature to be submitted along with quote.
	LABORATORY FURNITURE
	Scope of Work
	Supply and Installation of Laboratory Workbenches/Storage units including granite worktops and other supporting structures/hardware's based on the specified Make List.This includes delivery to NEIGRIHMS, unloading the consignment and transporting it from the place of storage to the installation site.
	Supply & Installation of all utility service outlets and accessory fittings, electrical receptacles, plumbing and electrical switches & fittings identified on drawings as mounted on the laboratory furniture.
	Supply & Installation of all laboratory sinks, bottle traps, drain troughs etc.
	Supply & Installation of service structures where specified and setting in place reagent shelves of the type shown in the drawings.
	Removal of debris, dirt and rubbish accumulated as a result of installation/commissioning of the laboratory furniture and accessories and leaving the premises broom clean and orderly.
	Basis of Work
	It is the intent of this specification to use specified make list as the standard of construction for steel laboratory furniture. The construction standards of this product line shall provide the basis for quality and functional installation.

	NEIGRIHMS reserves the right to reject qualified or alternate proposals and to award based on product value where such action assures the owner greater integrity of product.
	Quality Assurance
	The steel laboratory furniture manufacturer shall provide work tops and casework all manufactured & shipped with proper packing & should take the full responsibility of the entire Scope of Works as specified in the tender.
	General Performance: Furniture shall meet the performance requirements and should follow SEFA 8M and/or EN 14727 and SEFA 10 and/or EN 13150 guidelines.
	Submittals
	Manufacturer's Data: Submit installation instructions for each type of casework
	Samples: Samples if called for will be reviewed for color, texture, and pattern only.
	Shop Drawings – Submit shop drawings for furniture assemblies showing the required details.
	Products/Manufacturers
	The selected manufacturer must warrant for a period of FIVE-years starting (date of acceptance or occupancy, whichever comes first that all products sold under the contract referenced above shall be free from defects in material and workmanship
	NEIGRIHMS will retain the above samples of the successful manufacturer or owner to insure that material delivered to jobsite conforms in every respect to the samples submitted if need be.
	TECHNICAL SPECIFICATIONS
1	**Work Platform (wall unit /Island Unit)**
A	**C-FRAME SYSTEM**
	All C-Frames assemblies should be manufactured from standard hollow metal sections; confirming to I.S. Code 7138:1973 (Indian Standard specification for steel tubes for furniture) and all sheet metal components should be of CRCA MS confirming to IS Code 513:1994
	The suspended under-bench welded units should be supported on heavy-duty steel frames fully carrying the load of worktops. Its superior strength combined with aesthetically appealing end caps shall give maximum flexibility and modularity while making a layout.
	C-frame should be constructed from a rectangular pipe with a cross section of 60mm x 30mm and should be 2 mm thick and should be without a vertical front leg to give a clean look.
	This shall provide more knee space or leg space and would facilitate uninterrupted lateral movement of the under-bench units within the bench run.
	The C-frame legs should be supplied with adjustable feet (tolerance from -5mm to +20mm) to correct the unevenness of flooring.

	The tubular enclosed type construction shall discourage dust accumulation and unwanted development of bacteria & fungus
	Drainage gradient should be well adjusted throughout the length of table and should have horizontal supports for drainage systems.
	The structure should have a removable back panel to provide access for maintenance throughout the length of table. The C-frame shall also have skirting at back bottom side.
	It should be suitable for sitting and standing nominal heights of 750mm & 900mm respectively. The nominal table depths should be 620 mm, 770 mm and 920 mm for wall side and 1240mm, 1540mm, 1840mm for Island tables.
	The Corner Units shall fit well with 770mm & 920mm table depths. All frame-work is should be pre-treated with superior pure epoxy powder coated finish.
	The C-Frames should be for suspended storage cabinets or for cabinets that can slide through-and-through from one end of the workbench to the other through CFrames (configuration depends upon the Schedule of Quantities)
B	**HORIZONTAL STRUCTURE**
	These should be made from rectangular pipes of 2mm thickness. Cross-sectional dimensions of the pipe should be 60 x 30 x 2 mm.
	They should be made of CRCA MS and coated with pure epoxy powder. These connect two C-Frames together as shown using C-clamps/U-clamps.
	Together with the C-Frames and Horizontal Members connected together, the skeletal structure of the work-bench is formed on which the worktop can be placed and the hanging-type storage cabinets can be suspended.
	Horizontal Members determine the width of the lab workbench as they form the member (distance) between two adjacent C-Frames.
	They should be available in various widths of 600, 750, 900, 1050, 1200, 1350, 1500, 1650, and 1800
C	**Removable Back Panels**
	These cover panels cover the service lines that run behind them
	These should be easily removable (unclipped) and the service line be accessed for maintenance
	This allows the equipment on workbench to remain undisturbed.
	They should be made of CRCA MS with pure epoxy powder coating and are of 1mm thickness
D	**COVER PANELS**
	All side cover panels and back panels, filler panels should be made from CRCA MS panels of 1.0mm thickness with pure epoxy powder coating
E	**MASTER UPRIGHT**
	Master Upright should be of the dimensions: 300 x 150 x 1.2 mm.
	It should be made from 1.2mm thick CRCA MS with pure epoxy powder coating.

	It should have an open-able door for easy service maintenance and should extend till the false ceiling
F	**VERTICAL UPRIGHT**
	The Upright system will form the back-bone for internal distribution of GDS, Electrical supply systems Shelves and Top Units and should be constructed from 16 gauge CRCA MS formed steel panels with removable covers.
	Shelf height should be adjusted with an increment of 1inch / 25mm
	Upright should also provide support to Top Units for hanging thus eliminating the danger of fixing the Top Units on non-rigid partition wall / panels.
	Uprights should be supplied with adjustable feet from -5mm to +20mm
G	**REAGENT SHELVES**
	Fixed-Type reagent shelves should be provided.
	It should be complete modular design consisting of 2 stage horizontal storage shelves made of CRCA MS with pure epoxy powder coating and having cutouts for electrical switches and sockets.
	It should have provision for placing Granite pieces (as per requirement in BOQ)
H	**WELDED UNDER-BENCH STORAGE CABINETS**
	Welded cabinet body should be of flush face construction with intersection of vertical and horizontal members like LH and RH side panel along with front horizontal channel, back panel and bottom panel.
	It should be relocated anywhere easily as it is an independent unit. Cabinet should be of square non-sharp edge construction. Doors should be assembled with SS-304 hinge assembly.
	Removable back panel should be provided to easily access the service lines running behind the cabinet benches.
	Intermediate horizontal channels should be provided between door and drawer. Shelf should be eight bend panel with 20mm height.
	Drawer tray should be of single piece construction.
	Drawer should be well supported on LH and RH ball slide suspension system. Steel door and drawer front is of double wall construction with sound dampening material filled inside
	Doors should be easily removable and hinges should be easily replaceable. Knee space panel should be in 22 gauge construction.
	Storage Units to be of the following types:
	Suspended Type
	(Depending upon the requirement in the schedule of quantity)
	Dimensions (Approx): W=300/450/600/750/900 mm, D = 530-550mm, H = 635/485 mm.
	Configurations:

	1 Shutter/ 2 Shutters + No Drawer/1 Drawer/2 Drawers/3 Drawers,
	MOC: MSCRCA MS: IS – 513 (1994),
	Thickness: LH/RH side panels, shutter front, Bottom panel, Top front, Drawer separator, shelf, Alignment channel should be of 1.2mm thk. Removable Back panel, Shutter cover, Fr. Rack strip, Top cover panel should be of 0.8mmthk. Finish: Powder coating pure epoxy, thickness 40-50 microns.
	Handle: Anodized Aluminum Recessed-Type,
	CTC: 160.0mm
	Lock: Units have a locking facility with 180° and 10 lever cam lock mechanism (except for sink and corner unit).
	Hinge: Knuckle-butt type SS Hinge.
	Screw: SS304. Shutter should be of twin-type construction with sound dampening effect using profeel. Shutter cover should be equipped with Bump on for sound dampening. Ball Slide: 500mm Length (required only for drawer unit). Shutter should have provision of roller catch
	WELDED OVER-HEAD STORAGE CABINETS
	The construction should be the same as the under-bench cabinets.
	The height of these cabinets should be around 635mm while the depth should be around 340mm.
	The shutters should be available in two options: Metal shutters and Metal frame with inserted glass
	There should be one height-adjustable shelf inside each cabinet. Other construction should be similar to under-bench cabinet
	SERVICE FITTINGS AND ACCESSORIES
	Service fittings should be laboratory grade, and water faucets and valve bodies should be cast red brass alloy or bronze forgings, all fittings should be powder plated unless specified otherwise.
	Service Indexes: Fittings should be identified with service indexes in the color coding as per DIN 12920.
	LABORATORY SINK AND ACCESSORIES
	SS Rectangular Sink without Border: Made up highest grade 18/8 (Type AISI 304) stainless steel. Standard bowl size (L x W x D) is 430 x 350 x 200 mm.
	WORKTOP
	It should be 20mm (+/- 2mm) thick Jet Black Granite worktop.
	The exposed edges of the worktop should be chamfered and smoothened.
	The bottom of the worktop should be polished and there should be a V-groove throughout the length of the exposed edges to protect the cabinets from coming in contact with the spillages.
	The overhang on the storage cabinet is 25 mm at the front side and 30 mm at the sides.

	The backing material used is a neoprene mat of 6 mm thickness.
	A representation the worktop edges is shown as under
	LIST OF APPROVED MAKES
	Steel used in furniture: TATA Steel, JINDAL Steel
	Powder Coating: Kansai Nerolac, Berger Paints, Asian Paints
	Emergency Devices, Water Faucets and Gas Valves, Fume Hood Utility Fittings: Watersaver, Broen
	Switches and Sockets, Data and LAN points : Northwest, Norisys
	Locks : Hettich, Hafele, Godrej
	Drawer Slides: Hettich, Hafele, Godre
	SS Sink: Diamond, Nirali, Jindal
	Worktop: Jet Black Granite
	Lab Components and specs
	Island Bench Type I (As per Layout)-IB 1
	Overall Size of The Island Bench 4580mmW*1540mmD*900mmH
	Providing and supply of C-Frames :
	Manufactured from standard hollow metal sections confirming to I.S. Code 7138:1973 (Indian Standard specification for steel tubes for furniture) and all sheet metal components to be of CRCA MS confirming to IS Code 513:1994.
	The suspended under-bench welded units shall be supported on heavy-duty steel frames fully carrying the load of worktops.
	Its superior strength is combined with aesthetically appealing end caps shall give maximum flexibility and modularity while making a layout.
	C-frame shall be constructed from a rectangular pipe with a cross section of 60mm x 30mm and shall be 2 mm thick and shall be without a vertical front leg to give a clean look.
	The C-frame legs shall be supplied with adjustable feet (tolerance from -5mm to +20mm) to correct the unevenness of flooring.
	The tubular enclosed type construction shall discourage dust accumulation and unwanted development of bacteria & fungus.
	Drainage gradient shall be well adjusted throughout the length of table and shall have horizontal supports for drainage systems.
	The structure shall have a removable back panel to provide access for maintenance throughout the length of table
	The C-frame shall also have skirting at back bottom side.
	The C-frame shall be suitable for sitting and standing nominal heights of 900mm respectively.
	The nominal table depths shall be 1540mm for Island tables. All frame-work is to be pre-treated with superior pure epoxy powder coated finish.
	Providing and supply of Horizontal Structures
	These shall be made from rectangular pipes of 2mm thickness.
	Cross-sectional dimensions of the pipe should be 60 x 30 x 2 mm. They shall be made of CRCA MS and coated with pure epoxy powder

	These connect two C-Frames together as shown using C-clamps/U-clamps.
	Together with the C-Frames and Horizontal Members connected together, the skeletal structure of the work-bench is formed on which the worktop can be placed and the hanging-type storage cabinets can be suspended.
	Horizontal Members determine the width of the lab workbench as they form the member (distance) between two adjacent C-Frames
	They shall be available in various widths of 750mm, 1500mm As per layout
	Providing and supply of Panels:
	All other panels used as End cover of the tables in case of Island tables to cover the space between two tables or between the table and the wall.
	The cover panels to be made of 1.0 mm thick CRCA MS sheet as per IS Code 513:1994
	Providing and supply of Welded Cabinets :
1	Under bench Suspended cabinets shall be flush face construction with doors and drawers in the same plane as the cabinet face frame, without overlap.
2	The MOC: MS CRCA MS: IS – 513 (1994).Thickness: LH/RH side panels, shutter front, Bottom panel, Top front, Drawer separator, shelf, Alignment channel shall be of 1.2mm thk.
3	Removable Back panel, Shutter cover, Fr. Rack strip, Top cover panel shall be of 0.8mmthk. Finish: Powder coating pure epoxy, thickness 40-50 microns
4	Handle: Anodized Aluminium Finish handles (D-Type or Recess-Type) Lock: Units have a locking facility with 180 deg. and 10 lever cam lock mechanism (except for sink and corner unit).
5	Hinge: SS 304 knuckle barrel Hinge of thickness 2.5mm and opening angle 180 deg. Screw: SS 304. Ball Slide: High quality double extension drawers of 500mm Length (approved Make) (required only for drawer unit)
6	Shutter is of twin type construction with sound dampening effect using profeel. Shutter cover is equipping with Bump on for sound dampening
7	Depth of the cabinets: 530mm.
8	Two No.s Welded Cabinets to be Provided with 2 Shutter and 1 Drawer of 750W-635H, along with 4 no.s of Sink cabinet unit of 2 Shutter - 750W-635H
	Providing and supply of Sink, Faucets & Accessories :
	SS Rectangular Sink without Border: Made up highest grade 18/8 (Type AISI 304) stainless steel. Standard bowl size (L x W x D) is 430 x 350 x 200 mm.
	Faucet shall be 3-way or 1-way type faucet of approved make.
	Service fittings are of laboratory grade, and water faucets and valve bodies are of cast red brass alloy or bronze forgings, all fittings are of powder plated unless specified otherwise.
	4 No.s of Sink should be Provided
	Providing and supply Fixed-Type reagent shelves:
	It should be complete modular design consisting of 2 stage horizontal storage shelves made of CRCA MS with pure epoxy powder coating and having cutouts for electrical switches and sockets.
	It should have provision for placing Granite pieces ,

	Configuration should be Two No.s Fixed Type Reagent Shelf (Main Type) 750 L- Cutout : 3 Module + 3 Module (Total 2 Cutouts Only) & 1 No.s Fixed Type Reagent Shelf (Main Type) 1500 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only)
	Providing and supply of Granite Work Top :
	It shall be 20mm (+/- 2mm) thick Jet Black Granite worktop.
	The exposed edges of the worktop shall be chamfered and smoothened.
	The bottom of the worktop shall be polished and there shall be a V-groove throughout the length of the exposed edges to protect the cabinets from coming in contact with the spillages.
	The overhang on the storage cabinet is 25 mm at the front side and 30 mm at the sides.
	The backing material used is a neoprene mat of 6 mm thickness.
	Island Bench Type 2 (As per Layout)-IB-2
	Over all Size of The Island Bench 4580mmW*920mmD*900mmH
	Providing and supply of C-Frames manufactured from standard hollow metal sections; confirming to I.S. Code 7138:1973 (Indian Standard specification for steel tubes for furniture) and all sheet metal components to be of CRCA MS confirming to IS Code 513:1994. The suspended under-bench welded units shall be supported on heavy-duty steel frames fully carrying the load of worktops.. Its superior strength is combined with aesthetically appealing end caps shall give maximum flexibility and modularity while making a layout. C-frame shall be constructed from a rectangular pipe with a cross section of 60mm x 30mm and shall be 2 mm thick and shall be without a vertical front leg to give a clean look. The C-frame legs shall be supplied with adjustable feet (tolerance from -5mm to +20mm) to correct the unevenness of flooring. The tubular enclosed type construction shall discourage dust accumulation and unwanted development of bacteria & fungus. Drainage gradient shall be well adjusted throughout the length of table and shall have horizontal supports for drainage systems. The structure shall have a removable back panel to provide access for maintenance throughout the length of table. The C-frame shall also have skirting at back bottom side. The C-frame shall be suitable for sitting and standing nominal heights of 900mm respectively. The nominal table depths shall be 920mm for Island tables. All frame-work is to be pre-treated with superior pure epoxy powder coated finish.
	Providing and supply of Horizontal Members : These shall be made from rectangular pipes of 2mm thickness. Crosssectional dimensions of the pipe should be 60 x 30 x 2 mm. They shall be made of CRCA MS and coated with pure epoxy powder. These connect two C-Frames together as shown using C-clamps/U-clamps. Together with the CFrames and Horizontal Members connected together, the skeletal structure of the work-bench is formed on which the worktop can be placed and the hanging-type storage cabinets can be suspended. Horizontal Members determine the width of the lab workbench as they form the member (distance) between two adjacent C-Frames. They shall be available in various widths 1500mm as per layout
	Providing and supply of Panels: All other panels used as End cover of the tables in case of Island tables to cover the space between two tables or between the table and the wall. The cover panels to be made of 1.0 mm thick CRCA MS sheet as per IS Code 513:1994

	Providing and supply of Welded Cabinets : Under bench Suspended cabinets shall be flush face construction with doors and drawers in the same plane as the cabinet face frame, without overlap. The MOC: MS CRCA MS: IS – 513 (1994). Thickness: LH/RH side panels, shutter front, Bottom panel, Top front, Drawer separator, shelf, Alignment channel shall be of 1.2mm thk. Removable Back panel, Shutter cover, Fr. Rack strip, Top cover panel shall be of 0.8mmthk. Finish: Powder coating pure epoxy, thickness 40-50 microns Handle: Anodized Aluminium Finish handles (D-Type or Recess-Type) Lock: Units have a locking facility with 180 deg. and 10 lever cam lock mechanism (except for sink and corner unit).Hinge: SS 304 knuckle barrel Hinge of thickness 2.5mm and opening angle 180 deg. Screw: SS 304.Ball Slide: High quality double extension drawers of 500mm Length (approved Make) (required only for drawer unit) Shutter is of twin type construction with sound dampening effect using profeel. Shutter cover is equipping with Bump on for sound dampening. Depth of the cabinets: 530mm. One No.s Welded Cabinets to be Provided with 2 Shutter and 1 Drawer of 750W635H, slong with 2 no.s of Sink cabinet unit of 2 Shutter - 750W-635H
	Providing and supply of Sink, Faucets & Accessories : SS Rectangular Sink without Border: Made up highest grade 18/8 (Type AISI 304) stainless steel. Standard bowl size (L x W x D) is 430 x 350 x 200 mm. . Faucet shall be 3-way or 1-way type faucet of approved make. Service fittings are of laboratory grade, and water faucets and valve bodies are of cast red brass alloy or bronze forgings, all fittings are of powder plated unless specified otherwise. 2 No.s of Sink should be Provided
	Providing and supply Fixed-Type reagent shelves should be provided. It should be complete modular design consisting of 2 stage horizontal storage shelves made of CRCA MS with pure epoxy powder coating and having cutouts for electrical switches and sockets. It should have provision for placing Granite pieces , Configuration should be Two No.s Fixed Type Reagent Shelf (Main Type) 750 L- Cutout : 3 Module + 3 Module (Total 2 Cutouts Only) & 1 No.s Fixed Type Reagent Shelf (Main Type) 1500 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only)
	Providing and supply of Granite Work Top : It shall be 20mm (+/- 2mm) thick Jet Black Granite worktop. The exposed edges of the worktop shall be chamfered and smoothened. The bottom of the worktop shall be polished and there shall be a V-groove throughout the length of the exposed edges to protect the cabinets from coming in contact with the spillages. The overhang on the storage cabinet is 25 mm at the front side and 30 mm at the sides. The backing material used is a neoprene mat of 6 mm thickness.
	Island Bench Type 3 (As per Layout)-IB 3
	Over all Size of The Island Bench 1130mmW*785mmD*900mmH

	Providing and supply of C-Frames manufactured from standard hollow metal sections; confirming to I.S. Code 7138:1973 (Indian Standard specification for steel tubes for furniture) and all sheet metal components to be of CRCA MS confirming to IS Code 513:1994. The suspended under-bench welded units shall be supported on heavy-duty steel frames fully carrying the load of worktops.. Its superior strength is combined with aesthetically appealing end caps shall give maximum flexibility and modularity while making a layout. C-frame shall be constructed from a rectangular pipe with a cross section of 60mm x 30mm and shall be 2 mm thick and shall be without a vertical front leg to give a clean look. The C-frame legs shall be supplied with adjustable feet (tolerance from -5mm to +20mm) to correct the unevenness of flooring. The tubular enclosed type construction shall discourage dust accumulation and unwanted development of bacteria & fungus. Drainage gradient shall be well adjusted throughout the length of table and shall have horizontal supports for drainage systems. The structure shall have a removable back panel to provide access for maintenance throughout the length of table. The C-frame shall also have skirting at back bottom side. The C-frame shall be suitable for sitting and standing nominal heights of 900mm respectively. The nominal table depths shall be 785mm for Island tables. All frame-work is to be pre-treated with superior pure epoxy powder coated finish.
	Providing and supply of Horizontal Members : These shall be made from rectangular pipes of 2mm thickness. Crosssectional dimensions of the pipe should be 60 x 30 x 2 mm. They shall be made of CRCA MS and coated with pure epoxy powder. These connect two C-Frames together as shown using C-clamps/U-clamps. Together with the CFrames and Horizontal Members connected together, the skeletal structure of the work-bench is formed on which the worktop can be placed and the hanging-type storage cabinets can be suspended. Horizontal Members determine the width of the lab workbench as they form the member (distance) between two adjacent C-Frames.They shall be available in various widths 1050 mm as per layout
	Providing and supply of Panels: All other panels used as End cover of the tables in case of Island tables to cover the space between two tables or between the table and the wall. The cover panels to be made of 1.0 mm thick CRCA MS sheet as per IS Code 513:1994

	Providing and supply of Welded Cabinets : Under bench Suspended cabinets shall be flush face construction with doors and drawers in the same plane as the cabinet face frame, without overlap. The MOC: MS CRCA MS: IS – 513 (1994). Thickness: LH/RH side panels, shutter front, Bottom panel, Top front, Drawer separator, shelf, Alignment channel shall be of 1.2mm thk. Removable Back panel, Shutter cover, Fr. Rack strip, Top cover panel shall be of 0.8mmthk. Finish: Powder coating pure epoxy, thickness 40-50 microns Handle: Anodized Aluminium Finish handles (D-Type or Recess-Type) Lock: Units have a locking facility with 180 deg. and 10 lever cam lock mechanism (except for sink and corner unit). Hinge: SS 304 knuckle barrel Hinge of thickness 2.5mm and opening angle 180 deg. Screw: SS 304. Ball Slide: High quality double extension drawers of 500mm Length (approved Make) (required only for drawer unit) Shutter is of twin type construction with sound dampening effect using profeel. Shutter cover is equipping with Bump on for sound dampening. Depth of the cabinets: 530mm. One No.s of Cabinet to be provided with 1 door and 1 shutter of size 450mmW*635mmH
	Providing and supply of Granite Work Top : It shall be 20mm (+/- 2mm) thick Jet Black Granite worktop. The exposed edges of the worktop shall be chamfered and smoothened. The bottom of the worktop shall be polished and there shall be a V-groove throughout the length of the exposed edges to protect the cabinets from coming in contact with the spillages. The overhang on the storage cabinet is 25 mm at the front side and 30 mm at the sides. The backing material used is a neoprene mat of 6 mm thickness.
	Providing and supply of 1050 Module Length Single Side Electrical Trunking - Cutouts: 6 Module + 6 Module + 6 Module
	Island Bench Type 4 (As per Layout) IB-4
	Over all Size of The Island Bench 3750mmW*935mmD*900mmH
	Providing and supply of C-Frames manufactured from standard hollow metal sections; confirming to I.S. Code 7138:1973 (Indian Standard specification for steel tubes for furniture) and all sheet metal components to be of CRCA MS confirming to IS Code 513:1994. The suspended under-bench welded units shall be supported on heavy-duty steel frames fully carrying the load of worktops.. Its superior strength is combined with aesthetically appealing end caps shall give maximum flexibility and modularity while making a layout. C-frame shall be constructed from a rectangular pipe with a cross section of 60mm x 30mm and shall be 2 mm thick and shall be without a vertical front leg to give a clean look. The C-frame legs shall be supplied with adjustable feet (tolerance from -5mm to +20mm) to correct the unevenness of flooring. The tubular enclosed type construction shall discourage dust accumulation and unwanted development of bacteria & fungus. Drainage gradient shall be well adjusted throughout the length of table and shall have horizontal supports for drainage systems. The structure shall have a removable back panel to provide access for maintenance throughout the length of table. The C-frame shall also have skirting at back bottom side. The C-frame shall be suitable for sitting and standing nominal heights of 900mm respectively. The nominal table depths shall be 920mm for Island tables. All frame-work is to be pre-treated with superior pure epoxy powder coated finish.

	Providing and supply of Horizontal Members : These shall be made from rectangular pipes of 2mm thickness. Crosssectional dimensions of the pipe should be 60 x 30 x 2 mm. They shall be made of CRCA MS and coated with pure epoxy powder. These connect two C-Frames together as shown using C-clamps/U-clamps. Together with the CFrames and Horizontal Members connected together, the skeletal structure of the work-bench is formed on which the worktop can be placed and the hanging-type storage cabinets can be suspended. Horizontal Members determine the width of the lab workbench as they form the member (distance) between two adjacent C-Frames. They shall be available in various widths of 750,1500mm as per layout
	Providing and supply of Panels: All other panels used as End cover of the tables in case of Island tables to cover the space between two tables or between the table and the wall. The cover panels to be made of 1.0 mm thick CRCA MS sheet as per IS Code 513:1994
	Providing and supply of Welded Cabinets : Under bench Suspended cabinets shall be flush face construction with doors and drawers in the same plane as the cabinet face frame, without overlap. The MOC: MS CRCA MS: IS – 513 (1994). Thickness: LH/RH side panels, shutter front, Bottom panel, Top front, Drawer separator, shelf, Alignment channel shall be of 1.2mm thk. Removable Back panel, Shutter cover, Fr. Rack strip, Top cover panel shall be of 0.8mmthk. Finish: Powder coating pure epoxy, thickness 40-50 microns Handle: Anodized Aluminium Finish handles (D-Type or Recess-Type) Lock: Units have a locking facility with 180 deg. and 10 lever cam lock mechanism (except for sink and corner unit). Hinge: SS 304 knuckle barrel Hinge of thickness 2.5mm and opening angle 180 deg. Screw: SS 304. Ball Slide: High quality double extension drawers of 500mm Length (approved Make) (required only for drawer unit) Shutter is of twin type construction with sound dampening effect using profeel. Shutter cover is equipping with Bump on for sound dampening. Depth of the cabinets: 530mm.Cabinet for Sink unit to be provided two no.s of 2Shutter-750W-635H.
	Providing and supply of Sink, Faucets & Accessories : SS Rectangular Sink without Border: Made up highest grade 18/8 (Type AISI 304) stainless steel. Standard bowl size (L x W x D) is 430 x 350 x 200 mm. . Faucet shall be 3-way or 1-way type faucet of approved make. Service fittings are of laboratory grade, and water faucets and valve bodies are of cast red brass alloy or bronze forgings, all fittings are of powder plated unless specified otherwise. 2 No.s of Sink should be Provided
	Providing and supply Fixed-Type reagent shelves should be provided. It should be complete modular design consisting of 2 stage horizontal storage shelves made of CRCA MS with pure epoxy powder coating and having cutouts for electrical switches and sockets. It should have provision for placing Granite pieces , Configuration should be 3 No.s Fixed Type Reagent Shelf (Main Type) 750 L- Cutout : 3 Module + 3 Module (Total 2 Cutouts Only)

	Providing and supply of Granite Work Top : It shall be 20mm (+/- 2mm) thick Jet Black Granite worktop. The exposed edges of the worktop shall be chamfered and smoothened. The bottom of the worktop shall be polished and there shall be a V-groove throughout the length of the exposed edges to protect the cabinets from coming in contact with the spillages. The overhang on the storage cabinet is 25 mm at the front side and 30 mm at the sides. The backing material used is a neoprene mat of 6 mm thickness.
	Island Bench Type 5 (As per Layout) IB-5
	Over all Size of The Island Bench 3750mmW*1540mmD*900mmH
	Providing and supply of C-Frames manufactured from standard hollow metal sections; confirming to I.S. Code 7138:1973 (Indian Standard specification for steel tubes for furniture) and all sheet metal components to be of CRCA MS confirming to IS Code 513:1994. The suspended under-bench welded units shall be supported on heavy-duty steel frames fully carrying the load of worktops.. Its superior strength is combined with aesthetically appealing end caps shall give maximum flexibility and modularity while making a layout. C-frame shall be constructed from a rectangular pipe with a cross section of 60mm x 30mm and shall be 2 mm thick and shall be without a vertical front leg to give a clean look. The C-frame legs shall be supplied with adjustable feet (tolerance from -5mm to +20mm) to correct the unevenness of flooring. The tubular enclosed type construction shall discourage dust accumulation and unwanted development of bacteria & fungus. Drainage gradient shall be well adjusted throughout the length of table and shall have horizontal supports for drainage systems. The structure shall have a removable back panel to provide access for maintenance throughout the length of table. The C-frame shall also have skirting at back bottom side. The C-frame shall be suitable for sitting and standing nominal heights of 900mm respectively. The nominal table depths shall be1540mm for Island tables. All frame-work is to be pre-treated with superior pure epoxy powder coated finish.
	Providing and supply of Horizontal Members : These shall be made from rectangular pipes of 2mm thickness. Crosssectional dimensions of the pipe should be 60 x 30 x 2 mm. They shall be made of CRCA MS and coated with pure epoxy powder. These connect two C-Frames together as shown using C-clamps/U-clamps. Together with the CFrames and Horizontal Members connected together, the skeletal structure of the work-bench is formed on which the worktop can be placed and the hanging-type storage cabinets can be suspended. Horizontal Members determine the width of the lab workbench as they form the member (distance) between two adjacent C-Frames. They shall be available in various widths of 750,1500mm as per layout
	Providing and supply of Panels: All other panels used as End cover of the tables in case of Island tables to cover the space between two tables or between the table and the wall. The cover panels to be made of 1.0 mm thick CRCA MS sheet as per IS Code 513:1994

	Providing and supply of Welded Cabinets : Under bench Suspended cabinets shall be flush face construction with doors and drawers in the same plane as the cabinet face frame, without overlap. The MOC: MS CRCA MS: IS – 513 (1994). Thickness: LH/RH side panels, shutter front, Bottom panel, Top front, Drawer separator, shelf, Alignment channel shall be of 1.2mm thk. Removable Back panel, Shutter cover, Fr. Rack strip, Top cover panel shall be of 0.8mmthk. Finish: Powder coating pure epoxy, thickness 40-50 microns Handle: Anodized Aluminium Finish handles (D-Type or Recess-Type) Lock: Units have a locking facility with 180 deg. and 10 lever cam lock mechanism (except for sink and corner unit).Hinge: SS 304 knuckle barrel Hinge of thickness 2.5mm and opening angle 180 deg. Screw: SS 304. Ball Slide: High quality double extension drawers of 500mm Length (approved Make) (required only for drawer unit) Shutter is of twin type construction with sound dampening effect using profeel. Shutter cover is equipping with Bump on for sound dampening. Depth of the cabinets: 530mm. Cabinet for Sink unit to be provided 4 no.s no.s of 2Shutter-750W-635H.
	Providing and supply of Sink, Faucets & Accessories : SS Rectangular Sink without Border: Made up highest grade 18/8 (Type AISI 304) stainless steel. Standard bowl size (L x W x D) is 430 x 350 x 200 mm. . Faucet shall be 3-way or 1-way type faucet of approved make. Service fittings are of laboratory grade, and water faucets and valve bodies are of cast red brass alloy or bronze forgings, all fittings are of powder plated unless specified otherwise. 4 No.s of Sink should be Provided
	Providing and supply Fixed-Type reagent shelves should be provided. It should be complete modular design consisting of 2 stage horizontal storage shelves made of CRCA MS with pure epoxy powder coating and having cutouts for electrical switches and sockets. It should have provision for placing Granite pieces , Configuration should be three no.s Fixed Type Reagent Shelf (Main Type) 750 L- Cutout : 3 Module + 3 Module (Total 2 Cutouts Only)
	Providing and supply of Granite Work Top : It shall be 20mm (+/- 2mm) thick Jet Black Granite worktop. The exposed edges of the worktop shall be chamfered and smoothened. The bottom of the worktop shall be polished and there shall be a V-groove throughout the length of the exposed edges to protect the cabinets from coming in contact with the spillages. The overhang on the storage cabinet is 25 mm at the front side and 30 mm at the sides. The backing material used is a neoprene mat of 6 mm thickness.
	Island Bench Type 6 (As per Layout)-IB-6
	Over all Size of The Island Bench 2329mmW*1540mmD*900mmH

	Providing and supply of C-Frames manufactured from standard hollow metal sections; confirming to I.S. Code 7138:1973 (Indian Standard specification for steel tubes for furniture) and all sheet metal components to be of CRCA MS confirming to IS Code 513:1994. The suspended under-bench welded units shall be supported on heavy-duty steel frames fully carrying the load of worktops.. Its superior strength is combined with aesthetically appealing end caps shall give maximum flexibility and modularity while making a layout. C-frame shall be constructed from a rectangular pipe with a cross section of 60mm x 30mm and shall be 2 mm thick and shall be without a vertical front leg to give a clean look. The C-frame legs shall be supplied with adjustable feet (tolerance from -5mm to +20mm) to correct the unevenness of flooring. The tubular enclosed type construction shall discourage dust accumulation and unwanted development of bacteria & fungus. Drainage gradient shall be well adjusted throughout the length of table and shall have horizontal supports for drainage systems. The structure shall have a removable back panel to provide access for maintenance throughout the length of table. The C-frame shall also have skirting at back bottom side. The C-frame shall be suitable for sitting and standing nominal heights of 900mm respectively. The nominal table depths shall be1540mm for Island tables. All frame-work is to be pre-treated with superior pure epoxy powder coated finish.
	Providing and supply of Horizontal Members : These shall be made from rectangular pipes of 2mm thickness. Crosssectional dimensions of the pipe should be 60 x 30 x 2 mm. They shall be made of CRCA MS and coated with pure epoxy powder. These connect two C-Frames together as shown using C-clamps/U-clamps. Together with the CFrames and Horizontal Members connected together, the skeletal structure of the work-bench is formed on which the worktop can be placed and the hanging-type storage cabinets can be suspended. Horizontal Members determine the width of the lab workbench as they form the member (distance) between two adjacent C-Frames.They shall be available in various widths of 750, 1500mm As per layout
	Providing and supply of Panels: All other panels used as End cover of the tables in case of Island tables to cover the space between two tables or between the table and the wall. The cover panels to be made of 1.0 mm thick CRCA MS sheet as per IS Code 513:1994
	Providing and supply of Welded Cabinets : Under bench Suspended cabinets shall be flusl
	Providing and supply of Sink, Faucets & Accessories : SS Rectangular Sink without Border: Made up highest grade 18/8 (Type AISI 304) stainless steel. Standard bowl size (L x W x D) is 430 x 350 x 200 mm. . Faucet shall be 3-way or 1-way type faucet of approved make. Service fittings are of laboratory grade, and water faucets and valve bodies are of cast red brass alloy or bronze forgings, all fittings are of powder plated unless specified otherwise. 2 No.s of Sink should be Provided
	Providing and supply Fixed-Type reagent shelves should be provided. It should be complete modular design consisting of 2 stage horizontal storage shelves made of CRCA MS with pure epoxy powder coating and having cutouts for electrical switches and sockets. It should have provision for placing Granite pieces , Configuration should be Two No.s Fixed Type Reagent Shelf (Main Type) 750 L- Cutout : 3 Module + 3 Module (Total 2 Cutouts Only)

	Providing and supply of Granite Work Top : It shall be 20mm (+/- 2mm) thick Jet Black Granite worktop. The exposed edges of the worktop shall be chamfered and smoothened. The bottom of the worktop shall be polished and there shall be a V-groove throughout the length of the exposed edges to protect the cabinets from coming in contact with the spillages. The overhang on the storage cabinet is 25 mm at the front side and 30 mm at the sides. The backing material used is a neoprene mat of 6 mm thickness.
	Island Bench Type 7 (As per Layout) IB-7
	Over all Size of The Island Bench 6830mmW*1540mmD*900mmH
	Providing and supply of C-Frames manufactured from standard hollow metal sections; confirming to I.S. Code 7138:1973 (Indian Standard specification for steel tubes for furniture) and all sheet metal components to be of CRCA MS confirming to IS Code 513:1994. The suspended under-bench welded units shall be supported on heavy-duty steel frames fully carrying the load of worktops.. Its superior strength is combined with aesthetically appealing end caps shall give maximum flexibility and modularity while making a layout. C-frame shall be constructed from a rectangular pipe with a cross section of 60mm x 30mm and shall be 2 mm thick and shall be without a vertical front leg to give a clean look. The C-frame legs shall be supplied with adjustable feet (tolerance from -5mm to +20mm) to correct the unevenness of flooring. The tubular enclosed type construction shall discourage dust accumulation and unwanted development of bacteria & fungus. Drainage gradient shall be well adjusted throughout the length of table and shall have horizontal supports for drainage systems. The structure shall have a removable back panel to provide access for maintenance throughout the length of table. The C-frame shall also have skirting at back bottom side. The C-frame shall be suitable for sitting and standing nominal heights of 900mm respectively. The nominal table depths shall be1540mm for Island tables. All frame-work is to be pre-treated with superior pure epoxy powder coated finish
	Providing and supply of Horizontal Members : These shall be made from rectangular pipes of 2mm thickness. Crosssectional dimensions of the pipe should be 60 x 30 x 2 mm. They shall be made of CRCA MS and coated with pure epoxy powder. These connect two C-Frames together as shown using C-clamps/U-clamps. Together with the CFrames and Horizontal Members connected together, the skeletal structure of the work-bench is formed on which the worktop can be placed and the hanging-type storage cabinets can be suspended. Horizontal Members determine the width of the lab workbench as they form the member (distance) between two adjacent C-Frames. They shall be available in various widths of 750,1500 mm As per layout
	Providing and supply of Panels: All other panels used as End cover of the tables in case of Island tables to cover the space between two tables or between the table and the wall. The cover panels to be made of 1.0 mm thick CRCA MS sheet as per IS Code 513:1994

	Providing and supply of Welded Cabinets : Under bench Suspended cabinets shall be flush face construction with doors and drawers in the same plane as the cabinet face frame, without overlap. The MOC: MS CRCA MS: IS – 513 (1994). Thickness: LH/RH side panels, shutter front, Bottom panel, Top front, Drawer separator, shelf, Alignment channel shall be of 1.2mm thk. Removable Back panel, Shutter cover, Fr. Rack strip, Top cover panel shall be of 0.8mmthk. Finish: Powder coating pure epoxy, thickness 40-50 microns Handle: Anodized Aluminium Finish handles (D-Type or Recess-Type) Lock: Units have a locking facility with 180 deg. and 10 lever cam lock mechanism (except for sink and corner unit). Hinge: SS 304 knuckle barrel Hinge of thickness 2.5mm and opening angle 180 deg. Screw: SS 304. Ball Slide: High quality double extension drawers of 500mm Length (approved Make) (required only for drawer unit) Shutter is of twin type construction with sound dampening effect using profeel. Shutter cover is equipping with Bump on for sound dampening. Depth of the cabinets: 530mm. Cabinet for Sink unit to be provided Two no.s no.s of 2Shutter-750W-635H along with Four No.s Welded Cabinets to be Provided with 2 Shutter and 1 Drawer of 750W-635H
	Providing and supply of Sink, Faucets & Accessories : SS Rectangular Sink without Border: Made up highest grade 18/8 (Type AISI 304) stainless steel. Standard bowl size (L x W x D) is 430 x 350 x 200 mm. . Faucet shall be 3-way or 1-way type faucet of approved make. Service fittings are of laboratory grade, and water faucets and valve bodies are of cast red brass alloy or bronze forgings, all fittings are of powder plated unless specified otherwise. 6 No.s of Sink should be Provided
	Providing and supply Fixed-Type reagent shelves should be provided. It should be complete modular design consisting of 2 stage horizontal storage shelves made of CRCA MS with pure epoxy powder coating and having cutouts for electrical switches and sockets. It should have provision for placing Granite pieces , Configuration should be Two No.s Fixed Type Reagent Shelf (Main Type) 750 L- Cutout : 3 Module + 3 Module (Total 2 Cutouts Only) & Two No.s Fixed Type Reagent Shelf (Main Type) 1500 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only) Providing and supply of Granite Work Top : It shall be 20mm (+/- 2mm) thick Jet Black Granite worktop. The exposed edges of the worktop shall be chamfered and smoothened. The bottom of the worktop shall be polished and there shall be a V-groove throughout the length of the exposed edges to protect the cabinets from coming in contact with the spillages. The overhang on the storage cabinet is 25 mm at the front side and 30 mm at the sides. The backing material used is a neoprene mat of 6 mm thickness.
	Wall Bench Type 1 (As per Layout)-WB1
	Over all Size of The Wall Bench 4622mmW*5975mmW*1540mm, with 770mmD*900mmH , 3 units joined by two Corner Units of 900mmD making a U Shape

	Providing and supply of C-Frames manufactured from standard hollow metal sections; confirming to I.S. Code 7138:1973 (Indian Standard specification for steel tubes for furniture) and all sheet metal components to be of CRCA MS confirming to IS Code 513:1994. The suspended under-bench welded units shall be supported on heavy-duty steel frames fully carrying the load of worktops.. Its superior strength is combined with aesthetically appealing end caps shall give maximum flexibility and modularity while making a layout. C-frame shall be constructed from a rectangular pipe with a cross section of 60mm x 30mm and shall be 2 mm thick and shall be without a vertical front leg to give a clean look. The C-frame legs shall be supplied with adjustable feet (tolerance from -5mm to +20mm) to correct the unevenness of flooring. The tubular enclosed type construction shall discourage dust accumulation and unwanted development of bacteria & fungus. Drainage gradient shall be well adjusted throughout the length of table and shall have horizontal supports for drainage systems. The structure shall have a removable back panel to provide access for maintenance throughout the length of table. The C-frame shall also have skirting at back bottom side. The C-frame shall be suitable for sitting and standing nominal heights of 900mm respectively. The nominal table depths shall be770mm for Wall tables. All frame-work is to be pre-treated with superior pure epoxy powder coated finish
	Providing and supply of Horizontal Members : These shall be made from rectangular pipes of 2mm thickness. Crosssectional dimensions of the pipe should be 60 x 30 x 2 mm. They shall be made of CRCA MS and coated with pure epoxy powder. These connect two C-Frames together as shown using C-clamps/U-clamps. Together with the CFrames and Horizontal Members connected together, the skeletal structure of the work-bench is formed on which the worktop can be placed and the hanging-type storage cabinets can be suspended. Horizontal Members determine the width of the lab workbench as they form the member (distance) between two adjacent C-Frames. They shall be available in various widths of 1350, 1500mm As per layout
	Providing and supply of Panels: All other panels used as End cover of the tables in case of wall tables to cover the space between two tables or between the table and the wall. The cover panels to be made of 1.0 mm thick CRCA MS sheet as per IS Code 513:1994

	Providing and supply of Welded Cabinets : Under bench Suspended cabinets shall be flush face construction with doors and drawers in the same plane as the cabinet face frame, without overlap. The MOC: MS CRCA MS: IS – 513 (1994). Thickness: LH/RH side panels, shutter front, Bottom panel, Top front, Drawer separator, shelf, Alignment channel shall be of 1.2mm thk. Removable Back panel, Shutter cover, Fr. Rack strip, Top cover panel shall be of 0.8mmthk. Finish: Powder coating pure epoxy, thickness 40-50 microns Handle: Anodized Aluminium Finish handles (D-Type or Recess-Type) Lock: Units have a locking facility with 180 deg. and 10 lever cam lock mechanism (except for sink and corner unit). Hinge: SS 304 knuckle barrel Hinge of thickness 2.5mm and opening angle 180 deg. Screw: SS 304. Ball Slide: High quality double extension drawers of 500mm Length (approved Make) (required only for drawer unit) Shutter is of twin type construction with sound dampening effect using profeel. Shutter cover is equipping with Bump on for sound dampening. Depth of the cabinets: 530mm. There Should be Two No.s welded SInk unit cabinet with 2 shutter of size 750W635H and Two no.s of Corner unit Cabinet with one shutter of size 900mm*635mm and six no.s of welded cabinet with 2 shutter one drawer of size 750W-635H and One no.s of welded cabinet with 2 shutter one drawer of size 600W-635H.
	Providing and supply of Sink, Faucets & Accessories : SS Rectangular Sink without Border: Made up highest grade 18/8 (Type AISI 304) stainless steel. Standard bowl size (L x W x D) is 430 x 350 x 200 mm. . Faucet shall be 3-way or 1-way type faucet of approved make. Service fittings are of laboratory grade, and water faucets and valve bodies are of cast red brass alloy or bronze forgings, all fittings are of powder plated unless specified otherwise. Two No.s of Sink should be Provided Providing and supply Fixed-Type reagent shelves should be provided. It should be complete modular design consisting of 2 stage horizontal storage shelves made of CRCA MS with pure epoxy powder coating and having cutouts for electrical switches and sockets. It should have provision for placing Granite pieces , Configuration should be One no. Fixed Type Reagent Shelf (Main Type) 750 L- Cutout : 3 Module + 3 Module (Total 2 Cutouts Only), Three no. Fixed Type Reagent Shelf (Main Type) 1500 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only), One no. Fixed Type Reagent Shelf (Add On Type) 750 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only), Two No.s Fixed Type Reagent Shelf (Add On Type) 1500 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only), One no. Fixed Type Reagent Shelf (Add On Type) 1350 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only)

	Providing and supply of Granite Work Top : It shall be 20mm (+/- 2mm) thick Jet Black Granite worktop. The exposed edges of the worktop shall be chamfered and smoothened. The bottom of the worktop shall be polished and there shall be a V-groove throughout the length of the exposed edges to protect the cabinets from coming in contact with the spillages. The overhang on the storage cabinet is 25 mm at the front side and 30 mm at the sides. The backing material used is a neoprene mat of 6 mm thickness.
	Wall Bench Type 2 (As per Layout) WB-2
	Over all Size of The Wall Bench 4580mmW*770mmD*900mmH
	Providing and supply of C-Frames manufactured from standard hollow metal sections; confirming to I.S. Code 7138:1973 (Indian Standard specification for steel tubes for furniture) and all sheet metal components to be of CRCA MS confirming to IS Code 513:1994. The suspended under-bench welded units shall be supported on heavy-duty steel frames fully carrying the load of worktops.. Its superior strength is combined with aesthetically appealing end caps shall give maximum flexibility and modularity while making a layout. C-frame shall be constructed from a rectangular pipe with a cross section of 60mm x 30mm and shall be 2 mm thick and shall be without a vertical front leg to give a clean look. The C-frame legs shall be supplied with adjustable feet (tolerance from -5mm to +20mm) to correct the unevenness of flooring. The tubular enclosed type construction shall discourage dust accumulation and unwanted development of bacteria & fungus. Drainage gradient shall be well adjusted throughout the length of table and shall have horizontal supports for drainage systems. The structure shall have a removable back panel to provide access for maintenance throughout the length of table. The C-frame shall also have skirting at back bottom side. The C-frame shall be suitable for sitting and standing nominal heights of 900mm respectively. The nominal table depths shall be770mm for Wall tables. All frame-work is to be pre-treated with superior pure epoxy powder coated finish.
	Providing and supply of Horizontal Members : These shall be made from rectangular pipes of 2mm thickness. Crosssectional dimensions of the pipe should be 60 x 30 x 2 mm. They shall be made of CRCA MS and coated with pure epoxy powder. These connect two C-Frames together as shown using C-clamps/U-clamps. Together with the CFrames and Horizontal Members connected together, the skeletal structure of the work-bench is formed on which the worktop can be placed and the hanging-type storage cabinets can be suspended. Horizontal Members determine the width of the lab workbench as they form the member (distance) between two adjacent C-Frames. They shall be available in various widths of 1500mm as per layout
	Providing and supply of Panels: All other panels used as End cover of the tables in case of wall tables to cover the space between two tables or between the table and the wall. The cover panels to be made of 1.0 mm thick CRCA MS sheet as per IS Code 513:1994

	Providing and supply of Welded Cabinets : Under bench Suspended cabinets shall be flush face construction with doors and drawers in the same plane as the cabinet face frame, without overlap. The MOC: MS CRCA MS: IS – 513 (1994). Thickness: LH/RH side panels, shutter front, Bottom panel, Top front, Drawer separator, shelf, Alignment channel shall be of 1.2mm thk. Removable Back panel, Shutter cover, Fr. Rack strip, Top cover panel shall be of 0.8mmthk. Finish: Powder coating pure epoxy, thickness 40-50 microns Handle: Anodized Aluminium Finish handles (D-Type or Recess-Type) Lock: Units have a locking facility with 180 deg. and 10 lever cam lock mechanism (except for sink and corner unit). Hinge: SS 304 knuckle barrel Hinge of thickness 2.5mm and opening angle 180 deg. Screw: SS 304. Ball Slide: High quality double extension drawers of 500mm Length (approved Make) (required only for drawer unit) Shutter is of twin type construction with sound dampening effect using profeel. Shutter cover is equipping with Bump on for sound dampening. Depth of the cabinets: 530mm. There Should be One No.s welded SInk unit cabinet with 2 shutter of size 750W635H and Two no.s of welded cabinet with 2 shutter one drawer of size 750W-635H.
	Providing and supply of Sink, Faucets & Accessories : SS Rectangular Sink without Border: Made up highest grade 18/8 (Type AISI 304) stainless steel. Standard bowl size (L x W x D) is 430 x 350 x 200 mm. . Faucet shall be 3-way or 1-way type faucet of approved make. Service fittings are of laboratory grade, and water faucets and valve bodies are of cast red brass alloy or bronze forgings, all fittings are of powder plated unless specified otherwise. One No.s of Sink should be Provided
	Providing and supply Fixed-Type reagent shelves should be provided. It should be complete modular design consisting of 2 stage horizontal storage shelves made of CRCA MS with pure epoxy powder coating and having cutouts for electrical switches and sockets. It should have provision for placing Granite pieces , Configuration should be ONe Fixed Type Reagent Shelf (Main Type) 1500 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only) withOne Fixed Type Reagent Shelf (Add On Type) 750 L-Cutout : 6 Module + 6 Module (Total 2 Cutouts Only) and one Fixed Type Reagent Shelf (Add On Type) 1500 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only) Providing and supply of Granite Work Top : It shall be 20mm (+/- 2mm) thick Jet Black Granite worktop. The exposed edges of the worktop shall be chamfered and smoothened. The bottom of the worktop shall be polished and there shall be a V-groove throughout the length of the exposed edges to protect the cabinets from coming in contact with the spillages. The overhang on the storage cabinet is 25 mm at the front side and 30 mm at the sides. The backing material used is a neoprene mat of 6 mm thickness.
	Wall Bench Type 3 (As per Layout) WB-3
	Over all Size of The Wall Bench 7405mmW*770mmD*900mmH

	Providing and supply of C-Frames manufactured from standard hollow metal sections; confirming to I.S. Code 7138:1973 (Indian Standard specification for steel tubes for furniture) and all sheet metal components to be of CRCA MS confirming to IS Code 513:1994. The suspended under-bench welded units shall be supported on heavy-duty steel frames fully carrying the load of worktops.. Its superior strength is combined with aesthetically appealing end caps shall give maximum flexibility and modularity while making a layout. C-frame shall be constructed from a rectangular pipe with a cross section of 60mm x 30mm and shall be 2 mm thick and shall be without a vertical front leg to give a clean look. The C-frame legs shall be supplied with adjustable feet (tolerance from -5mm to +20mm) to correct the unevenness of flooring. The tubular enclosed type construction shall discourage dust accumulation and unwanted development of bacteria & fungus. Drainage gradient shall be well adjusted throughout the length of table and shall have horizontal supports for drainage systems. The structure shall have a removable back panel to provide access for maintenance throughout the length of table. The C-frame shall also have skirting at back bottom side. The C-frame shall be suitable for sitting and standing nominal heights of 900mm respectively. The nominal table depths shall be770mm for Wall tables. All frame-work is to be pre-treated with superior pure epoxy powder coated finish.
	Providing and supply of Horizontal Members : These shall be made from rectangular pipes of 2mm thickness. Crosssectional dimensions of the pipe should be 60 x 30 x 2 mm. They shall be made of CRCA MS and coated with pure epoxy powder. These connect two C-Frames together as shown using C-clamps/U-clamps. Together with the CFrames and Horizontal Members connected together, the skeletal structure of the work-bench is formed on which the worktop can be placed and the hanging-type storage cabinets can be suspended. Horizontal Members determine the width of the lab workbench as they form the member (distance) between two adjacent C-Frames. They shall be available in various widths of 1200, 1500 mm As per layout

	Providing and supply of Panels: All other panels used as End cover of the tables in case of wall tables to cover the space between two tables or between the table and the wall. The cover panels to be made of 1.0 mm thick CRCA MS sheet as per IS Code 513:1994 Providing and supply of Welded Cabinets : Under bench Suspended cabinets shall be flush face construction with doors and drawers in the same plane as the cabinet face frame, without overlap. The MOC: MS CRCA MS: IS – 513 (1994). Thickness: LH/RH side panels, shutter front, Bottom panel, Top front, Drawer separator, shelf, Alignment channel shall be of 1.2mm thk. Removable Back panel, Shutter cover, Fr. Rack strip, Top cover panel shall be of 0.8mmthk. Finish: Powder coating pure epoxy, thickness 40-50 microns Handle: Anodized Aluminium Finish handles (D-Type or Recess-Type) Lock: Units have a locking facility with 180 deg. and 10 lever cam lock mechanism (except for sink and corner unit). Hinge: SS 304 knuckle barrel Hinge of thickness 2.5mm and opening angle 180 deg. Screw: SS 304. Ball Slide: High quality double extension drawers of 500mm Length (approved Make) (required only for drawer unit) Shutter is of twin type construction with sound dampening effect using profeel. Shutter cover is equipping with Bump on for sound dampening. Depth of the cabinets: 530mm. There Should be One No.s welded SInk unit cabinet with 2 shutter of size 750W635H and Three no.s of welded cabinet with 2 shutter one drawer of size 750W-635H and One of welded cabinet with 2 shutter one drawer of size 600W-635H.
	Providing and supply of Sink, Faucets & Accessories : SS Rectangular Sink without Border: Made up highest grade 18/8 (Type AISI 304) stainless steel. Standard bowl size (L x W x D) is 430 x 350 x 200 mm. . Faucet shall be 3-way or 1-way type faucet of approved make. Service fittings are of laboratory grade, and water faucets and valve bodies are of cast red brass alloy or bronze forgings, all fittings are of powder plated unless specified otherwise. One No.s of Sink should be Provided
	Providing and supply Fixed-Type reagent shelves should be provided. It should be complete modular design consisting of 2 stage horizontal storage shelves made of CRCA MS with pure epoxy powder coating and having cutouts for electrical switches and sockets. It should have provision for placing Granite pieces , Configuration should be One No Fixed Type Reagent Shelf (Main Type) 1200 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only) with one no Fixed Type Reagent Shelf (Add On Type) 750 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only) and three no. Fixed Type Reagent Shelf (Add On Type) 1500 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only)
	Providing and supply of Granite Work Top : It shall be 20mm (+/- 2mm) thick Jet Black Granite worktop. The exposed edges of the worktop shall be chamfered and smoothened. The bottom of the worktop shall be polished and there shall be a V-groove throughout the length of the exposed edges to protect the cabinets from coming in contact with the spillages. The overhang on the storage cabinet is 25 mm at the front side and 30 mm at the sides. The backing material used is a neoprene mat of 6 mm thickness.
	Wall Bench Type 4 (As per Layout) WB-4
	Over all Size of The Wall Bench 7405mmW*770mmD*900mmH

	Providing and supply of C-Frames manufactured from standard hollow metal sections; confirming to I.S. Code 7138:1973 (Indian Standard specification for steel tubes for furniture) and all sheet metal components to be of CRCA MS confirming to IS Code 513:1994. The suspended under-bench welded units shall be supported on heavy-duty steel frames fully carrying the load of worktops.. Its superior strength is combined with aesthetically appealing end caps shall give maximum flexibility and modularity while making a layout. C-frame shall be constructed from a rectangular pipe with a cross section of 60mm x 30mm and shall be 2 mm thick and shall be without a vertical front leg to give a clean look. The C-frame legs shall be supplied with adjustable feet (tolerance from -5mm to +20mm) to correct the unevenness of flooring. The tubular enclosed type construction shall discourage dust accumulation and unwanted development of bacteria & fungus. Drainage gradient shall be well adjusted throughout the length of table and shall have horizontal supports for drainage systems. The structure shall have a removable back panel to provide access for maintenance throughout the length of table. The C-frame shall also have skirting at back bottom side. The C-frame shall be suitable for sitting and standing nominal heights of 900mm respectively. The nominal table depths shall be770mm for Wall tables. All frame-work is to be pre-treated with superior pure epoxy powder coated finish.
	Providing and supply of Horizontal Members : These shall be made from rectangular pipes of 2mm thickness. Crosssectional dimensions of the pipe should be 60 x 30 x 2 mm. They shall be made of CRCA MS and coated with pure epoxy powder. These connect two C-Frames together as shown using C-clamps/U-clamps. Together with the CFrames and Horizontal Members connected together, the skeletal structure of the work-bench is formed on which the worktop can be placed and the hanging-type storage cabinets can be suspended. Horizontal Members determine the width of the lab workbench as they form the member (distance) between two adjacent C-Frames. They shall be available in various widths of 1200, 1500 mm As per layout
	Providing and supply of Panels: All other panels used as End cover of the tables in case of wall tables to cover the space between two tables or between the table and the wall. The cover panels to be made of 1.0 mm thick CRCA MS sheet as per IS Code 513:1994

	Providing and supply of Welded Cabinets : Under bench Suspended cabinets shall be flush face construction with doors and drawers in the same plane as the cabinet face frame, without overlap. The MOC: MS CRCA MS: IS – 513 (1994). Thickness: LH/RH side panels, shutter front, Bottom panel, Top front, Drawer separator, shelf, Alignment channel shall be of 1.2mm thk. Removable Back panel, Shutter cover, Fr. Rack strip, Top cover panel shall be of 0.8mmthk. Finish: Powder coating pure epoxy, thickness 40-50 microns Handle: Anodized Aluminium Finish handles (D-Type or Recess-Type) Lock: Units have a locking facility with 180 deg. and 10 lever cam lock mechanism (except for sink and corner unit). Hinge: SS 304 knuckle barrel Hinge of thickness 2.5mm and opening angle 180 deg. Screw: SS 304. Ball Slide: High quality double extension drawers of 500mm Length (approved Make) (required only for drawer unit) Shutter is of twin type construction with sound dampening effect using profeel. Shutter cover is equipping with Bump on for sound dampening. Depth of the cabinets: 530mm. There Should be One No.s welded SInk unit cabinet with 2 shutter of size 750W635H and Three no.s of welded cabinet with 2 shutter one drawer of size 750W-635H and One of welded cabinet with 2 shutter one drawer of size 600W-635H.
	Providing and supply of Sink, Faucets & Accessories : SS Rectangular Sink without Border: Made up highest grade 18/8 (Type AISI 304) stainless steel. Standard bowl size (L x W x D) is 430 x 350 x 200 mm. . Faucet shall be 3-way or 1-way type faucet of approved make. Service fittings are of laboratory grade, and water faucets and valve bodies are of cast red brass alloy or bronze forgings, all fittings are of powder plated unless specified otherwise. One No.s of Sink should be Provided
	Providing and supply Fixed-Type reagent shelves should be provided. It should be complete modular design consisting of 2 stage horizontal storage shelves made of CRCA MS with pure epoxy powder coating and having cutouts for electrical switches and sockets. It should have provision for placing Granite pieces , Configuration should be Three no.s Fixed Type Reagent Shelf (Main Type) 1200 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only), One No.s Fixed Type Reagent Shelf (Add On Type) 750 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only), One no. Fixed Type Reagent Shelf (Add On Type) 1500 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only) Providing and supply of Granite Work Top : It shall be 20mm (+/- 2mm) thick Jet Black Granite worktop. The exposed edges of the worktop shall be chamfered and smoothened. The bottom of the worktop shall be polished and there shall be a V-groove throughout the length of the exposed edges to protect the cabinets from coming in contact with the spillages. The overhang on the storage cabinet is 25 mm at the front side and 30 mm at the sides. The backing material used is a neoprene mat of 6 mm thickness.
	Wall Bench Type 5 (As per Layout)- WB-5
	Over all Size of The Wall Bench 2290mmW*5904mmW*3830mm, with 770mmD*900mmH , 3 units joined by two Corner Units of 900mmD making a U Shape

	Providing and supply of C-Frames manufactured from standard hollow metal sections; confirming to I.S. Code 7138:1973 (Indian Standard specification for steel tubes for furniture) and all sheet metal components to be of CRCA MS confirming to IS Code 513:1994. The suspended under-bench welded units shall be supported on heavy-duty steel frames fully carrying the load of worktops.. Its superior strength is combined with aesthetically appealing end caps shall give maximum flexibility and modularity while making a layout. C-frame shall be constructed from a rectangular pipe with a cross section of 60mm x 30mm and shall be 2 mm thick and shall be without a vertical front leg to give a clean look. The C-frame legs shall be supplied with adjustable feet (tolerance from -5mm to +20mm) to correct the unevenness of flooring. The tubular enclosed type construction shall discourage dust accumulation and unwanted development of bacteria & fungus. Drainage gradient shall be well adjusted throughout the length of table and shall have horizontal supports for drainage systems. The structure shall have a removable back panel to provide access for maintenance throughout the length of table. The C-frame shall also have skirting at back bottom side. The C-frame shall be suitable for sitting and standing nominal heights of 900mm respectively. The nominal table depths shall be770mm for Wall tables. All frame-work is to be pre-treated with superior pure epoxy powder coated finish
	Providing and supply of Horizontal Members : These shall be made from rectangular pipes of 2mm thickness. Crosssectional dimensions of the pipe should be 60 x 30 x 2 mm. They shall be made of CRCA MS and coated with pureepoxy powder. These connect two C-Frames together as shown using C-clamps/U-clamps. Together with the CFrames and Horizontal Members connected together, the skeletal structure of the work-bench is formed on which the worktop can be placed and the hanging-type storage cabinets can be suspended. Horizontal Members determine the width of the lab workbench as they form the member (distance) between two adjacent C-Frames. They shall be available in various widths of 750, 1050,1500mm As per Layout
	Providing and supply of Panels: All other panels used as End cover of the tables in case of wall tables to cover the space between two tables or between the table and the wall. The cover panels to be made of 1.0 mm thick CRCA MS sheet as per IS Code 513:1994

	Providing and supply of Welded Cabinets : Under bench Suspended cabinets shall be flush face construction with doors and drawers in the same plane as the cabinet face frame, without overlap. The MOC: MS CRCA MS: IS – 513 (1994). Thickness: LH/RH side panels, shutter front, Bottom panel, Top front, Drawer separator, shelf, Alignment channel shall be of 1.2mm thk. Removable Back panel, Shutter cover, Fr. Rack strip, Top cover panel shall be of 0.8mmthk. Finish: Powder coating pure epoxy, thickness 40-50 microns Handle: Anodized Aluminium Finish handles (D-Type or Recess-Type) Lock: Units have a locking facility with 180 deg. and 10 lever cam lock mechanism (except for sink and corner unit). Hinge: SS 304 knuckle barrel Hinge of thickness 2.5mm and opening angle 180 deg. Screw: SS 304. Ball Slide: High quality double extension drawers of 500mm Length (approved Make) (required only for drawer unit) Shutter is of twin type construction with sound dampening effect using profeel. Shutter cover is equipping with Bump on for sound dampening. Depth of the cabinets: 530mm. There Should be Two No.s welded SInk unit cabinet with 2 shutter of size 750W635H and Two no.s of Corner unit Cabinet with one shutter of size 900mm*635mm and Four no.s of welded cabinet with 2 shutter one drawer of size 750W-635H and Two no.s of welded cabinet with 1 shutter one drawer of size 450W-635H.
	Providing and supply of Sink, Faucets & Accessories : SS Rectangular Sink without Border: Made up highest grade 18/8 (Type AISI 304) stainless steel. Standard bowl size (L x W x D) is 430 x 350 x 200 mm. . Faucet shall be 3-way or 1-way type faucet of approved make. Service fittings are of laboratory grade, and water faucets and valve bodies are of cast red brass alloy or bronze forgings, all fittings are of powder plated unless specified otherwise. Two No.s of Sink should be Provided Providing and supply Fixed-Type reagent shelves should be provided. It should be complete modular design consisting of 2 stage horizontal storage shelves made of CRCA MS with pure epoxy powder coating and having cutouts for electrical switches and sockets. It should have provision for placing Granite pieces , Configuration should be Three No.s Fixed Type Reagent Shelf (Main Type) 1500 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only), One No. Fixed Type Reagent Shelf (Main Type) 1050 L- Cutout : 6 Module + 6 Module (Total 2 Cutours Only), Two No.s Fixed Type Reagent Shelf (Add On Type) 750 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only), One NO.s Fixed Type Reagent Shelf (Add On Type) 1500 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only), One NO.s Fixed Type Reagent Shelf (Add On Type) 1050 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only)
	Providing and supply of Granite Work Top : It shall be 20mm (+/- 2mm) thick Jet Black Granite worktop. The exposed edges of the worktop shall be chamfered and smoothened. The bottom of the worktop shall be polished and there shall be a V-groove throughout the length of the exposed edges to protect the cabinets from coming in contact with the spillages. The overhang on the storage cabinet is 25 mm at the front side and 30 mm at the sides. The backing material used is a neoprene mat of 6 mm thickness.
	Wall Bench Type 6 (As per Layout)

	Over all Size of The Wall Bench 4622mmW*5975mmW*1540mm, with 770mmD*900mmH , 3 units joined by two Corner Units of 900mmD making a U Shape
	Providing and supply of C-Frames manufactured from standard hollow metal sections; confirming to I.S. Code 7138:1973 (Indian Standard specification for steel tubes for furniture) and all sheet metal components to be of CRCA MS confirming to IS Code 513:1994. The suspended under-bench welded units shall be supported on heavy-duty steel frames fully carrying the load of worktops.. Its superior strength is combined with aesthetically appealing end caps shall give maximum flexibility and modularity while making a layout. C-frame shall be constructed from a rectangular pipe with a cross section of 60mm x 30mm and shall be 2 mm thick and shall be without a vertical front leg to give a clean look. The C-frame legs shall be supplied with adjustable feet (tolerance from -5mm to +20mm) to correct the unevenness of flooring. The tubular enclosed type construction shall discourage dust accumulation and unwanted development of bacteria & fungus. Drainage gradient shall be well adjusted throughout the length of table and shall have horizontal supports for drainage systems. The structure shall have a removable back panel to provide access for maintenance throughout the length of table. The C-frame shall also have skirting at back bottom side. The C-frame shall be suitable for sitting and standing nominal heights of 900mm respectively. The nominal table depths shall be770mm for Wall tables. All frame-work is to be pre-treated with superior pure epoxy powder coated finish.
	Providing and supply of Horizontal Members : These shall be made from rectangular pipes of 2mm thickness. Crosssectional dimensions of the pipe should be 60 x 30 x 2 mm. They shall be made of CRCA MS and coated with pure epoxy powder. These connect two C-Frames together as shown using C-clamps/U-clamps. Together with the CFrames and Horizontal Members connected together, the skeletal structure of the work-bench is formed on which the worktop can be placed and the hanging-type storage cabinets can be suspended. Horizontal Members determine the width of the lab workbench as they form the member (distance) between two adjacent C-Frames. They shall be available in various widths of 1350, 1500mm As per layout
	Providing and supply of Panels: All other panels used as End cover of the tables in case of wall tables to cover the space between two tables or between the table and the wall. The cover panels to be made of 1.0 mm thick CRCA MS sheet as per IS Code 513:1994

	Providing and supply of Welded Cabinets : Under bench Suspended cabinets shall be flush face construction with doors and drawers in the same plane as the cabinet face frame, without overlap. The MOC: MS CRCA MS: IS – 513 (1994). Thickness: LH/RH side panels, shutter front, Bottom panel, Top front, Drawer separator, shelf, Alignment channel shall be of 1.2mm thk. Removable Back panel, Shutter cover, Fr. Rack strip, Top cover panel shall be of 0.8mmthk. Finish: Powder coating pure epoxy, thickness 40-50 microns Handle: Anodized Aluminium Finish handles (D-Type or Recess-Type) Lock: Units have a locking facility with 180 deg. and 10 lever cam lock mechanism (except for sink and corner unit). Hinge: SS 304 knuckle barrel Hinge of thickness 2.5mm and opening angle 180 deg. Screw: SS 304. Ball Slide: High quality double extension drawers of 500mm Length (approved Make) (required only for drawer unit) Shutter is of twin type construction with sound dampening effect using profeel. Shutter cover is equipping with Bump on for sound dampening. Depth of the cabinets: 530mm. There Should be Two No.s welded SInk unit cabinet with 2 shutter of size 750W635H and Two no.s of Corner unit Cabinet with one shutter of size 900mm*635mm and Five no.s of welded cabinet with 2 shutter one drawer of size 750W-635H and One no.s of welded cabinet with 2 shutter one drawer of size 600W-635H.
	Providing and supply of Sink, Faucets & Accessories : SS Rectangular Sink without Border: Made up highest grade 18/8 (Type AISI 304) stainless steel. Standard bowl size (L x W x D) is 430 x 350 x 200 mm. . Faucet shall be 3-way or 1-way type faucet of approved make. Service fittings are of laboratory grade, and water faucets and valve bodies are of cast red brass alloy or bronze forgings, all fittings are of powder plated unless specified otherwise. Two No.s of Sink should be Provided Providing and supply Fixed-Type reagent shelves should be provided. It should be complete modular design consisting of 2 stage horizontal storage shelves made of CRCA MS with pure epoxy powder coating and having cutouts for electrical switches and sockets. It should have provision for placing Granite pieces , Configuration should be ONe Fixed Type Reagent Shelf (Main Type) 750 L- Cutout : 3 Module + 3 Module (Total 2 Cutouts Only), Three Fixed Type Reagent Shelf (Main Type) 1500 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only), One Fixed Type Reagent Shelf (Add On Type) 750 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only), Two Fixed Type Reagent Shelf (Add On Type) 1500 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only), One Fixed Type Reagent Shelf (Add On Type) 1350 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only)
	Providing and supply of Granite Work Top : It shall be 20mm (+/- 2mm) thick Jet Black Granite worktop. The exposed edges of the worktop shall be chamfered and smoothened. The bottom of the worktop shall be polished and there shall be a V-groove throughout the length of the exposed edges to protect the cabinets from coming in contact with the spillages. The overhang on the storage cabinet is 25 mm at the front side and 30 mm at the sides. The backing material used is a neoprene mat of 6 mm thickness.

	Wall Bench Type 7 (As per Layout)
	Over all Size of The Wall Bench 2290mmW*5904mmW*3830mm, with 770mmD*900mmH , 3 units joined by two Corner Units of 900mmD making a U Shape
	Providing and supply of C-Frames manufactured from standard hollow metal sections; confirming to I.S. Code 7138:1973 (Indian Standard specification for steel tubes for furniture) and all sheet metal components to be of CRCA MS confirming to IS Code 513:1994. The suspended under-bench welded units shall be supported on heavy-duty steel frames fully carrying the load of worktops.. Its superior strength is combined with aesthetically appealing end caps shall give maximum flexibility and modularity while making a layout. C-frame shall be constructed from a rectangular pipe with a cross section of 60mm x 30mm and shall be 2 mm thick and shall be without a vertical front leg to give a clean look. The C-frame legs shall be supplied with adjustable feet (tolerance from -5mm to +20mm) to correct the unevenness of flooring. The tubular enclosed type construction shall discourage dust accumulation and unwanted development of bacteria & fungus. Drainage gradient shall be well adjusted throughout the length of table and shall have horizontal supports for drainage systems. The structure shall have a removable back panel to provide access for maintenance throughout the length of table. The C-frame shall also have skirting at back bottom side. The C-frame shall be suitable for sitting and standing nominal heights of 900mm respectively. The nominal table depths shall be770mm for Wall tables. All frame-work is to be pre-treated with superior pure epoxy powder coated finish.
	Providing and supply of Horizontal Members : These shall be made from rectangular pipes of 2mm thickness. Crosssectional dimensions of the pipe should be 60 x 30 x 2 mm. They shall be made of CRCA MS and coated with pure epoxy powder. These connect two C-Frames together as shown using C-clamps/U-clamps. Together with the CFrames and Horizontal Members connected together, the skeletal structure of the work-bench is formed on which the worktop can be placed and the hanging-type storage cabinets can be suspended. Horizontal Members determine the width of the lab workbench as they form the member (distance) between two adjacent C-Frames. They shall be available in various widths of 600, 750, 1050, 1500mm as per Layout
	Providing and supply of Panels: All other panels used as End cover of the tables in case of wall tables to cover the space between two tables or between the table and the wall. The cover panels to be made of 1.0 mm thick CRCA MS sheet as per IS Code 513:1994

	Providing and supply of Welded Cabinets : Under bench Suspended cabinets shall be flush face construction with doors and drawers in the same plane as the cabinet face frame, without overlap. The MOC: MS CRCA MS: IS – 513 (1994). Thickness: LH/RH side panels, shutter front, Bottom panel, Top front, Drawer separator, shelf, Alignment channel shall be of 1.2mm thk. Removable Back panel, Shutter cover, Fr. Rack strip, Top cover panel shall be of 0.8mmthk. Finish: Powder coating pure epoxy, thickness 40-50 microns Handle: Anodized Aluminium Finish handles (D-Type or Recess-Type) Lock: Units have a locking facility with 180 deg. and 10 lever cam lock mechanism (except for sink and corner unit). Hinge: SS 304 knuckle barrel Hinge of thickness 2.5mm and opening angle 180 deg. Screw: SS 304. Ball Slide: High quality double extension drawers of 500mm Length (approved Make) (required only for drawer unit) Shutter is of twin type construction with sound dampening effect using profeel. Shutter cover is equipping with Bump on for sound dampening. Depth of the cabinets: 530mm. There Should be Two No.s welded SInk unit cabinet with 2 shutter of size 750W635H and Two no.s of Corner unit Cabinet with one shutter of size 900mm*635mm and Four no.s of welded cabinet with 2 shutter one drawer of size 750W-635H and One no.s of welded cabinet with 2 shutter one drawer of size 600W-635H and One no.s of welded cabinet with 1 shutter one drawer of size 450W-635H.
	Providing and supply of Sink, Faucets & Accessories : SS Rectangular Sink without Border: Made up highest grade 18/8 (Type AISI 304) stainless steel. Standard bowl size (L x W x D) is 430 x 350 x 200 mm. . Faucet shall be 3-way or 1-way type faucet of approved make. Service fittings are of laboratory grade, and water faucets and valve bodies are of cast red brass alloy or bronze forgings, all fittings are of powder plated unless specified otherwise. Two No.s of Sink should be Provided
	Providing and supply Fixed-Type reagent shelves should be provided. It should be complete modular design consisting of 2 stage horizontal storage shelves made of CRCA MS with pure epoxy powder coating and having cutouts for electrical switches and sockets. It should have provision for placing Granite pieces , Configuration should be Three Fixed Type Reagent Shelf (Main Type) 1500 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only), One Fixed Type Reagent Shelf (Main Type) 1050 L- Cutout : 6 Module + 6 Module (Total 2 Cutours Only), Two Fixed Type Reagent Shelf (Add On Type) 750 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only), One Fixed Type Reagent Shelf (Add On Type) 1500 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only), One Fixed Type Reagent Shelf (Add On Type) 1050 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only)
	Providing and supply of Granite Work Top : It shall be 20mm (+/- 2mm) thick Jet Black Granite worktop. The exposed edges of the worktop shall be chamfered and smoothened. The bottom of the worktop shall be polished and there shall be a V-groove throughout the length of the exposed edges to protect the cabinets from coming in contact with the spillages. The overhang on the storage cabinet is 25 mm at the front side and 30 mm at the sides. The backing material used is a neoprene mat of 6 mm thickness.
	Wall Bench Type 8 (As per Layout

	Over all Size of The Wall Bench 2290mmW*5268mmW, with 770mmD*900mmH , 2 units joined by one Corner Unit of 900mmD making a L Shape
	Providing and supply of C-Frames manufactured from standard hollow metal sections; confirming to I.S. Code 7138:1973 (Indian Standard specification for steel tubes for furniture) and all sheet metal components to be of CRCA MS confirming to IS Code 513:1994. The suspended under-bench welded units shall be supported on heavy-duty steel frames fully carrying the load of worktops.. Its superior strength is combined with aesthetically appealing end caps shall give maximum flexibility and modularity while making a layout. C-frame shall be constructed from a rectangular pipe with a cross section of 60mm x 30mm and shall be 2 mm thick and shall be without a vertical front leg to give a clean look. The C-frame legs shall be supplied with adjustable feet (tolerance from -5mm to +20mm) to correct the unevenness of flooring. The tubular enclosed type construction shall discourage dust accumulation and unwanted development of bacteria & fungus. Drainage gradient shall be well adjusted throughout the length of table and shall have horizontal supports for drainage systems. The structure shall have a removable back panel to provide access for maintenance throughout the length of table. The C-frame shall also have skirting at back bottom side. The C-frame shall be suitable for sitting and standing nominal heights of 900mm respectively. The nominal table depths shall be770mm for Wall tables. All frame-work is to be pre-treated with superior pure epoxy powder coated finish.
	Providing and supply of Horizontal Members : These shall be made from rectangular pipes of 2mm thickness. Crosssectional dimensions of the pipe should be 60 x 30 x 2 mm. They shall be made of CRCA MS and coated with pure epoxy powder. These connect two C-Frames together as shown using C-clamps/U-clamps. Together with the CFrames and Horizontal Members connected together, the skeletal structure of the work-bench is formed on which the worktop can be placed and the hanging-type storage cabinets can be suspended. Horizontal Members determine the width of the lab workbench as they form the member (distance) between two adjacent C-Frames. They shall be available in various widths of 750, 1500 mm as per layout

	Providing and supply of Panels: All other panels used as End cover of the tables in case of wall tables to cover the space between two tables or between the table and the wall. The cover panels to be made of 1.0 mm thick CRCA MS sheet as per IS Code 513:1994 Providing and supply of Welded Cabinets : Under bench Suspended cabinets shall be flush face construction with doors and drawers in the same plane as the cabinet face frame, without overlap. The MOC: MS CRCA MS: IS – 513 (1994). Thickness: LH/RH side panels, shutter front, Bottom panel, Top front, Drawer separator, shelf, Alignment channel shall be of 1.2mm thk. Removable Back panel, Shutter cover, Fr. Rack strip, Top cover panel shall be of 0.8mmthk. Finish: Powder coating pure epoxy, thickness 40-50 microns Handle: Anodized Aluminium Finish handles (D-Type or Recess-Type) Lock: Units have a locking facility with 180 deg. and 10 lever cam lock mechanism (except for sink and corner unit). Hinge: SS 304 knuckle barrel Hinge of thickness 2.5mm and opening angle 180 deg. Screw: SS 304. Ball Slide: High quality double extension drawers of 500mm Length (approved Make) (required only for drawer unit) Shutter is of twin type construction with sound dampening effect using profeel. Shutter cover is equipping with Bump on for sound dampening. Depth of the cabinets: 530mm. There Should be one no.s of Corner unit Cabinet with one shutter of size 900mm*635mm and Four no.s of welded cabinet with 2 shutter one drawer of size 750W-635H.
	Providing and supply Fixed-Type reagent shelves should be provided. It should be complete modular design consisting of 2 stage horizontal storage shelves made of CRCA MS with pure epoxy powder coating and having cutouts for electrical switches and sockets. It should have provision for placing Granite pieces , Configuration should be Two No. Fixed Type Reagent Shelf (Main Type) 1500 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only), One No Fixed Type Reagent Shelf (Add On Type) 750 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only), Two NoFixed Type Reagent Shelf (Add On Type) 1500 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only)
	Providing and supply of Granite Work Top : It shall be 20mm (+/- 2mm) thick Jet Black Granite worktop. The exposed edges of the worktop shall be chamfered and smoothened. The bottom of the worktop shall be polished and there shall be a V-groove throughout the length of the exposed edges to protect the cabinets from coming in contact with the spillages. The overhang on the storage cabinet is 25 mm at the front side and 30 mm at the sides. The backing material used is a neoprene mat of 6 mm thickness.
	Wall Bench Type 9 (As per Layout
	Over all Size of The Wall Bench 5752mmW*770mmD*900mmH

	Providing and supply of C-Frames manufactured from standard hollow metal sections; confirming to I.S. Code 7138:1973 (Indian Standard specification for steel tubes for furniture) and all sheet metal components to be of CRCA MS confirming to IS Code 513:1994. The suspended under-bench welded units shall be supported on heavy-duty steel frames fully carrying the load of worktops.. Its superior strength is combined with aesthetically appealing end caps shall give maximum flexibility and modularity while making a layout. C-frame shall be constructed from a rectangular pipe with a cross section of 60mm x 30mm and shall be 2 mm thick and shall be without a vertical front leg to give a clean look. The C-frame legs shall be supplied with adjustable feet (tolerance from -5mm to +20mm) to correct the unevenness of flooring. The tubular enclosed type construction shall discourage dust accumulation and unwanted development of bacteria & fungus. Drainage gradient shall be well adjusted throughout the length of table and shall have horizontal supports for drainage systems. The structure shall have a removable back panel to provide access for maintenance throughout the length of table. The C-frame shall also have skirting at back bottom side. The C-frame shall be suitable for sitting and standing nominal heights of 900mm respectively. The nominal table depths shall be770mm for Wall tables. All frame-work is to be pre-treated with superior pure epoxy powder coated finish.
	Providing and supply of Horizontal Members : These shall be made from rectangular pipes of 2mm thickness. Crosssectional dimensions of the pipe should be 60 x 30 x 2 mm. They shall be made of CRCA MS and coated with pure epoxy powder. These connect two C-Frames together as shown using C-clamps/U-clamps. Together with the CFrames and Horizontal Members connected together, the skeletal structure of the work-bench is formed on which the worktop can be placed and the hanging-type storage cabinets can be suspended. Horizontal Members determine the width of the lab workbench as they form the member (distance) between two adjacent C-Frames. They shall be available in various widths of 1200,1500mm As per layout
	Providing and supply of Panels: All other panels used as End cover of the tables in case of wall tables to cover the space between two tables or between the table and the wall. The cover panels to be made of 1.0 mm thick CRCA MS sheet as per IS Code 513:1994

	Providing and supply of Welded Cabinets : Under bench Suspended cabinets shall be flush face construction with doors and drawers in the same plane as the cabinet face frame, without overlap. The MOC: MS CRCA MS: IS – 513 (1994).Thickness: LH/RH side panels, shutter front, Bottom panel, Top front, Drawer separator, shelf, Alignment channel shall be of 1.2mm thk. Removable Back panel, Shutter cover, Fr. Rack strip, Top cover panel shall be of 0.8mmthk.Finish: Powder coating pure epoxy, thickness 40-50 microns Handle: Anodized Aluminium Finish handles (D-Type or Recess-Type) Lock: Units have a locking facility with 180 deg. and 10 lever cam lock mechanism (except for sink and corner unit).Hinge: SS 304 knuckle barrel Hinge of thickness 2.5mm and opening angle 180 deg. Screw: SS 304.Ball Slide: High quality double extension drawers of 500mm Length (approved Make) (required only for drawer unit) Shutter is of twin type construction with sound dampening effect using profeel. Shutter cover is equipping with Bump on for sound dampening. Depth of the cabinets: 530mm. There Should be Two No.s welded SInk unit cabinet with 2 shutter of size 750W635H and One no.s of welded cabinet with 2 shutter one drawer of size 750W-635H and Two no.s of welded cabinet with 2 shutter one drawer of size 600W-635H.
	Providing and supply of Sink, Faucets & Accessories : SS Rectangular Sink without Border: Made up highest grade 18/8 (Type AISI 304) stainless steel. Standard bowl size (L x W x D) is 430 x 350 x 200 mm. . Faucet shall be 3-way or 1-way type faucet of approved make. Service fittings are of laboratory grade, and water faucets and valve bodies are of cast red brass alloy or bronze forgings, all fittings are of powder plated unless specified otherwise. Two No.s of Sink should be Provided
	Providing and supply Fixed-Type reagent shelves should be provided. It should be complete modular design consisting of 2 stage horizontal storage shelves made of CRCA MS with pure epoxy powder coating and having cutouts for electrical switches and sockets. It should have provision for placing Granite pieces , Configuration should be one No Fixed Type Reagent Shelf (Main Type) 1500 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only), two no.s Fixed Type Reagent Shelf (Add On Type) 1200 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only) Providing and supply of Granite Work Top : It shall be 20mm (+/- 2mm) thick Jet Black Granite worktop. The exposed edges of the worktop shall be chamfered and smoothened. The bottom of the worktop shall be polished and there shall be a V-groove throughout the length of the exposed edges to protect the cabinets from coming in contact with the spillages. The overhang on the storage cabinet is 25 mm at the front side and 30 mm at the sides. The backing material used is a neoprene mat of 6 mm thickness.
	Wall Bench Type 10 (As per Layout) WB-10
	Over all Size of The Wall Bench 2860mmW*7979mmW*2860mm, with 770mmD*900mmH , Placed asper layout making a U Shape

	Providing and supply of C-Frames manufactured from standard hollow metal sections; confirming to I.S. Code 7138:1973 (Indian Standard specification for steel tubes for furniture) and all sheet metal components to be of CRCA MS confirming to IS Code 513:1994. The suspended under-bench welded units shall be supported on heavy-duty steel frames fully carrying the load of worktops.. Its superior strength is combined with aesthetically appealing end caps shall give maximum flexibility and modularity while making a layout. C-frame shall be constructed from a rectangular pipe with a cross section of 60mm x 30mm and shall be 2 mm thick and shall be without a vertical front leg to give a clean look. The C-frame legs shall be supplied with adjustable feet (tolerance from -5mm to +20mm) to correct the unevenness of flooring. The tubular enclosed type construction shall discourage dust accumulation and unwanted development of bacteria & fungus. Drainage gradient shall be well adjusted throughout the length of table and shall have horizontal supports for drainage systems. The structure shall have a removable back panel to provide access for maintenance throughout the length of table. The C-frame shall also have skirting at back bottom side. The C-frame shall be suitable for sitting and standing nominal heights of 900mm respectively. The nominal table depths shall be770mm for Wall tables. All frame-work is to be pre-treated with superior pure epoxy powder coated finish.
	Providing and supply of Horizontal Members : These shall be made from rectangular pipes of 2mm thickness. Crosssectional dimensions of the pipe should be 60 x 30 x 2 mm. They shall be made of CRCA MS and coated with pure epoxy powder. These connect two C-Frames together as shown using C-clamps/U-clamps. Together with the CFrames and Horizontal Members connected together, the skeletal structure of the work-bench is formed on which the worktop can be placed and the hanging-type storage cabinets can be suspended. Horizontal Members determine the width of the lab workbench as they form the member (distance) between two adjacent C-Frames. They shall be available in various widths of 1500, 1650mm as per layout
	Providing and supply of Panels: All other panels used as End cover of the tables in case of wall tables to cover the space between two tables or between the table and the wall. The cover panels to be made of 1.0 mm thick CRCA MS sheet as per IS Code 513:1994

	Providing and supply of Welded Cabinets : Under bench Suspended cabinets shall be flush face construction with doors and drawers in the same plane as the cabinet face frame, without overlap. The MOC: MS CRCA MS: IS – 513 (1994). Thickness: LH/RH side panels, shutter front, Bottom panel, Top front, Drawer separator, shelf, Alignment channel shall be of 1.2mm thk. Removable Back panel, Shutter cover, Fr. Rack strip, Top cover panel shall be of 0.8mmthk. Finish: Powder coating pure epoxy, thickness 40-50 microns Handle: Anodized Aluminium Finish handles (D-Type or Recess-Type) Lock: Units have a locking facility with 180 deg. and 10 lever cam lock mechanism (except for sink and corner unit). Hinge: SS 304 knuckle barrel Hinge of thickness 2.5mm and opening angle 180 deg. Screw: SS 304. Ball Slide: High quality double extension drawers of 500mm Length (approved Make) (required only for drawer unit) Shutter is of twin type construction with sound dampening effect using profeel. Shutter cover is equipping with Bump on for sound dampening. Depth of the cabinets: 530mm. There Should be Two No.s welded SInk unit cabinet with 2 shutter of size 750W635H and Seven no.s of welded cabinet with 2 shutter one drawer of size 750W-635H and One no.s of welded cabinet with 2 shutter one drawer of size 600W-635H.
	Providing and supply of Sink, Faucets & Accessories : SS Rectangular Sink without Border: Made up highest grade 18/8 (Type AISI 304) stainless steel. Standard bowl size (L x W x D) is 430 x 350 x 200 mm. . Faucet shall be 3-way or 1-way type faucet of approved make. Service fittings are of laboratory grade, and water faucets and valve bodies are of cast red brass alloy or bronze forgings, all fittings are of powder plated unless specified otherwise. Two No.s of Sink should be Provided
	Providing and supply Fixed-Type reagent shelves should be provided. It should be complete modular design consisting of 2 stage horizontal storage shelves made of CRCA MS with pure epoxy powder coating and having cutouts for electrical switches and sockets. It should have provision for placing Granite pieces , Configuration should be Three No.s Fixed Type Reagent Shelf (Main Type) 1500 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only), One No. Fixed Type Reagent Shelf (Add On Type) 1650 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only), Four No.s Fixed Type Reagent Shelf (Add On Type) 1500 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only)
	Providing and supply of Granite Work Top : It shall be 20mm (+/- 2mm) thick Jet Black Granite worktop. The exposed edges of the worktop shall be chamfered and smoothened. The bottom of the worktop shall be polished and there shall be a V-groove throughout the length of the exposed edges to protect the cabinets from coming in contact with the spillages. The overhang on the storage cabinet is 25 mm at the front side and 30 mm at the sides. The backing material used is a neoprene mat of 6 mm thickness
	Wall Bench Type 11 (As per Layout)
	Over all Size of The Wall Bench 5490mmW*5935mmW* 1505mmW, with 770mmD*900mmH , 3 units joined by Two Corner Unit of 900mmD making a U Shape

	Providing and supply of C-Frames manufactured from standard hollow metal sections; confirming to I.S. Code 7138:1973 (Indian Standard specification for steel tubes for furniture) and all sheet metal components to be of CRCA MS confirming to IS Code 513:1994. The suspended under-bench welded units shall be supported on heavy-duty steel frames fully carrying the load of worktops.. Its superior strength is combined with aesthetically appealing end caps shall give maximum flexibility and modularity while making a layout. C-frame shall be constructed from a rectangular pipe with a cross section of 60mm x 30mm and shall be 2 mm thick and shall be without a vertical front leg to give a clean look. The C-frame legs shall be supplied with adjustable feet (tolerance from -5mm to +20mm) to correct the unevenness of flooring. The tubular enclosed type construction shall discourage dust accumulation and unwanted development of bacteria & fungus. Drainage gradient shall be well adjusted throughout the length of table and shall have horizontal supports for drainage systems. The structure shall have a removable back panel to provide access for maintenance throughout the length of table. The C-frame shall also have skirting at back bottom side. The C-frame shall be suitable for sitting and standing nominal heights of 900mm respectively. The nominal table depths shall be770mm for Wall tables. All frame-work is to be pre-treated with superior pure epoxy powder coated finish.
	Providing and supply of Horizontal Members : These shall be made from rectangular pipes of 2mm thickness. Crosssectional dimensions of the pipe should be 60 x 30 x 2 mm. They shall be made of CRCA MS and coated with pure epoxy powder. These connect two C-Frames together as shown using C-clamps/U-clamps. Together with the CFrames and Horizontal Members connected together, the skeletal structure of the work-bench is formed on which the worktop can be placed and the hanging-type storage cabinets can be suspended. Horizontal Members determine the width of the lab workbench as they form the member (distance) between two adjacent C-Frames. They shall be available in various widths of 1350, 1500, 1650mm as per layout
	Providing and supply of Panels: All other panels used as End cover of the tables in case of wall tables to cover the space between two tables or between the table and the wall. The cover panels to be made of 1.0 mm thick CRCA MS sheet as per IS Code 513:1994

	Providing and supply of Welded Cabinets : Under bench Suspended cabinets shall be flush face construction with doors and drawers in the same plane as the cabinet face frame, without overlap. The MOC: MS CRCA MS: IS – 513 (1994). Thickness: LH/RH side panels, shutter front, Bottom panel, Top front, Drawer separator, shelf, Alignment channel shall be of 1.2mm thk. Removable Back panel, Shutter cover, Fr. Rack strip, Top cover panel shall be of 0.8mmthk. Finish: Powder coating pure epoxy, thickness 40-50 microns Handle: Anodized Aluminium Finish handles (D-Type or Recess-Type) Lock: Units have a locking facility with 180 deg. and 10 lever cam lock mechanism (except for sink and corner unit). Hinge: SS 304 knuckle barrel Hinge of thickness 2.5mm and opening angle 180 deg. Screw: SS 304. Ball Slide: High quality double extension drawers of 500mm Length (approved Make) (required only for drawer unit) Shutter is of twin type construction with sound dampening effect using profeel. Shutter cover is equipping with Bump on for sound dampening. Depth of the cabinets: 530mm. There Should be Two No.s welded SInk unit cabinet with 2 shutter of size 750W635H and Two no.s of Corner unit Cabinet with one shutter of size 900mm*635mm and Three no.s of welded cabinet with 2 shutter one drawer of size 750W-635H and Four no.s of welded cabinet with 2 shutter one drawer of size 600W-635H.
	Providing and supply of Sink, Faucets & Accessories : SS Rectangular Sink without Border: Made up highest grade 18/8 (Type AISI 304) stainless steel. Standard bowl size (L x W x D) is 430 x 350 x 200 mm. . Faucet shall be 3-way or 1-way type faucet of approved make. Service fittings are of laboratory grade, and water faucets and valve bodies are of cast red brass alloy or bronze forgings, all fittings are of powder plated unless specified otherwise. Two No.s of Sink should be Provided Providing and supply Fixed-Type reagent shelves should be provided. It should be complete modular design consisting of 2 stage horizontal storage shelves made of CRCA MS with pure epoxy powder coating and having cutouts for electrical switches and sockets. It should have provision for placing Granite pieces , Configuration should be Two No. s Fixed Type Reagent Shelf (Main Type) 1500 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only), Two No.s Fixed Type Reagent Shelf (Main Type) 1350 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only), One Fixed Type Reagent Shelf (Add On Type) 1650 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only), One Fixed Type Reagent Shelf (Add On Type) 1500 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only), One No.s Fixed Type Reagent Shelf (Add On Type) 1350 L- Cutout : 6 Module + 6 Module (Total 2 Cutouts Only)
	Providing and supply of Granite Work Top : It shall be 20mm (+/- 2mm) thick Jet Black Granite worktop. The exposed edges of the worktop shall be chamfered and smoothened. The bottom of the worktop shall be polished and there shall be a V-groove throughout the length of the exposed edges to protect the cabinets from coming in contact with the spillages. The overhang on the storage cabinet is 25 mm at the front side and 30 mm at the sides. The backing material used is a neoprene mat of 6 mm thickness.
	Overhead storage Units
	Providing and supply of Welded Top Units :

i	The construction shall be the same as the under-bench cabinets.
	The height of these cabinets shall be around 635mm while the depth shall be around 340mm.
	The shutters shall be available in Metal frame with inserted glass.
	There shall be one height-adjustable shelf inside each cabinet
	Other construction shall be similar to under-bench cabinet
	Dissection Hall
	Dissection Table: MOC SS 304, Strong SS Tubular Framework Made of SS 304 grade.
	Top made from thick SS sheet of 2mm , with high boarder, with built in stainless steel bin for fluid collection, Overall size:-2000(L)x600(W)x850(H) mm
	Mechanical Height Adjustable revolving stool with Back and Hi Base
	The seat is made up of 1.2cm thick flat plywood and with moulded polyurethane foam, and upholstered with synthetic leather covers
	Seat size Dia 40cm, 360 degree revolving. Back Assembly foam is designed contoured lumbar support for extra comfort. Synthetic leather upholstery. Back size 45 cm.
	Five prong pedestal is fabricated from 0.2 cm thick HR Sheet, powder coated and fitted with injection moulded black polypropylene Hub Cap and 5 nos twin wheel castors
	The pedestal is 55cm pitch circle diameter. Circular foot ring of 52cm made up of 1.9cm thick ERW tube for foot support.
	Twin wheel castors are injection moulded in Black Nylon. Width 650mm, Dept 650mm, , height 880- 995mm
22	**Revive Examination Couch**

	Overall dimension 1975 mm (L) x 560 mm (W) x 805 mm (H). Examination couch with three drawers with three cabinets, inbuilt step stool and BP tray holder. The base frame should made of 30 mm x 30 mmX 1.6 thick ERW tube. The cabinets should made of 1 mm thick CRCA sheet with recessed plastic handles and with lock and plastic door latch. the hinges of the cabinet should be made of sheet metal and pin arrangement. The internal dimension of the two side cabinets should be 422 mm (W) x 455 mm (D) x 540 mm (H). the internal dimension of the central cabinet should be 422 mm (W) x 455 mm (D) x 358 mm (H). The storage cabinet unit should be mounting tubular base frame. The head rest should be adjustable on gas spring which should be actuated with C shaped handle lever. The drawers should made of 1 mm thick CRCA sheet with recessed plastic handles and work on double extension ball slides for smooth glide. the internal dimension of the drawer should be 330 mm (W) x 427 mm (D) x 92 mm (H) The mattress platform should be 65 mm thick which is made of 12 mm thick ply and PU foam and covered with leatherette cover. The cover should be water resistant, fire retardant, antimicrobial. the cover should have in-vitro cytotoxicity test report from reputed test lab. the end of the top mattress surface should be tapered end edge for ergonomic benefit. There should be ss304 made tissue roll holder present on the lower side of the back rest. There should be 1 mm thick CRCA made step stool with leveler with double extension ball slide for smooth operation. There should be 1 mm thick CRCA made BP apparatus holder which should be adjustable in height on a SS made height adjustable rod. Total load bearing capacity should be 135 kg. The examination couch should be provided with six numbers levelers made of metal & plastic for adjustment on the uneven floor. All the metal parts should be pretreated and powder coated with epoxy polyester powder coating. The quoted model of the medical device must be registered under CDSCO and submit the license to manufacture for sale or for distribution of the medical device.. Should have European CE certification with 4-digit registration code. Should USFDA Certification the manufacturer should have ISO 13485:2016 certification from any notifying agency.
23	**Table**
	Size: 1350 mm W x 6000 mm D x750 mm H . Worktop:18mm thk. Pre-Laminated Particle Board (PLB) All work surface edges are duly sealed with 2mm thick PVC Edge banding. Modesty panel:18mm thk. Pre-Laminated Particle Board (PLB) All work surface edges are duly sealed with 2mm thick PVC Edge banding. Rectangular Frame: Fabricated component in 1.2mm thick CRCA (IS:513), Finish: Powder coat (Epoxy polyester. Plastic Cap for Cable travel: Injection Moulded Polypropylene. Drawer: Shell and Drawer tray :0.6mm thick CRCA (IS:513) , Finish: Powder coat (Epoxy polyester), Product Should be certified with GREENGUARD , GRIHA, SCS IAQ for quality standard.
24	**High Back Chair**

	The cushioned seat assembly should consist of seat base moulded in glass-filled poly-amide, moulded polyurethane foam and upholstered with high stretched knitted polyester fabric. The cushioned back assembly should consist of back inner moulded in polypropylene in-situ moulded with polyurethane foam & upholstered with high stretch knitted polyester fabric. Full Back Size- 45.5cmW x 53H, Seat Size-48.5cm W x 47 cm H. The HR Polyurethane foam should be used in seat and back cushion moulded in density Min 48 kg m3. The seat and back are firmly connected to the base frame and are cantilevered in such a way that gives multidimensional movement possibility just with a simple lean. The "S" shaped spines moulded in high strength glass filled polyamide and the spine connector moulded in glass filled poly amide. Tilt angle can be adjusting to 3 positions. Should have Fixed Armrest. Pedestal assembly is injection moulded in glass filled Poly amide and fitted with 5 No.s twin wheel castors. Product Should be certified with GREENGUARD, BIFMA Level 2 GREENPRO, SCS IAQ for quality standard

	Mobile Digital Radiography Systems
Sl.No.	**Specifications**
	Battery Driven, compact, easily transportable digital radiography system with Wireless flat panel detector mobile and inbuilt DAP meter suitable for bedside X-Rays,Intensive care unit and operation theatre use.
	It must include the following:
A	**The Generator:**
1	It should be microprocessor controlled high frequency with output 40 KW or more.
2	KV range: 40 KV to 125 KV or more.
3	Tube current: 300 mA or more.
4	It should have an electronic timer with shortest exposure time – 1 ms or less.
5	It should have a digital display of mAs and KV.
B	**X-Ray Tube:**
1	Output should match the output of the generator.
2	It must be a rotating anode type with 2700 rpm or more.
3	Dual Focal spot size of X-Ray tube of 0.3 mm and 1mm.
4	Anode heat storage capacity should be 140 KHU or more.
5	Multi leaf collimator should be supplied with the system.
6	It should have an integrated DAP meter. The DAP meter reading should be visible on the software console with each image.
C	**Flat Panel detector:**
1	The flat panel detector made up of amorphous silicon with CsI scintillator size at least 17”x17”, wireless.
2	The detector pixel matrix should be 3,408 (h) x 2,800 (v) or more with DQE at least 70%. at 0 lp/mm
3	Pixel size should be 150 um or less.
4	The machine should have provision for detector storage compartment with charging facility .
5	The image processing time after exposure should not be more than 5 sec.
6	Weight of the detector shouldn’t be less than 3.5Kg
7	The wireless detector must have a lithium ion battery that allows more than 600 thorax exposures per recharge.
D	**Battery:**
1	The machine should be able to run on mains as well as on battery supply. The system should allow at least 150 thorax exposures per battery recharge.
2	The unit should have separate batteries for driving the unit and generator.
3	The battery should be able to be charged from a normal 15A, 220-240V single phase socket in less than 4 hours, should be capable of generating at least 100 exposures.
E	**Inbuilt Console:**

1	The machine should have an integrated/ inbuilt console with a TFT touch screen with size at least 19 inches or more .
2	The console should be able to view the image, and provide post processing features, using touch screen.
3	The post processing features should include zoom, contrast and brightness adjustment etc.
4	It should have storage memory of at least 3000 images.
5	The software console should be able to control exposure parameters, generator setting, image processing patient data entry, study selection, printing and Dicom send. Separate consoles are not acceptable.
F	**Other Features:**
1	The unit must have an effective braking system for parking, transport and emergency braking. The tube stand must be fully counter balanced with rotation in all directions.
2	The unit should have manual over ride and manual drive system incase of fail of battery power to atleast park in a safe postion .
3	It must have a telescopic/articulated arm for maximum positioning flexibility in any patient position. The angles in various planes to be specified by the manufacturer. The cables should preferably be concealed in the arm system.
4	The facility for exposures with remote control/ detachable exposure switch should be possible.
5	Detachable exposure switch should be supplied with a chord of at least 5 meters.
6	A grid of 6:1 ratio with size 17”x17” should be supplied.
7	The system should have European CE (Full Quality assurance, MDD 93/42/EEC) and USA FDA approval/CDSCO/BIS .
8	The system offered should have AERB Type approval / NOC for installation and use in India
G	**Connectivity:**
	The machine should be fully network ready and it should be possible to transfer images and patient data from and to hospital network using LAN connectivity or wireless LAN.
H	**Power Line Connection:**
	The unit should be able to operate on single phase power supply with plug in facility to any standard wall outlet with automatic adaptation to line voltage 200 to 240 volts, 15 Amp plug.
I	**INDEPENDENT WORK STATION FOR POST PROCESSING-2nos**
1	Post-processing Workstation with a high resolution monitor should be provided with the System. The GUI and post processing must be identical to the inbuilt console
2	The workstation should have a graphics card built in and support all common DICOM functions.
3	The monitor should have minimum 2.0 Mega Pixel resolution and have capability of portrait and landscape arrangements.
4	The processor should be of Dual Core Technology or better.

5	RAM should be of minimum 2GB.
6	The HDD should be of minimum 2x500 GB or better with RAID 5 configuration or better.
7	The workstation should have a DVD writer(inbuilt/external) for burning images.
8	The workstation software should support the following:
a	Patient list with capability to query/ search based on various criterion such as name, id number, date of examination etc.
b	Features such as DICOM Viewing, Windowing, Zoom, Pan, Magnify, Annotate, Mark, Measure, Reporting.
9	Connectivity to DICOM printers with multi format to be provided.
10	The workstation should have to connect to external storage devices and DICOM Servers ,and the responsibility to connect to the any existing dicom servers /PACS /any other available Dry imager lies with the bidder/OEM.
11	This work station should be able to access study data stored in the inbuilt console with our manual sending/QR.
12	Dry Imager with 500 dpi resolution or more with 2 universal trays to print films.
J	**Guarantee / Warranty:**the whole unit including x-ray tube, detector all other accessories, batteries and consumables required to run this unit should be guaranteed for five years.
K	**C.M.C**: After expiry of guarantee/ warranty, CMC should be for five years which includes x-ray tube, detector all other accessories, batteries and consumables(Films) required to run this unit.
L	Retrofitted or refurbished units are not acceptable.

	Refrigerated Centrifuge For General And Research Purpose
Sl.No.	**Specification**
1	Floor standing refrigerated centrifuge for separation of components from whole blood.
2	Should have a stable, sturdy all steel design with stainless steel rotor chamber, easy to clean with corrosion resistant paint.
3	Should provide container for collection of drain and condensed water.
4	Should be CFC free refrigerant.
5	Should be microprocessor controlled.
6	Should provide programmable memory with tamper proof program saving facility with capacity to save at least 30 programs.
7	Should provide various formats of swing-out rotors with metal buckets and with wind shields that should be able to accommodate at least the following: Sixteen 350 ml/and or 450 ml single, double, triple, quadruple/quintuple blood bags with SAGM bag and empty satellite bags with In Line filter system.
8	Should provide removable plastic adapters to hold single/double/triple/quadruple blood bags with partition in every bucket.
9	Should provide inserts with hook adapter to spin buffy coat or small volume of blood and balancing weights for inserts.
10	Should have automatic lid lock.
11	Required speed and force:
a	Maximum speed 4500 rpm.
b	Maximum RCF (Relative Centrifugal Force) for blood bags 6500g.
c	Acceleration and deceleration profiles should be independently adjustable with at least nine break levels and options for free coasting.
12	Acceptable speed variation: microprocessor controlled rotor speed to within 10 rpm of set value.
13	Acceptable temperature control parameters:
a	Range at least -20°C to +40°C
b	Adjustable in 1°C intervals
c	Microprocessor controlled rotor temperature within 1°C of set temperature regardless of centrifuge speed.
14	Programmable centrifugation time: 0 min to 99 hours with minimum resolution of 1 minutes.
15	Acceptable digital display for time: should have display resolution of at least 2 digits, speed/RCF display resolution of 4 digits and time display resolution of 3 digits.
16	Should incorporate alarms for imbalance detection, lid interlock, over temperature, rotor over speed.
17	Should have motor imbalance detection system: automatic shutdown of centrifuge if rotor load is out of balance.
18	The equipment should be suitable for operation from 0 to 40°C at 90% reactive humidity. Electronic circuitry should be tropicalized for this ambient condition.
19	Acceptable noise level: within 60 decibels.

20	The equipment should come with customized castor wheels for changing location.
21	Protection of data: in the event of power interruption or complete failure, facility for storage of data indefinitely should be available.
22	Should have a provision for external connectivity.
23	A security lock to prevent unintentional switch off and also unauthorized opening of the equipment should be provided.
24	Complete with comprehensive set of spare parts and accessories including: double pan balance, balancing weights and plates, plastic inserts and spacers and hooks for adjusting to different types and sizes of bags/tubings/filter designs, and a suitable capacity voltage stabilizer and a suitable UPS with maintenance free batteries for minimum one hour back-up should be supplied free of cost with the system.
25	**Electrical characteristics:**
a	Input voltage 220/240 V50 Hz
b	A line voltage corrector as per the requirement of the equipment, of appropriate rating, should form part of the configuration.
c	Copper wound single phase automatic line voltage corrector conforming to IS: 9815(PLI)/94 with latest amendments or equivalent international standards fitted with a voltmeter and switch to indicate output/input voltage should be provided.
d	Input output voltmeter and ampere meter. Protection for high low voltage cut off, overload and short circuit protection should be provided
e	Equipment should be supplied with 2meter cord at input and fitted with plugs of appropriate rating.
f	Make of the line voltage corrector should be indicated.
26	Should provide a set of equipment for calibration (e.g. tachometer) and routine Preventive Maintenance as per manufacturer's instructions in service /technical manual.
	Additional requirements:
a	5 years warranty and 5 years CMC
b	Temperature recording chart paper for the period of CMC should be supplied free.
c	All equipment should specify design, installation, operational and performance qualifications.
d	Firm must submit validation and calibration reports which should have traceability to applicable national and international standards at installation and annually.
e	Complete with comprehensive set of spare parts including a spare compressor, etc. and a suitable capacity voltage stabilizer should be supplied.
f	The make, rating, model, description, specifications, price, quantity of each item should be furnished separately.
g	Necessary catalogues, technical write up in English should be attached with the offer both in hard and soft copies.
h	Performance, efficiency and other factors such as distortion etc., as applicable should be furnished.

i	Complete construction, details in respect of material specification, thickness, finish etc. should be furnished.
j	Certifications should show compliance with:
a	Product certification: CE class IIA or BIS or WHO-GMP or CDS CO or US FDA.
b	Quality certification: ISO 13485 and ISO 9001: 2008.
c	Electrical safety: IEC/EN 61010-1.
k	Log book with instructions for daily, weekly, monthly and quarterly maintenance checklist should be provided. The job description of the Blood Centre Technician and the company Service Engineer should be clearly spelt out.
l	Log book with instructions for daily, weekly, monthly and quarterly maintenance checklist should be provided. The job description of the Blood Centre Technician and the company Service Engineer should be clearly spelt out.
m	Arrangements for demonstration and training on operation of the equipment should be provided and the items required or expenditureincurred should be borne by the supplier.
	Should be ISO/ ISI/ BIS/ BIFMA /CDSCO /CE -FDA approved products or otherwise indicated in the technical specification.

SITC & Integration of Components for Smart Class room & Conference Room

Sl.No.	Technical Specification
1	**Digital Podium System**
a)	**Main Cabinet System:**
	Metallic structure customized to house hardware/software with powder coated fitted with cooling fans & caster wheels with brakes.
	Podium Dimensions: - Height- Presenter side 950-1050mm, Audience Side 1100-1200 mm front width 600-700 mm, side width 700-800mm
	Provision to fit in 21.5” or bigger Interactive Monitor with motorized tilt mechanism
	External connectivity options: 2xUSB, 1 x XLR– HDMI In/Out, VGA In/Out, Audio In/Out, Gigabit LAN
	Drawer for document camera with dimensions – Depth 560mm, width 440mm, height 150mm approx With a deviation of 10%
	Metallic top tray for placing documents, laptop etc. dimensions 600 mm x 600mm aproximately
	Drawer for key board and mouse
	Security- All drawers, sliding trays, and doors should be lockable.
	Minimum 8 x 5 Amp modular universal metallic spike buster for devices connectivity with miniature circuit breaker and central power control.
	Provision to fix Logo at the front side with the flexibility to change the logo. Size– 560mmx410mm approx
	Provision of 19" Rack inside podium to fit in international standard equipment with minimum adjustable shelves.
	Access doors for servicing both from front and back sides of the podium
	Wire managers on left, right sides and at bottom for flexibility of managing additional wires/wiring
b)	**HDMI Multimedia Controller:**
	Integrated multimedia controller on top panel with key pad , audio system volume control, switch on/off the PC & Projector, USB etc. Switching among PC, Laptop and Document Camera with auto splitting between podium monitor & projection system, switching DVD & TV etc.
	Minimum 2 x HDMI input devices and 2 x HDMI output devices connectivity with one VGA connectivity prefereable & must support 4K resolution .
c)	**Interactive Monitor:**
	Size 21.5” with multi touch, up to 60 deg motorized tilt
	Resolution 1920 X 1080-pixel
	HDMI/DVI, VGA and USB input Ports
	Brightness 250 cd/m2
	PC-i5or better with latest generation ,8GB/1TB HDD ,250 GB SDD with Wireless Keyboard & mouse /Win 10 OS (HP/Dell/ACER/Asus)

2	**Display System**
a)	**UHD 4K -98"" Interactive Board/Display:**
	Active screen size ("inch) - 98"
	Display backlight - DLED
	Display area - 1893*1069mm
	Display ratio - 16:9
	Resolution - 3840*2160
	Display colors - 10 bit or better
	LCD BRIGHNESS - 400cd/m2 or better
	Contrast ratio (typical) - 1200:1 or better
	Response time (typical) - 4ms
	Display orientation - landscape
	Reference frequency - 60 hz or better
	Android Smart System
	CPU QUAD CORE 1.9GHz or better , RAM 8GB,ROM 128GB Android Version -11or better
	Android Version - 11 or better
	Android Resolution - 4k
	WiFi Dongle - Yes
	Device mirroring BYOD Devices atleast for 2 users
	Touch Surface Material - Toughened Tempered Anti Glare Glass
	Touch Sensor - Infrared Touch
	Touch Points - 20 Points with Windows and 10 Points with Android
	Touch Screen Writing Tools - Nano Pen Or Finger
	Positioning Accuracy - +-1mm
	Communication Interface - USB
	Speaker Max Power Output – 15W x 2 or better
	Installation Method (Optional) - Wall-Mounted/Floor Stand
	VESA Pattern - 800*400
	OPS PC – Available
	Front Interface Inputs - HDMI IN X 1 , USB 3.0X3 ,USB TOUCH X1 and USB-C type x 1(Preferable)
	Rear Av Inputs - HDMI 2.0(4k@60hz*2) X 2, Dp1.2(4k@60hz) X 1, VGA (1920x1080@60hz)X1,& Pc Audiox1, USB(Touch) X 1, , USB Type-c x1, HDMI out x 1
	Av Outputs - HDMI Out (Support 4k@60hz, 1920x1080@60hz) X 1
	Other –YPbPr in*1, USB2.0*1,Public USB3.0*1, Camera USB3.0*1, LAN in*1 , OPS slot x 1
b)	**86 ” UHD 4K Interactive Flat Panel Display:**
	Panel Size - 86 "
	Type/Tech - TFT LCD Module with LED Backlight
	Aspect Ratio - 16:09
	Native Resolution - 3840*2160 (4K)
	Colors - 1.07 Billion
	Brightness - 370 nits (typ.)

	Contrast Ratio - 1200:1
	Response Time - 8ms
	Refresh Rate - 60 Hz
	Viewing Angles - H = 178, V = 178 typ.
	Backlight Life - 30,000 Hours Typ.
	Glass Thickness - 4mm
	Glass hardness- 9H (pencil). 7(Mohs)
	Surface Treatment - Anti-glare (7H)
	Orientation - Landscape
	Compatibility - CVBS-480i, HDMI 480i/p, 720p, 1080i/p
	Ports - USB Type A: 2.0 – 2, 3.0 -1, Type B: 2 for Touch, HDMI x3, Mic, RGB, RS232, Audio, Speakers 2x15W
	Operating Temperature - 0°C to 40°C
	Humidity - 20% - 80% non-condensing
	Voltage - AC 100-240V, 50/60HZ
	Consumption - 220 (typ) < 0.5 W ("Standby Mode")
	Main Power Switch - Yes
	Tilt - 800*400
	Type/Tech - IR
	Touch Resolution - 32767 x 32767
	Touch Point - 20 Point
	OPS- Builtin
	OS Support - Windows, Mac latest
	Tender Specific OEM Authorization is mandatory else the bid will not be considered
c)	**4200 lumens Long Throw Projector:**
	Technology
	Projection System: LCD/DLP Technology, RGB liquid crystal shutter
	LCD Panel: 0.59 inch with MLA (D9)
	Image
	Color Light Output: 4,200 Lumen
	White Light Output: 4,200 Lumen
	Resolution: WXGA, 1280 x 800, 16:10
	Native Contrast: 16,000 : 1
	Lamp: UHE/UHP , 230 W, 6,500 h durability, 17,000 h durability (economy mode)
	Keystone Correction: Auto vertical: ± 30 ° horizontal ± 30 °
	Colour Reproduction: Upto 1.07 billion colours
	Optical
	Throw Ratio: 1.38 - 2.24:1
	Zoom: Manual, Factor: 1 - 1.6
	Screen Size: 29 inches - 280 inches
	Projection Distance Wide: 0.9 m - 8.5 m
	Projection Distance Tele: 1.4 m - 13.7 m
	Projection Lens F Number: 1.51 - 1.99
	Projection Lens Focal Length: 18.2 mm - 29.2 mm
	Offset: 10 : 1

	Connectivity
	1x USB Type B, 1x RS-232C, 2x VGA in, 1x VGA out, 1x HDMI in, 1x Composite in, 1x Stereo mini jack audio out, 1x Stereo mini jack audio in or higher
	Advanced Features
	Security: lock, Control panel lock, Security cable hole, Wireless LAN unit lock, Password protection
	Other features: AV Mute Slide, Automatic keystone correction, Built-in speaker, Direct Power on/off, Document Camera Compatible, Easy OSD pre-setting, Horizontal and vertical keystone correction, Network projection, OSD copy function, PC Free, Quick Corner, Split-Screen Function, Wireless LAN capable, iprojection set-up by QR code
	Video Color Modes: Blackboard, Cinema, Dynamic, Sports, sRGB
	Technology
	Projection System: LCD/DLP Technology, RGB liquid crystal shutter
d)	**Motorized Projection Screen:**
	Motorized screen Size: 10x6ft. (Diagonal)
	Matte Finish
e)	**55” Display Monitor**
	Resolution: Ultra HD 3840 x 2160
	Display Type: 4K UHD
	Picture Processor: Intelligent Quad Core Processor 4K
	Refresh Rate: 60 Hz
	AI Brightness, HDR 10 Pro/HLG HDR Pro or better
	Color Enhancer: Advanced color enhancer
	Speaker System: 2.0 Ch Speaker
	input:-
	Integrated Audio System
a)	**60W PA Wall Speakers:**
	Power Rating: 60W RMS/90W Max.
	Power Taps: 60W, 60/40/30/20/10W
	Impedance/Voltage: 8Ω / 100V
	Frequency Response: 50-20,000Hz
	SPL at 1kHz (1W/1m): 87dB
b)	**Quad-channel Class-D amplifier 4 x 100W**
	RMS/AES Power Handling
	4Ω Stereo: 4 x 100W
	8Ω Stereo: 4 x 50W,
	8Ω Bridge: 2 x 200 W
	Frequency Response (± 3 dB): 20 Hz - 20 kHz
	Signal/Noise: > 90 dB
	THD+N (@ 1 kHz): < 0.1% (1/2 Rated Power)
	Crosstalk (@ 1 kHz): > 70 dB
	Technology: Class-D
	Power

	Supply: Switching mode, 100~240V AC / 50~60Hz
	Consumption: 200 W or less
	Standby: 5W or less
	Inputs
	Sensitivity: 0 dB (1V RMS)
	Impedance: 12 kΩ balanced
	Connector: 3-pin XLR female
	Protection: DC Short circuit, Overheating, Over load, Signal limiting
	Cooling: Convection /Fan cooled
	Operating temperature: 0° ~ 40° @ 95% Humidity
	Outputs
	Connector: 2-pin Euro Terminal Block (Pitch - 5.08 mm)
	Tender Specific OEM Authorization is mandatory else the bid will not be considered
	CE certificate undertaking must be attached with the bid.
c)	**Dual-channel Class-D amplifier 2 x 250W:**
	Frequency Response: (± 3 dB) 20 Hz - 20 kHz
	Signal / Noise: > 90 dB
	THD+N (@ 1 kHz): < 0.1%
	Crosstalk (@ 1 kHz): > 70 dB
	Technology: Class-D
	Power Supply: Switching mode, 100 ~ 240 V AC / 50 ~ 60 Hz
	Power Consumption: 224 W, Standby 0.8 Watt (30 min standby time)
	Inputs Sensitivity: (1W/1m) 0 dB (1V RMS)
	Impedance: 12 kΩ balanced
	Connector XLR female with Male Linkthrough/Block balanced Inputs
	Protection: DC Short circuit, Overheating, Over load, Signal limiting
	Cooling: Convection /Fan cooled
	Outputs Connector: Speakon compatible & 2-pin Euro Terminal Block (5.08 mm)
	RMS Power: @ 4 Ω Stereo- 2 x 250 W @, 8 Ω Bridge- 500 W, @ 8 Ω Stereo- 2 x 130 W
	Tender Specific OEM Authorization is mandatory else the bid will not be considered
	Ce/Equivalent Certification should be attached with the bid.
d)	**4 x 250W Quad-channel Class-D amplifier**
	RMS/AES Power Handling
	4Ω Stereo: 4 x 250W
	8Ω Stereo: 4 x 130W,
	8Ω Bridge: 2 x 500 W
	Frequency Response (± 3 dB): 20 Hz - 20 kHz
	Signal/Noise: > 90 dB
	THD+N (@ 1 kHz): < 0.1%
	Crosstalk (@ 1 kHz): > 70 dB
	Technology: Class-D
	Power
	Supply: Switching mode, 230~240V AC / 50~60Hz

	Consumption: 500W or less
	Standby: 5watt or less
	Inputs
	Sensitivity: 0 dB (1V RMS)
	Impedance: 12 kΩ balanced
	Connector XLR female with Male Linkthrough/Block balanced Inputs
	Protection: DC Short circuit, Overheating, Over load, Signal limiting
	Cooling: Convection /Fan cooled
	Outputs
	Connector: 2-pin Euro Terminal Block (Pitch - 5.08 mm)
e)	**Wireless Dual Channel Microphone:**
	Transmitter
	RF Output Power: 10mW (Max.),
	Frequency Stability: ±0.005%
	Modulation Mode: FM
	Microphone Element: Dynamic, Cardioid
	Frequency Response: 50-15,000Hz
	Power Requirement: 3V (2 × 1.5V AA Pencil Cells)
	Current Consumption: ≤ 150mA
	Controls: Microphone ON/OFF switch
	Indication: Channel Frequency Display
	Receiver
	Audio Output: Bal. 0dBu, Unbal. -10dBu
	S/N Ratio: 100dB
	Distortion: ≤1%
	Frequency Response: 50-15,000Hz
	Power Requirement: 220V-240V AC 50Hz for AC Adaptor (supplied alongwith)
	Controls: ON/OFF Switch, Volume Controls for Channel A & B
	Indications: LEDs for RF & Audio Signal, Channel Frequency Display
f)	**Wireless Lapel/Head Worn Microphone:**
	Should be a RF transmission system consisting of a stationary receiver and a Compact body pack transmitter & unobtrusive clip-on microphone
	Should be able to operate in at least 10 compatible channels in a stable UHF band
	Pickup pattern: Omni-directional
	Signal to noise ratio: ≥103dB
	AF Frequency response: 80 to 16,000 Hz
	Power Supply: 2 X AA battery 1.5V
	Power Supply: 2 X AA battery 1.5V
	Audio input: 3.5 mm jack socket
	Tender Specific OEM Authorization is mandatory else the bid will not be considered
	CE /RoHS/Equivalent certificate undertaking must be attached with the bid.
g)	**Gooseneck Microphone**
	Frequency Response: 50-16,000Hz
	Sensitivity: 5.5mV/Pa
	Impedance: 200Ω

	Power Reqd.: 9V-52V DC
	Overall Length: 508mm (20”)
	Phantom Power
	Operating Voltage: 240V AC 50Hz
	Phantom Supply: 48V DC
	Mic Inputs: 1 x Female XLR
	Mic Outputs: 2 x Male XLR (For Amplifier)
h)	**Ceiling Tile Microphone:**
	Audio Output: 1 x 3-pin terminal (fits Phoenix contact MCVW 1.5-3-ST-3.81) 1 x Digital Dante Network Audio (RJ-45 Primary and Secondary)
	Ethernet / Control: 1 x RJ-45 Ethernet Port for PoE power supply and data/control communication
	Supply voltage: 44 – 57 V DC PoE IEEE 802.3af Class 3
	Power consumption max.: 8.8 W
	Safety certification: UL 62368 certification (including UL 2043 testing and compliance)
	Acoustic properties
	Transducer principle: Pre-polarized condenser microphone
	AF frequency response: 160 Hz - 18,000 Hz
	Sensitivity: 0 dBV/Pa (988 mV/Pa)
	Signal-to-noise ratio: 80 dB (A) or better
	Latency<16 ms
	Equivalent noise level: 20(A) or better
	Number of KE 10-237 microphone capsules: 15 or better
	Pick-up pattern: Beam Pattern
	Max. sound pressure level: 104 dB SPL
	Dynamic range: 93 dB (A)
	Number of microphones - 28
	Coverage area - 600 Sq Ft or better
	Integration with DSP of any brand
	Control System
a)	**Audio Digital Signal Processor**
	Inputs
	2 HDMI: On female HDMI connectors
	4 Balanced Mono Audio: On 3–pin terminal blocks
	1 Unbalanced Stereo Audio On a 3.5mm mini jack
	Outputs
	1 Balanced Stereo Audio On a 5−pin terminal block connector
	1 HDMI: On a female HDMI connector
	Ports
	1 USB Audio: On a female mini USB–B connector
	1 RS-232: On a 3–pin terminal block
	1 Ethernet: On an RJ–45 female connector
	Line/Mic Level Input
	Impedance Unbalanced: 7.6kΩ
	Impedance Balanced: 3.8kΩ

	Impedance Microphone: 3.8kΩ
	Nominal level Unbalanced: 0dBV (0.77Vrms)
	Nominal level Balanced: +6.8dBu (1.54Vrms)
	Maximum level (Balanced): +8dBu (2Vrms)
	Sensitivity Unbalanced: Full power @ 0dBV (0.77Vrms)
	Sensitivity Balanced: Full power @ +6dBu (1.54Vrms)
	Phantom Power: 48 VDC on/off per input
	Line Level Output
	Impedance Unbalanced / Balanced:500Ω
	Frequency Response:20Hz − 20kHz @ +/−1dB
	S/N Ratio: >85dB, 20Hz − 20kHz, at unity gain (unweighted)
	Audio THD + Noise:
	Crosstalk: < −85dB, 20Hz to 20kHz
	Video
	Max Bandwidth: 18Gbps (6Gbps per graphic channel)
	Max Resolution: 4K@60Hz (4:4:4)
	Compliance: HDMI and HDCP 2.2
	User Interface
	Indicators: Power and audio port status LEDs
	Controls: Input selection buttons
	Control RS-232-
	Baud Rate: 115200
	Supported PC Web Browsers
	Windows: Chrome
	Power
	Source: PoE or 12V DC 5A adapter
	Consumption 630mA
	Tender specific OEM Authorization is mandatory else the bid will not be considered.
	EMC and RoHS certificate undertaking must be attached with the bid.
b)	**8 Port PoE Switch:**
	General:
	Hardware Version : Rev. B
	10/100/1000 Ports : 8
	Port Standards &Function :
	IEEE 802.3, 802.3u, 802.3ab compliant
	IEEE 802.3x Flow Control
	IEEE 802.3az EEE complain
	IEEE 802.3af compliant (DGS-1100-05PD)
	IEEE 802.3af/at compliant (DGS-1100-08P)
	Half/Full-duplex operation at 10/100
	Full-duplex operation at 1000Mbps
	Auto-Negotiation for each port
	Auto MDI/MDIX
	Switching Capacity : 16 Gbps
	Max. Forwarding Rate : 11.9 Mpps
	MAC Address Table Size : 4K Entries

	Packet Buffer : 1.5 Mbits
	Flash Memory : 2 Mbytes
	Power over Ethernet:
	PoE Standard: 802.3af/at
	PoE Capable Ports: Ports 1-8
	PoE Power Budget: 64W
c)	**10 port PoE Switch**
	Network Interface:
	8 10/100/1000Mbps PoE RJ45 port (port 1 ~port 8) 2 10/100/1000Mbps uplink RJ45 port (port 9~port 10)
	Transmission Rate:
	10/100/1000Mbps Each port supports MDI / MDIX auto-flip and auto
	Network interface:10BASE-T or 100BASE-TX Ethernet RJ-45 port
	Protocols and Standards:
	IEEE802.3i 10BASE-T
	IEEE 802.3u 100BASE-TX
	IEEE 802.3ab 1000BASE-T
	ANSI/IEEE 802.3 NWay auto-negotiation
	IEEE802.3x Flow Control
	IEEE 802.3af/at standard
	Performance:
	Bandwidth: 20 Gbps (no block)
	Network delay (100 to 100M bps): maximum 20 μs (using 64byte packet)
	Frame filtering and transmission rate
	10M: 14,800pps
	100M: 148,800pps
	1000M: 1488,00pps
	LEDs Indicator:
	Power:
	LINK/ACT，POE
	POE Pin: 1/2(+) 3/6(-);
	Power: Total Power: 120W
	Lightning protection: 6KV
d)	**4x2 HDMI Matrix Switcher**
	HDMI Bandwidth: 18Gbps
	Input Ports: 4×HDMI (Type-A)
	Output Ports: 2×HDMI (Type-A), 1×Stereo Audio (3.5mm)
	Control Ports: 2×RS-232 (3-pin Terminal Block)
	Service Port: 1×USB 2.0 (Mini B)
	IR Frequency: 38kHz
	Baud Rate: Up to 115200 (19200 default)
	Power Supply: 5V/2.6A DC
	ESD Protection (HBM): ±8kV (Air Discharge), ±4kV (Contact Discharge)
	Relative Humidity: 20 – 90% RH (Non-condensing)
	Power Consumption: 8.62W
e)	**4x4 HDMI Matrix Switcher**
	Video Bandwidth: 600MHz/18Gbps

	Input Ports: 4 x HDMI, 1 x IR, 1 x RS-232, 1 x Mini USB(Service): 1 x RJ45(Control),
	Output Ports: 4 x HDMI
	Supported Resolutions: 480i~1080p@24/50/60Hz, 4K up to 4096x2160@60Hz (YUV 4:4:4, 8-bit), VGA~WUXGA
	IR Frequency: 30~50kHz
	Baud Rate: 115200 bps
	Power Supply: 24VDC/2.7A
	ESD Protection: Human body model- ±8 kV (air-gap discharge), ±4 kV (contact discharge),
	Relative Humidity: 20~90% RH (non-condensing)
	Power Consumption: 21W
	Virtual Recording System
a)	**Full HD PTZ Camera for Presenters and Viewers/ Audience**
	Video system: Common resolutions & frame rates from 720p/25 to 1080p/60
	Pan tilt angle: Pan: ±170°, Tilt: -30° to +90° or better
	Programmable Tracking
	Sensor:1/2.7 Inch, CMOS, effective pixel: 2.07M
	Lens :12X, F3.5MM – 42.3MM, F1.8 – F2.8 or better
	Shutter:1/30S – 1/10000S
	Number of Presets: 250 or better
	Angle of view: Horizontal 72.5° – 6.9° Vertical 44.8° – 3.9°
	Rotation range: Horizontal: ±170°, Vertical: -30° – +90°
	Speed range: Pan: 1.7° – 100°/S, Tilt: 1.7° – 69.9°/S
	HD output :1 X HDMI: Version 1.3
	Network interface:1 X RJ45: 10M/100M Adaptive Ethernet Port
	Audio inputs :1-CH 3.5MM Audio Interface Line IN
	USB :1 X USB3.0: Type B female JACK 1 X USB2.0
	Communication :1 X RS-232 IN: 8-PIN Min Din, Max Distance: 30M,
b)	**USB Tx/Rx HDBT:**
	Inputs Tx (Each): 1 USB-B
	Outputs Tx (Each): 1 CAT5e/6
	Inputs Rx (Each): 1 CAT5e/6
	Outputs Rx (Each): 2 USB-A
	Regulation:CE/ FCC/eqivalent certified
	Enclosure: Black Metal
	USB 2.0 over CAT maximum 50M Extender
	2x1 USB A to B HUB, any CAT5e/6 cable length up to 50m
	RJ45 interface for CAT5 e/6
	Support Video, Audio, KVM and generic USB connectivity
c)	**HDMI Tx/Rx HDBT:**
	Video Input
	Interface: Tx-1 x HDMI Type A Female (Black), Rx-N/A
	Impedance:100Ω
	Max. Distance-1.8m
	Video Output
	Interface: Tx-N/A, Rx-1 x HDMI Type A Female (Black)
	Impedance:100Ω

	Video
	Max. Data Rate:10.2Gbps (3.4Gbps per lane)
	Max. Pixel Clock:340 MHz
	Compliance: HDMI (3D, Deep Color, 4K); HDCP 2.2 Compatible Consumer Electronics Control (CEC)
	Max. Resolutions/Distance: Up to 4K @ 35m (Cat 5e/6) / 40m (Cat 6a); 1080p @ 60m (Cat 5e/6) / 70m (Cat 6a)
	4K supported: 4096 x 2160 / 3840 x 2160 @ 60Hz (4:2:0); 4096 x 2160 / 3840 x 2160 @ 30Hz (4:4:4)
	Audio
	Input: Tx-1 x HDMI Type A Female (Black), Rx-N/A
	Output: Tx-N/A, Rx-1 x HDMI Type A Female (Black)
	Power
	Connectors:1 x DC Jack (Black) with locking
	Consumption: Tx-DC5V, 1.85W, Rx-DC5V, 4.23W
	Tender specific OEM Authorization is mandatory else the bid will not be considered.
d)	**HDMI Multi viewer**
	HDMI Bandwidth: 18Gbps
	Input Ports: 4×HDMI (Type-A)
	Output Ports: 2×HDMI (Type-A), 1×USB 3.0/USB 2.0 (Type-B)
	Control Ports: 1×RS-232 (3.5mm), 1×IP Control (RJ-45)
	Service Port: 1×USB 2.0 (Type-A)
	Baud Rate: 19200
	Power Supply (Multi viewer): 24V/2.7A DC
	Power Supply (Vid Capture): Powered via USB3.0 (0.9A minimum) or equivalent
	ESD Protection (HBM): ±8kV (Air Discharge), ±4kV (Contact Discharge)
	Relative Humidity: 20 – 90% RH (Non-condensing)
	Power Consumption: 15.3W (Multi viewer), 7.15W (Video Capture)
	Video Bar
	Loudspeaker Array:
	Configuration: Stereo loudspeakers, ported enclosure
	Amplifier Power: 5-20 W per channel, < 0.3% distortion over frequency range
	Frequency Response (–10 dB): 100Hz – 16KHz
	Maximum SPL @ 1 m: 89 dB (IEC 60268-5, mono input, wall-mounted)
	Microphone Array:
	Configuration: 4 microphones or more
	Frequency Response (–10 dB): 100Hz – 16KHz
	Pickup Range: 6.0 m (19.7 ft)
	Technology: Static and adaptive dynamic beam-forming, stereo acoustic echo cancellation (AEC), digital noise suppression
	Camera And Video:
	Field of View (FOV): 120° diagonal × 110° horizontal × 75° vertical or better
	Image Sensor: 8 MP
	Focus Distance: 0.5 m (1.6 ft) to ∞

	Lens: Up to 5x digital zoom, detachable camera privacy cover (included)
	Positioning: Auto framing capability or manual pan-tilt-zoom (PTZ) with 3 configurable presets (Home, 1, 2)
	Processing: Automatic white balance, automatic brightness, digital noise reduction
	USB Device Video Class (UVC): v1.1
	Supported Video Resolutions: UHD 2160p (4K), 1080p, 720p, 960×480, 848×480, 640×480, 640×360, 432×240 (30 fps)
	Video Encoding: H.264, M-JPEG
	Connections:
	USB: USB Type-C® to host computer (with Display Link) (USB 3.0 UAC, UVC, HID)
	Network: Wired: RJ-45, 1 Gbps Ethernet (IEEE 802.3), Wireless: Wi-Fi 802.11ac
	Bluetooth: Bluetooth 4.2 HSP, A2DP, AVRCP, BLE
	Display: HDMI 1.4b and 2.1 output (to display, from host computer)
	Analog Audio: Stereo 3.5 mm (1/8 in) input
	General Purpose:2-pin Euroblock general-purpose input
	Power: Via external power supply with localized power cord (included)
	Input: 110 – 240 VAC, 50/60 Hz, 1.5 A max.
	Output: 24 VDC, 1.875 A
	Software Applications:
	Control/Configuration: setting/Control/Configuration software (available for Windows and macOS or via web browser)
	System Requirements:
	Operating System: Windows 10 or higher
	macOS 10.10 or higher
	Cable, Connectors and Accessories
	a.) 1 KVA Online UPS,2 KVA & 3 KVA Line Interactive UPS as per requirement
	b.) 15U Equipment Rack
	c.) Cable, connectors, and accessories as per requirement
	Video Conferencing Software with licencse for warranty & CMC period
	a.)Unlimited group meetings for up to 30 hours
	b.)Up to 300 participants per meeting
	c.)10 GB of cloud storage per user
	Note: All dimensions mentioned in the technical specification are approximate value and may vary +10%
	Scope of Work:
1	Bid must include SITC of the item mentioned in the BOQ along with necessary Civil/ Electrical/ networking/ laying of LAN/ Fiber Optic cable etc., Casing, Insulation/ Acoustic required for complete the installation and commissioning of the items. The Bidder must visit the site to quote appropriately.
2	Warranty: - 5years
3	Training for users for at least 120-man hours on the functional & usage of the system

4	The bidder must submit the detail schematic diagram of the system before starting installation.

Syringe Infusion Pump

	Specification
	1.Should have bottom/front /top loading technique.
	2. Should accept all makes of 5ml, 10ml, 20ml, 50ml & 60 ml syringes with automatic detection of syringe size.
	3. For 50 ml syringe flow rate should be from 0.1ml/h to 1000ml/hr or more.
	4. Should have Bolus dose programmable up to 1000 ml/hr or more, with bolus rate & infused volume display at the time of giving bolus.
	5.Should have Drug Library of 2000 drugs or more with drug dose calculation.
	6. Keep Vein Open (KVO) available with a facility to set KVO flow rates and option to keep the function OFF & anti bolus system.
	7. Should have programmable Occlusion pressure Digital & analog display from 100mmHg up to 900mmHg with increment of 50mmHg.
	8. Should have bright display Panel with Provision for display of Occlusion Pressure, flow rate, battery indicator, Drug name & total infused volume all at a time.
	9. Should have various modes of infusion (Rate mode, Volume Target mode, Volume Time mode, Body Weight mode etc.).
	10. Should have Occlusion pressure pre alarm.
	11. Should have PM line disconnection alarm.
	12. Should have mains disconnection alarm, low Battery Alarm, end of infusion alarm.
	13. Battery operating time: Approx. 15 @ 1 ml/h, 10 h @ 5 ml/h, 08 h @ 20 ml/h with Battery capacity display in hr and min.
	14. Should have Universal mounting accessary for vertical & horizontal stand.
	15. Pumps should be mountable on each other to save space.
	16. Should have facility of mounting on stacking racks of 4 - 6 Pumps with single power supply & stacking mounts & prices for individual stacking unit may be quote optionally .
	17. With set of four pumps one Stacking rack should be supply free of cost.
	18. Should be provided with racks which have the capability to export HL7 data through RS232 port /USB/HDMI/Ethernet (Data communication port).
	19. Should be able to communicate with CPMS (Central Patient Monitoring System).& may quote optionally
	20. Flow /Drive accuracy should be +/- 2%
	22. Manufacturer should quote to ensure proper after sale services & company should provide the service directly /by channelpartner to ensure maximum uptime of the equipment by local service centre.
	23.Ingress protection certified IPX3 & have ability to protect from moisture.
	24. Should have feature like anti bolus system to avoid accidental bolus during occlusion.
	25. Pumps must be drop test certified from a height of 1 mtr & certificate must be attached in the technical datasheet .
2.Standards, Safety and Training	
	1. Should be FDA/CE/UL/ BIS /CDSCO approved product.
	2. Manufacturer should have ISO certification for quality standards.
	3. Comprehensive training for users and support services till familiarity with the system.

	4. Electrical safety conforms to standards for electrical safety IEC 60601- 1 (Or equivalent International / National standard) general requirement for Electrical safety of Medical equipment.
	5.The equipment complies with the requirement of the Medical Device Directive of class I equipment and Electromagnetic compatibility; all supporting documents must be provided.
3. Documentation:	
	1. User / Technical / Maintenance manuals to be supplied in English.
	2. Log book with instructions for daily, weekly, monthly and quarterly maintenance checklist. The job description of the hospital technician and company service engineer should be clearly spelt out.
	3. Cost of spare parts, consumables(Battery etc,) and accessories(..if any) which are not covered under warranty & CMC period has to quote in schedule XI as percentage value in the Technical Bid, or else will be consider to be cover throughout the warranty & CMC period.
	4. Calibration and routine Preventive Maintenance Support as per manufacturer documentation in service / technical manual has to be done throughout the warranty & CMC period.
	5. Compliance report to be submitted in a tabulated and point wise manner clearly mentioning the page / Para number of original catalogue / data sheet and the offer details has to submit in the technical bid. Any point, if not substantiated with authenticated catalogue / manual, will not be considered.
	6. Certificate of inspection and quality control indicating the S / N for all non-consumable items with date at the time of installation.
	7.All the technical specifications accepted in the compliance statement must be supported by Original Literature from the firm/O.E.M with Highlighting, Numbering & flagging in the compliance statement.
4. Environmental factors:	
	1. Shall meet IEC-60601-1-2:2001 (Or Equivalent BIS) General Requirements of safety for Electromagnetic Compatibility or should comply with 89/366/ECC; EMC-Directive.
	2. The unit shall be capable of operating continuously in ambient temperature of 30-40 deg C and relative humidity of 15- 90 % .
	3. The unit shall be capable of being stored continuously in ambient temperature of 10-50 deg C and relative humidity of 15 – 90 %
4. Warranty and Maintenance	
	1. Warranty for 5 years followed by CMC for 5 years including Spares &service.
	2. Mandatory 2 PMs / Year with unlimited breakdown calls has to be attended by the bidder/manufacturer throughout the warranty & CMC period at site.i.e. NEIGRIHMS, SHILLONG
	3. Duly signed Mandatory PM reports has to be submitted periodically, falling which necessary action will be initiated as per term& condition of the tender .

	Trinocular Microscope with provision for bright and dark microscopy, polarized microscopy and immuno
Sl.No.	**Specifications**
1	Optical system: Infinity corrected system
2	Focus: Vertical stage movement 25mm or more per coarse Stroke, Vertical stage movement 1 micron or less per Fine stro
3	Illuminator: Lamp House for LED with connecting cable having life Span of 30,000 hrs approx
4	Revolving nosepiece: Reversed Sextuple revolving nosepiece.
5	Objectives: Plan Achromatic 2X,4X, 10X, 20X, 40X,100X
6	Observation tube: Wide field Trinocular Eyepiece Tube with 10% eyepieces of 25mm F.O.V
7	Stage: Ceramic coated surface mechanical stage with right/left hand
8	Low drive control with left hand for two specimens
9	Condenser: Swing out condenser usable for 2X-100X
10	Camera & Software: Digital Cooled CCD/CMOS Camera approx 5 MP pixel size 4.65 mm x 4.65 mm, with 12 bit digitization, Fire wire /USB 3.0 port. Software to capture and image processing
11	Computer system: i5 processor, 4GB RAM 125GB SSD & 500 GB HDD, DVR R /W, TFT 26" with latest windows /MAC
12	The system should have Fluorescence attachment up to 6 filters position and Filters for following fluorophores should be supplied 1. DAPI 2. FICT/GFP 3. TRICT/Rhodamine 4. Texas Red 5. CYS 6. One position should be empty for Bright Field Imaging
13	The equipment should be USA- FDA/European- CE/ BIS approved
14	The Microscope and camera should be from same manufacturer
15	The microscope should be provided with digital 55" HD LED projection panel.
16	There should be provision for simultaneous viewing at projector as well as microscope
17	There should be provision for split screen display for simultaneous viewing of acquired as well as image.
18	Document supporting track record and satisfactory performance from institutes of national importance (minimum one) should be provided.

19	System should be covered under 5 yrs warranty and 5 yrs CMC for all the items supplied along with the specification except consumables/accessories.
20	EMD Status /EMD exemption status

Fully Automated High Throughput Multiblock RT PCR System for TTI Testing For Department of Transfusion Medicine and Blood Centre, NEIGRIHMS
Technical Specification
1. The system should be fully automated integrated molecular analytical platform capable of supporting the entire workflow including sample transfer, extraction, Real Time PCR- based amplification & detection, automated result interpretation and delivery with minimum user interactions in a single system.
2. The system should have certified compatibility for running of molecular assays with due regulatory approvals for viral load determination of HIV, Hepatitis B and Hepatitis C viruses.
3. The system should be able to run NAT testing for blood screening with complete traceability and that should be certified by CDSCO / European CE-IVD.
4. Along with these commercial kits with regulatory approval, the system should also allow simultaneous performance of automated workflows for in-house Laboratory Developed Tests / open channel assays.
5. The system should allow continuous loading of samples reagents & consumables, along with the option of running STAT samples.
6. At least 6 assays should be allowed to be performed simultaneously.
7. The system should be flexible to use varied sample volume depending upon various assays.
8. The system should have a throughput of generating 120-150 results in 8 hrs.
9. The system should hold up to 120 samples on board as well as reagents & controls of multiple parameters and consumables to minimum user interventions. There should be provision of continuous loading and unloading of the samples without affecting the instrument run.
10. The system should be equipped with two independent thermal block cyclers to perform different thermal cycler profiles simultaneously.
11. The system should have a built-in control unit and touch screen user interface.
12. The system should use reagents and controls in ready-to-use cassettes with storage temperature of 2°C to 8°C.
13. The system should have single room operation & should feature contamination prevention with usage of dedicated tips, pipette tips with filter and automatic heat sealing of amplification plates.
14. The system should be flexible to accommodate a variety of sample tubes including tube racks and collection medium containers.
15. The system should have surveillance of liquid handling. disposables reagent status waste and maintenance schedule.
16. The system should be equipped with sample identification with on-board and handheld barcode scanners
17. Hard Disk – 1 TB storage should be provided with instrument for data backup.

18. The system should be provided with compatible online UPS With 1 hour backup
19. The system should be provided with 5 years of warranty tree of cost & CMC for the subsequent 5 years should be quoted separately.
20. The system should be provided with one kit (350-400 samples) along with all necessary consumables and plastic ware for running at least 400 Samples.
21. Price of all the compatible reagents. kits. plastic ware & consumables should be quoted for rate contract with the Institution for a period of at 2 years and extendable on mutually agreeable terms for another year.
22. The system should be upgraded free of cost in case of any technological upgradation by, the manufacturer within the period of validity of the CMC.
23. Bids should be submitted by original manufacturers with commitment of after-sale service and guarantee of ensuring maximum downtime of 3 days
24. The system should be provided with a dedicated computer system with Intel Core i7 or equivalent processor, 8GB RAM. 2 TB hard disk, 5 MGHz digitizer high resolution TFT 23" color monitor, laser printer.