ACU/PS/AHRC/Clsd-Tender/ 161 /2021-22 Date: 19/11/2021

RE-TENDER NOTICE

Adichunchanagiri University is inviting **closed tenders** for the supply of Medical equipment and General instruments to "Adichunchanagiri Institute of Medical Sciences (AIMS)" and its hospital – "Adichunchanagiri Hospital and Research Centre (AHRC)", B.G. Nagara, from the competitive firms.

1	Name of the work	Supply of General Equipment to AIMS and AHRC
2	Tender documents available for download	19-11-2021 to 06-12-2021 up to 05:00 PM

Sl. No.	Name of the Medical Equipment/Instrument	Provisional Qty. (In No's)
1.	AB scan	1
2.	Fumigation machine	3
3.	Whole body cooling system	1
4.	Patients controlled analgesia system (portable)	1
5.	Digital Pure tone audiometer	1
6.	High speed Mastoid drill	1
7.	Radio frequency ablation machine	1
8.	Flexible Bronchoscope	1
9.	Vacuum Extractor and suction machine	5
10.	Blood and Fluid warmer	1
11.	Ultrasonic nebulizers	3
12.	Ultra-Sonography machine with 3 probes	1
13.	Ultrasonography equipment with colour Doppler	2
14.	Portable ultrasound with multiple probes including CARDIAC probe (Including probes for paediatric/infant evaluation)	2
15.	500 mA HF Static X-ray unit	1
16.	100mA Portable X-ray unit	1

Note: Kindly send quotes in 2 bid formats (Technical and Financial bids sealed separately inside the main envelope for each individual item or list of items) to be addressed to **"The Registrar, Adichunchanagiri University, B.G. Nagara -571448, Nagamangala (T), Mandya(D)".**

- Adichunchanagiri University reserves all the rights to accept, reject, incorporate changes and re-tender without giving any reasons.
- The sealed cover must be duly superscripted with the words "ACU/AHRC/Clsd Tendr/Equipment/Ref no" Or tender details for which company is quoting.

B.G. Nagara - 571448, NH-75, Nagamangala Tq., Mandya Dist., Karnataka, India.
Tel: 08234 287285 | Email: info@acu.edu.in, registrar@acu.edu.in | www.acu.edu.in

- Attach Brochure, Certification of the product, Bank/account details, PAN, GSTIN and 02 Years of ITR declaration inside the main envelope and company contact details with email ID on the main envelope cover for further correspondence.
- Quote for **unit price** with applicable GST (display GST at extra column) and **warranty** must be **minimum 03 years for equipment**.

Dr. C.K. Subbaraya
Registrar
Adichunchanagiri University
B.G.Nagara-571448

Technical Specifications

1.	**AB Scan**
	A -Scan Specification
	A-Scan -10MHZ with Fixation Light
	Scan Mod -eManual & Auto
	Scan Method Contact & Immersion
	Gain Control -0% to 100%
	IOL Formulas -SRKII, SRK T, Holladay 1, Binhorst II, Haigis, Hoffer Q
	Refraction Formulas -Clinical History Method, Contact Lens, Rosa, SRK-T.Shammas
	Lens Type: Aphakic, Dense Cataract, Phakic, Pseudo (Acrylic, PMMA, SILICONE), Silicon oil
	Patient Record -Name, MRD, Gender, DOB, Dr's comments
	IOL Configuration -More then 200
	Axial Length Measurement -12-40mm
	Printer -Any PC support standard printer (Laser)
	Data Exporting -jpeg, pdf, Html, Rtf, Xls, Xlsx, Csv, Text, Image Tfile
	Patient Record Storage Data stored in system hard disk (minmum 1TB)
	B-Scan with UBM Specification
	Gain -128 to +128
	TGC Near, Mid, Far
	B - Scan Probe 12 MHZ
	UBM 35MHZ
	Scan Angle for 20 to 60 degree (B-Scan), 20 to 35 degree (UBM)
	Vector density and sampling 256 vectors X 2048 points / per vector
	View Zone 30mm to 60mm (B-Scan), 15 to 18mm (UBM)
	Axial Resolutions 300 microns (B-Scan), 40 Microns (UBM)
	Lateral Resolution 500 microns (B-Scan), 50 microns (UBM)
	Data Base Dimensions 1Mb / Image
	Measurement Tools Angle, Caliper and Area
	Other Tools Arrow mark, Probe Orientation and Text annotation
	A/B Scans Capability -A-Scan vector available as overlay on B-mode Images
	Velocity Adjustable to tissue or material being imaged

	Gray Scale 256 Flood fill Colour Fill the false Colour for differentiate the image segment Image - Gray levels Image Capture Rate 15fps Video Recording Avi format, Cine Image Buffer 600 Frames per cine (Total 600 X 10= 6000 Frames) Image exporting PNG, jpeg, BMP, GIF, TIFF Report exporting jpeg, pdf, Html, MHT, Rtf, Xls, Xlsx, Csv, Text, Image System Control Input Devices USB Keyboard, Mouse & Foot Pedal
2	**Fogger Machine/Fumigation machine**
	1. Device should be made for hospital use only. (operation theatre or intensive care unit sterilization) 2. Device should be portable, electrically operated. 3. Machine weight at least 6 kg. 4. Tank capacity at around 5liters. 5. Area covered should be around 7500 cubic feet 6. Tank should be metallic made and sturdy. 7. Droplet size generated by nozzle should be submicron size. Validation of droplet size by a governing body will be preferred. 8. Timer function should be present. Integrated timer is preferred. 9. Particle throw in a closed room should reach up to 3 to 4 meters 10. Output should be less than or equal to 3 litters per hour. 11. All parts should be compatible with acidic or alkaline liquids. 12. Medical grade silicon tubing and stainless steel internal parts. complying to FDA &UPS CLASS VI 13. Should have intake air filter uniquely designed of two layers for dust and fog separation 14. Device motor should be high speed. 15. Should have Precision Metering System: 0-70ml/minute 16. Should be of nozzle assembly – non clogging design – Engg. Plastics 17. All the companies who have quoted for the fogger machine, should come and demonstrate their Fogger machines within 15 days after being contacted. Purchase of the machine will be decided only after seeing the demonstration.
03	**Whole body cooling system**

	Environmental • Operating Temperature: 15 to 350°C (59 to 95°F) • Humidity - 0 to 95% RH • Atmospheric Pressure: 500 hPa to 1060 hPa • Storage: Temperature: -5 to +50°C (23 to 122°F) • Humidity: 0 to 95%RH ▪ non-condensing Atmospheric Pressure: 500 hPa to 1060 hPa • Performance Light Band 400 to 550 nanometres; infrared and UV • Width: filtered with dichroic reflector and filters • Irradiance High setting: 45 □11.25 □W/cm2/nm* • Level: Low setting: 19 □4.75 □/W/cm2/nm* • (*Light output is the average measurement of 6 points on the pad; □25%) • Fan Noise: Sound level less than 54 dBA measured at 1 meter with environmental sound level 10dBA below measured value • Mode of Operation: Designed for continuous operation Illuminator Bulb: o Type: 12 volts, 100-watt quartz halogen o Life: 800 hours' average at 25°C (77°F), at high intensity setting and continuous operation Physical • Light Source: Size: 10.5 x 4.5 x 11.0 in • (26.7 x 11.4 x 27.9 cm) (W x H x L) • Weight: 7 pounds (3.2 kg) • Light Pad: Overall pad size: 4.0 x 8.0 in (10.2 x 20.3 cm) • Illuminated area: 4.0 x 6.0 in (10.2 x 15.2 cm) • Fibre Optic Length: 48 in □2 in (122 cm +5 cm) • Cable: At least 2400 optic fibres woven into a mat • Electrical input: 2.2A at 100/120 volts AC 1.1A at 220/230/240 volts AC 100, 120, 220, 230, 240 volts AC, 50/60 Hz • Wattage: 200 watts' maximum Overheat Thermal cut-out switch near the lamp actuates Protection: at 110°C (230°F), cutting power to the lamp Chassis Less than 300 microamperes at 100/120Leakage volts AC • Current: Less than 500 microamperes at 220/230/240 volts AC **Trans illuminator Option** 9000 lux +25% -35% Infinitely variable light adjustment 48 in (122 cm) cable Bili Blanket Plus High Output Phototherapy System with Trans illuminator
04	**Patient controlled analgesia infusion pump**
	1. Must accommodate any syringe of: a) 10 ml b) 20 ml c) 50 ml. 2. Automatic detection of syringe size & proper fixing. Must provide alarm for wrong loading of syringe such as flanges out of slot; disengaged plunger, unsecured barrel etc. 3. Flow must be adjustable between 0.1 ml to 650 ml/hr. 4. Dosage adjustments should be possible in mg and ml/hr

	5. It should have system to give Bolus volumes of 5ml or more than 5ml during infusion. 6. Bolus rate adjustable from 0 to 1000ml/hour. 7. Accuracy +/- 2%. 8. The dosing modes: PCA, CBI, PCA + CBI and loading. 9. It should be providing security against tampering with ability to record and retrieve drug pump/Microprocessor malfunction. 10. Graphic LCD or LED display to denote infusion & alarm status & keypad. The display should remain visible in any light condition 11. Set flow rate and volume infused should be digitally displayed. 12. Delivery rate should be preset on Delivery rate and on volume and time pre selection. 13. Volume infused should be displayed. 14. Must have a fast mode of infusion independent of set flow rate. 15. Clearly recognizable bolus button is differentiated from nurse call button 16. Should not allow change of flow rate or fast delivery without stopping the pump. 17. Should have audio and visual alarms for: • Occlusion • Syringe almost empty • Syringe Empty • Very Low Battery • Syringe paused too long • End of Infusion • Illegal Syringe • Cover Unlocked • Patient Handset Disconnected • Limit Dose Reached • Accumulated Dose • Log Memory Full • No Mains • Low Battery 18. Internal Error Occlusion sensitivity should be adjustable by the operator 19. Occlusion pressure adjustable from 100 to 1500mmHg. Max actuator force 50N (5Kgf) 20. Operating conditions 10 C to 45 C, 30-90% RH 21. Should work on a/c. mains (220V , 50/60 Hz) and on Battery 22. Should have a built in rechargeable battery 23. Battery charging should be automatic when connected to an AC power source 24. Should provide clamp for fixing on IV pole 25. Should be stackable so that one pump can lock into another 26. It should be upgradeable 27. It should provide printer capability 28. To be supplied with standard 50ml syringe/tubings:200 Nos each
05	**Digital Pure tone audiometer**
	1. Should have wide and narrow band masking and speech band masking. 2. Should be supplied with HD-01 as standard and should accept both 8 and 10 ohms' headphones.

	3. Tone decay test should be available along with pulse tone warble Tone & + 10dB facility. 4. Special Filter should be in Speech Mode (off / 2K / 4 K & 6 K). 5. Digital calibration should be calibrated from front panel with combination of Keys (no moving any part inside the audiometer). 6. Should be with USB port facility for computer adaptability to operate through computer. Software should be provided free of charge. 7. There should be socket for external battery input. 8. Input voltage: AC 230 Volts – 50 Hz / DC 12 Volts. 9. Pure Tone Frequencies: Air Conduction: 125 Hz to 8 KHz (Maximum 120 dB). 10. Speech: 100 dB. 11. Bone conduction: 250 Hz to 6 kHz (Maximum 70 dB). 12. Noise: Wide, Narrow & Speech Band. 13. Attenuator (masking) in steps of 5dB. 14. Masking Range 0 dB to 100 dB. 15. Weight: 1.5 kg nett. With bag 4 kg (Approx). 16. Dimensions in cm: 20 cm x 27 cm x 8.5 cm. 17. Compliant with ANSI S3.6 1989 standard. 18. **Accessories** and others: Audio Cups. Supplier should submit Test Certificate for the instrument along with supply. Manufacturer firm should have their own service centre or authorized service centre in nearby Bengaluru, in order to attend breakdown calls IMMEDIATELY after intimation. Detailed address with contact no, mail ID etc of such service centre should be mentioned in the offer.
06	**High speed Mastoid drill**
	• International Standards for a High Speed Micro Motor drill for use in ENT • High Speed Micro Motor System with motor control display with Hand pieces Straight & Contra angled to be used in Sinus Surgery, Otology, Ethmoid, Mastoid & Temporal Bone surgeries with foot control, integrated irrigation system, speed greater than 50,000 rpm, burrs for special applications • Burrs: Cutting 0 to 5 number -1 each, Polishing 0 to 5 number – 1 each, Diamond 0 to 5number- 1 each. • Certification : USFDA/European CE approved
07	**Radiofrequency Ablation Machine (RFA)**
	1. The machine should be US FDA approved with details of previous sales to reputed institutions. 2. Adequate safety to operator, patients, attendants and other medical apparatus

	connected. 3. Device should have both the output frequencies- Monopolar and Bipolar. 4. Device should have output frequency: 4 MHz for Monopolar and 1.7 MHz for Bipolar. 5. Device should have a minimum output power of 90 W. 6. Device should have Cut (90W or above), blend (65 W or above), Coag (45 W or above), fulgurate (35 W or above) and bipolar (90 W or above) output waveforms. 7. Device should come with a dual frequency footswitch and cable. 8. Device should have an option of both reusable and disposables consumables. 9. Device should have Digital Control Panel for easy operation and clear view of settings. 10. Device should have Solid State Circuitry for dependable and consistent energy emission. 11. Device should have auto-cut facility. 12. Device should have safety indicators to provide visual and auditory alerts. 13. Device should have parameter recall for rapid set-up. 14. Device should have an audible alarm for neutral plate dislodgement. 15. Device should be able to produce very sharp and precise cutting, negligible lateral heat production, and adequate hemostasis. 16. Device should come with a foot-controlled hand piece. 17. Device should come with a hand piece clip. 18. Device should come with a three-button finger switch hand piece. 19. Device should be a quieter system, small, lightweight generator for easy portability. 20. Weight of the machine should not be more than 10kg. 21. Device should come with a reusable medical electrode kit. 22. Device should come with a reusable neutral plate that does not require skin contact. 23. Device should come with an instantly ready to use hand piece. 24. Device should have platform to use multiple electrodes, for various surgical procedures. 25. Device should be able to treat following indications –moles, verrucae vulgaris, rhinophyma, nevus, papilloma or flat warts, seborrheic keratosis, hemangioma, venous lake, benign lesions of scalp, soft fibroma, telangiectasia, keloids. 26. Standard accessories should include: 1. Neutral plates 2. Two sets of surgical electrodes (loops, balls, knives, pin, fine wire, needle, sharp pointed electrodes, scalpel, coagulation ball). Loops should be round, oval, triangular and diamond shaped. Electrodes' proximal diameter should be 1.6 mm and 2.4 mm, to accommodate standard hand piece connection. RF Surgipens Bipolar forceps with cable.
08	**Flexible Video-Bronchoscope, Monitor, Hd Video Processor With Light Source (Adult)**

BRONCHOSCOPE (01 Nos.)

Channel Inner diameter	2.8mm or more
Field view	1100 or More
Depth of field	3 – 50 mm
Distal End Outer Diameter	Less than 6.3mm
Insertion tube outer diameter	Less than 6.3mm
Working length	500-700mm
Bending Angulation range	Up-1800 Down-1200 or more
Total length	800-900 mm
Bronchoscope should be fully immiscible in disinfectant and cleaning solution	

- HD Video processor and Cold light source (both from original manufacturer)
- Compatible 300 Watt Xenon light source with coloured temperature around 6000 kelvins and Led lamp as auxiliary / back up.

1. Automatic light adjustment to maintain optimum brightness.
2. It should have a coloured system CCD
3. 2 spare bulbs (same quality)
4. It should be compatible to all scopes and ULTRASOUND endoscope and transmit image digitally
5. It should have automatic as well as manual brightness control mode.
6. It should have facility of extra illumination for more light apart from brightness control.
7. Processor should be able to give images of surface analysis and vessel analysis for identifying lesions and perform improve pit pattern classification.
   - Monitor: - High resolution monitor (minimum 19 inch) HC-LED medical grade.
   - Video Recording and reporting system: - (personal computer from standard manufacturer with latest processor and operating system, recording software, color laser printer)
   - Accessories: - All standard accessories (Leakage tester, valves, bite block cleaning brush, cytology brush, biopsy forceps, and maintenance kit) from original manufacturer must be provided.
   - UPS: - UPS with 1 hour back up

Others: - The Bronchoscope along with standard accessories and other accessories (other than supplied with the scope) should be quoted separately

09	**Vacuum Extractor and Suction machine**

Registrar Adichunchanagiri University B.G.NAGARA PIN-571 448

	1. Vacuum extractor with digital display. 2. Microprocessor controlled digital/analogue display(led) with precise indication up to 1 mmhg accuracy whicj may not be seen in the conventional analogue boutdon vacuum gauge. 3. Vacuum indication can be preselected in the digital display either in mmHG OR IN Kg/cm2 4. Portable suction unit: size 38x17x28.5cm, weight 5.1kg 5. SUCTION MACHINE with pump: Power supply: 230-240V/50Hz, Vacuum capacity: 18 litres/mm and Maximum depression: -75kPa (-563mmHg) 6. Vacuum is created by a plastic piston and cylinder system, with four vacuum-creating 7. Soft silicon cup: Medical graded silicon rubber ensures absolute biocompatibility and high durability with all four sizes 8. Suitable for occipital anterior (OA) positions and outlet presentation 9. Caesarean AID CUP all 2 sizes.
10	**Blood and Fluid warmer**
	1. Intended for use in operation theatre and ICU to deliver norm thermic and warm blood and fluids at a very high infusion rate 2. Fast flow fluid infusion system 3. Fluid warming integrated 4. Air detection system integrated- ultrasonic air detection technology preferable 5. Automatic stoppage of flow when air is detected 6. Minimum 500 ml/minute flow 7. Rigid pressure chambers should accommodate standard blood and crystalloid bag (one litre bag optional) 8. Providing a constant pressure for rapid infusion 9. On/Off toggle switch to quickly and easily pressurize chambers 10. Dual bag connection facility 11. Pole mounting facility/wheel facility 12. Touch buttons for control. All consumables for the equipment should be provided for 20 usage.
11	**Ultrasonic Nebulizer**
	1. The unit can be wall mounted with a rail clamp or placed on a movable stand for highest flexibility 2. The integrated timer features the following settings: 15/30/40 or 60 minutes or continuous flow. 3. A heated tube with a heating capacity of up to 37 degrees Celsius provides high comfort for the patient during use. 4. Nebulizer performance, adjustable 0-180ml/hr

	5. Particle size 0.5-5-micron meter. 6. Air flow, adjustable 0-20 liter/min. 7. Ultrasonic frequency 1.68Mhz or above.
12	**U S G Machine 3 Probes**
	1. System must be a state of the art model & have all digital beam former technology with super computer processing and clinically proven imaging technologies. 2. System should be offered with the following applications: abdominal, obstetric/ gynaec, TV probe for OBG. 3. System must be offered with a minimum of 60,000 digital processed channels per image frame. 4. System must be offered with frequency compounding facility. Other equivalent technology can also be offered. 5. System must be offered with Speckle Reduction Imaging: - image processing technique to remove speckles & clutter artifacts. 6. Should have state of the art Transmit Real Time Compound Imaging Technology 7. System must be offered with a very high dynamic range of at least 170dB to pick up subtle echoes. 8. Frequency processing facility for the transducers should be 1-12 MHz. This must be available without the need for frequency switching. 9. Must have at least 3 Active Integrated Transducer Ports with electronic switching. 10. System must be offered with an acquisition frame rate of at least 750 frames/ second. 11. Must be offered with a single button control for automatic optimization & adjustment of TGC and Receiver Gain. 12. System must be offered with a single button control for automatic optimization & adjustment to achieve uniformity of Color Gain/ Spectrum for faster scans. 13. Triplex Imaging should be standard on the system. 14. The system should have at least 10 user programmable parameters. 15. The system should have at least 100 seconds of Clip storage facility. 16. System should allow for live image & archive images side-by-side or quad display on a single monitor. This display shall allow any type of image on either side. 17. The system should provide scan depths from a minimum of 2 cm or less to a maximum of 30 cm or better 18. User Interface 19. On/Off task light & Backlit illumination of control panel. 20. Easily accessible, full size qwerty keyboard for text entry, functional keys & system programing. 21. Thumbnail menu provides on-screen thumb-nails of images & dynamic clips during exams. 22. Monitor: • System must be offered with an above 19-inch high resolution, flat panel, medical grade monitor with wide viewing angles & good color resolution.

	• Resolution: 1024x768pixels or better 23. Internal Hard Disk of 250 GB or more. Image storage as raw data & DICOM images. Conversion to JPEG, AVI, and MPEG file formats available. 24. Should have facility to transfer images to an integrated DVD writer and pen drive, without any interfacing. 25. Raw data processing • System should provide a display zoom function on frozen images. • System should have the facility of performing measurements & annotations on stored images. 26. Cine Function: • Cine Review up to 1200 frames 27. Measurements & Calculations: • All general measurements & calculations for all applications with digital calipers for distance, area, volume, circumference and Doppler wave form parameter measurements • Customizable Anatomy Description. 28. Transducers: 29. The system must be provided with the following transducers: - • 2-5 MHz Broadband Curved Array Transducer • 4-9 MHz Broadband Tightly Curved Endocavitory Array Transducer with minimum 140-degree field of view, but if bidder has larger angle available must supply that also. 30. Tissue Harmonic Imaging, Compound Imaging & Doppler Mode should be available on all probes. Doppler cursor shall be user-steerable with linear transducers 31. System Power: 200-240V, AC, 50Hz 32. The System should have DICOM 3.0 (minimum) as standard. (DICOM ready system) 33. System Interface: 1 no. Ethernet connectivity; 2nos. RS 232C Serial Port Connector; 2nos. USB 3.0 Port; & AC Main outlet. 34. DICOM PUSH/ QUERY/ RETRIVE. Connectivity to RIS/ PACS/ HIS 35. System should be supplied with the following peripheral devices: • 3 KVA Online UPS • USB Colour Laser Printer of reputed brand with built in image management Software FDA & CE (Should be from Notified Body) approval.
13	**Ultrasonography equipment with Color Doppler**

	System must be State- of- art latest model with super computed signal processing and clinically proven imaging technology for high better resolution. The machine should be given with both hardware and software which is latest, complete DICOM 3 Compatible, PACS connectable. The system must be a premium machine and should be latest and state of the art with fully digital technology equipment to incorporate the facility of 2D, M-Mode, PW Doppler, CW Doppler, Power Doppler, bidirectional power angio, Contrast Imaging(CEUS), real time strain & shear wave Elastography imaging, Real time 3-D(4-D), Imaging for abdomen, obstetrics & Gynaec, Peripheral vascular, adult trans-cranial & superficial parts imaging like breast, scrotum, thyroid, musculoskeletal prostate, pediatric and small parts. The system should be able to support at least 4 active and universal ports allowing any Transducer to be connected to any port System must be offered with minimum of 1,000,000 digital processed channels per image frame. System must be offered min 21.5 inches LED medical grade monitor for high contrast & high resolution with additional touch sensitive monitor minimum 10 inch or more with minimum contrast ratio of 1000:1 and 1280 x 1024 resolution or more. Proven Keyboard control panel should have up down hydraulic height adjustment, swivel movement with single button for both height & swivel. The system should have 256 grey shades (8 bits) or more. The broadband beam former should be capable of simultaneously processing ultrasound signals from 1 MHz to 18 MHz. System must be offered with frequency compounding facility. The system should have a fast boot up time of less than 150 seconds, when switched on from 'OFF' position, and less than 60 seconds from 'STANDBY' position. System must be offered with 2D, M-mode, color flow, pulsed wave Doppler, Directional color power Doppler. All these must be standard. Power Doppler& directional color Doppler for perfusion study should be available for visualization of flow in small vessels without over flow and very sensitive for transient flow. System must be offered with speckle reduction imaging Image processing technique to remove speckle, and clutter artifacts System must be offered with dynamic range of at least 220 db to pick up subtle echoes.

	System should have Pan Zoom & Hi Zoom display magnification minimum 8 times, The system should truly compound the image and steer upto 9 beams steered line of sight. The system should also speckle noise reduction, compounding, auto gain / optimization, trapezoid/virtual convex imaging, Panoramic imaging, dual imaging, dual/quad split display and edge enhancement feature. System must be offered with independently selectable gain control in latest position. System should be capable of full needle visualization during biopsy and this feature to be offered as standard. System must be offered with acquisition frame rate of at least 1200 frames/sec. System must be offered with cine loop review facility The system should have Contrast Harmonic Imaging and should have optimization settings to detect the Contrast Agents. System should be upgradable to other advanced Technologies to perform better Contrast Harmonic Imaging. Triplex Imaging should be standard on the system. System must be offered with single button control for automatic optimization and adjustment in 2D , color and Doppler to achieve optimal uniformity of images and faster scan. Automatic/semiautomatic Fetal Biometry should be available and it is required for high patient throughput. System should be capable of scanning depth of minimum of 30cm or more. Scanning Depth should be clearly mentioned in the technical quote. B mode & B colour simultaneous should be available side by side real time display of B Mode & Colour flow. Digital zoom facility for region of interest in real time and frozen images. System should allow us to take 10 pair distance measurement at a time on a frozen image. System should support Baseline Shift and angle correction in both real time and after freeze. Storage – Min 1 TB or more in the system hard disk drive. Faster booting time preferred. Archive – should have facility to transfer images to PC or Pen Drive. System should be capable to transfer reports & clinical images to PC via network.

Equipment to have optional upgradability 4D imaging including virtual light source, with rendering, multi slice viewing, TDI. Supported by original data sheet.

In all probes 4 different frequency selection should be available.

Cine loop as well as cine scroll facility in B mode with storage Max 10000 or more storage capacity. Technical data sheet should be enclosed in technical bid.

Omni Directional M Mode with 3 Cursors both in real time & on frozen image in all the probes, with M Mode cursor rotation of Complete 360 Degree, system should have provision of getting M-mode image from the stored B-mode image.

System should be upgradeable to allow user to take 3D image using routine convex probe and Free hand 3D should be available in both Convex probe.

The real time shear wave elastography mode should be there and be capable of performing:

i) Real time 2D Shear Wave / point shear wave tissue Elastography imaging should be available on Linear probe, endocavity and curvilinear probe. System should have both Shear and Strain elastography.

ii) The Shear wave elastography should be real time and fully automatic; requiring no manual / automatic compression with reproducible results in KPa or m/s for Liver, Breast, Thyroid, Renal, prostate and MSK applications.

iii) System should be able to generate a color coded real time shear wave elastogram with a reference Adjustable Numerical elasticity scale for all the applications.

iv) System should be able to display simultaneously both color coded Shear wave elastogram and corresponding B-Mode image in real time.

v) There should be User adjustable elasticity-box size with a Display Depth of 0 - 12cm

vi) Shear wave Elastography Quantification tool should be able to provide multiple elasticity values of the tissues inside the ROI both m/s and kPA (KiloPascal) on all transducers.

vii) System should have integrated report worksheet for Liver elasticity assessment.

viii)The system should have qualitative evaluation of relative tissue stiffness of focal changes in tissue compared to surrounding tissue with enhanced border definition using ARFI / equivalent in both convex / linear transducers.

ix) The system should permit the display of a color-coded tissue stiffness map as well as shear wave velocity measurements.

x)The system should recognize tissue strain analysis solutions, providing a single image presentation of both qualitative and quantitative assessment of tissue stiffness.

xi) TV/TR transducer probe should support real time shear wave electrography with reusable biopsy guide.

xii) Real time Shear wave elastography package should be FDA approved

xii)The system should have state-of-the-art features for improving the resolution in images, reducing artefacts and improved signal / noise ratio.

The user should be able to adjust the SWE box size, compare 2 ROI`s, draw a freeform ROI and should be able to place the quantification box on single or multiple images for average calculations of mean, median, SD and IQR values.

The system should have the capability of displaying continuous B-mode, Color Doppler mode and SWE in a real time triplex mode.

Advanced directional color Doppler to pick the difficult & small vessels without blooming artifacts.

System should be ready for upgrade to Fusion Technology and attach technical data sheet and shown in the broacher.

Power Consumption of the machine should not be more than 800VA

The successful tenderers have to impart on-site training to Doctors on the operation and preventive maintenance of the equipment at the time of installation and anytime during warranty period if demanded by the User Institution to the satisfaction of the Tender Inviting Authority and User Institution.

All probes should have tissue harmonic imaging.
Thermal printer 1 no
2 KVA Online UPS with 1-hour backup
Should have safety certificate from competent authority European CE & FDA (US). Copy of certificate /test report shall be produced along with technical bid.

The system should have Fusion Technology with CT, MRI, and PET-CT & Elastography. All necessary hardware and software should be provided with system for optimal performance of fusion imaging. Technical team should be provided whenever necessary

for training in fusion imaging. Any additional modality purchased in future should be integrated with fusion imaging.

Any additional accessories necessary for functioning of the fusion imaging should be provided.

The system should have a full suite of OB measurements and fetal growth charts.

1. The system should have CD-DVD and USB archival (DICOM and PC format).
2. The system should be DICOM 3.0 (or higher version) ready (like send, receive, print, record on CD / DVD, acknowledge etc.) for connectivity to any network, PC / computer etc. in DICOM format and should have options of DICOM modality worklist, Query and retrieve, Compression and export to media.
3. The system should have facility of direct storage and retrieval of B / W and color images (both frozen and cine loops) in the in-built hard disk drive. Inbuilt hard disk of 2TB or more. The device should store images in DICOM, JPG, WMV and AVI formats for maximum flexibility.
4. System shall have image management features that store images by patient and include the ability to review images from different exam dates.
5. System shall support the ability to store digital data in complete Raw Form, that allows to optimize imaging parameters such as B Gain, Dynamic Range, Speckle Reduction levels, Doppler Gain, Doppler Base Line on old Images & old loops recalled from the image archive.
6. Unit should have a four Castor design with central braking system or equivalent system.
7. The systems shall have to be networked by the vendor in future when the PACS is installed; as well as with the main HIS server at the Institute for post processing and review of the images at work stations in various locations.

Transducers: Following transducers should be offered with the system:

Transducer provided must have a latest crystal technology and should support real time shear wave elastogaphy on all probes. Volume matrix linear probe should be quoted

1. Curved array transducer: 1 - 6 MHz +/-2MHz.
2. Matrix Linear array transducer: 5 – 18 MHz +/-2MHz.
3. Endocavitary transducer with 3D/4D Volume : 3 – 12 MHz +/-2MHz at least a 175 degree field of view.
4. Matrix Linear array transducer: 3 – 12 MHz +/-2MHz.
5. 3D/4D Volume transducer: 2 - 9 MHz +/-2MHz.

Pre-installation requirements: nature, values, quality,

	Tolerance: 1. Availability of 5-amp socket. 2. Safety and operation check before hand over. 3. Machine to be installed only when PCPNDT registration is obtained from health care facility. The supplier should get all the registration process of PCPNDT. Requirements for sign-off: Certificate of calibration and inspection from the manufacturer Training of staff (medical paramedical, technicians): 1. Training of users on operation onsite and basic maintenance for two weeks. 2. Advanced maintenance task required shall be documented. Warranty: Full warranty for 3 years after sales inclusive of all spares and related materials supplied along with equipment. This includes all third party items also. (main unit, all probes, UPS along with batteries and accessories supplied with the unit). C.M.C. charges should be quoted separately in Indian rupees after the expiry of warranty (for all the items supplied) Penalty clause for non-functioning of equipment in term of hardship to the patients and financial loss to institute. (As per institute norms) Uptime guarantee of 95% of 365 days in a year. Maintenance tasks CMC for 5 years 2 PM Visits Annually. All Breakdown calls to be attended within 24 hrs of registration. A free comprehensive software up gradation guarantee for 10 years of the ultrasound unit must be provided.
14	**Portable ultrasound with multiple probes including CARDIAC probe (including probes for pediatric/ infant evaluation)**

The equipment must be capable of operating in B, M, Doppler, Color flow and Power Doppler modes
It should support transducers with linear, cardic and convex formats. Further, it must include a full array of measurement and calculation packages. The specific minimum requirements for this equipment are as follow.

1. The system shall include at least a 19" LCD monitor for both excellent image viewing as well as providing for workflow and productivity features.
2. The LCD monitor shall be mounted on an articulating arm that moves side-to-side, forward and backward. The system shall include a minimum 10-inch Touch-screen LCD with
3. context sensitive menus to facilitate productivity as well as minimize training requirements.
4. The system shall have minimum three universal active probe Ports in a convenient, easy to access location to maximize the availability of needed probes, with pin less connector.
5. System should be portable with wheels.
6. System shall have image management features that store images by patient and include the ability to review images from different exam dates.
7. System shall support the ability to store digital data in complete Raw Form, that allows to optimize imaging parameters such as B Gain, Dynamic Range, Speckle Reduction levels, Doppler Gain, Doppler Base Line on old Images & old loops recalled from the image archive.
8. System shall allow for live image and archive images side-by-side or quad display on a single monitor. This display shall allow any type of image – B-Mode, Color, or power Doppler on either side.
9. The system shall implement a feature, which enables to help streamlining the workflow. In particular, the system should automatically invoke the correct mode and imaging parameter and advance to the next step within the examination with a one-bottom operation. Contrast Ultrasound Capability (CEUS) with Times Intensity Curve Graphs.
10. TVI/TDI advance cardiac package.
11. Raw Data Processing. The system shall allow for Post-Storage image manipulation to provide maximum image flexibility, review and productivity. It shall include the ability to change all following on recalled old Stored Images/Loops:

    Overall B-Mode gain, dynamic range and gray scale maps.

    Overall Doppler gain, base line shift, sweep speed and inverted spectral waveform.
    Anatomical M-Mode
12. The system shall provide a display zoom function on frozen images.
13. Reusable cover for USG machine of good quality.

14. Scanning Parameters

1. The system should have more than 1,00,000 digital system processing

	channels. 2. The system shall provide scan depths from a minimum of 2 cm to a maximum of at least 30 cm. **15. B-Mode/ M-Mode Imaging** 1. The system shall provide the capability for coded tissue harmonic imaging on all offered transducers. 2. The system shall have an "anatomical" M-Mode – allowing the M-Mode cursor to be adjustable in any plane and allow for accurate 3. Unit should be capable of creating a M-Mode from an old recalled CINE loop also. 4. Color flow/Power Doppler. 5. Spectral Doppler (PW) **16. Measurements and Calculations** 1. Measurements should be possible on frozen images as well as on images recalled from the image archive. 2. The system shall provide a comprehensive set of obstetrical and gynecologic calculations cardiac and vascular calculations with summary reports. **17. Image Archive and Networking** 1. The device should store images onto an integrated DVD-R Multridrive and a USB port storage device. 2. The system shall include at least 500 GB hard drive for large local storage capacity. 3. The device should store images in DICOM, JPG, WMV and AVI formats for maximum flexibility. **18. DICOM Connectivity option should be available Transducers** Convex Probe, Operating Frequency: 1 - 5 MHz Cardiac probe, Linear probe System should have CE /FDA (US)/ BIS approved product Standard Accessories; a) B/W Thermal printer b) Free Software upgrade(s) during the period of Warranty & CMC c) Probe Protection covers / probe connector cover for all probes
15	**500 mA Static X – Ray units**
	X-RAY GENERATOR (High frequency) 1. The X-ray generator should be high frequency not less than 32KW with flat panel.

2. The X- ray control panel should be feather touch or equivalent.
3. The X-ray control should have digital display of KV, mA, Mas & time.
4. The radiography KV should be 40 to 125KV or above.
5. Parameter combination should be 500 mA or Equivalent. 40 to 125KV, focal spot 0.6/1.5 and 200KHU anode heat storage. (only BEL/Toshiba tubes to be supplied)
6. The exposure time should be from 1 ms to 10s in 38 steps.
7. The radiography mAs should be 0.1 to 500 mAs or above.
8. The APR should be 216.
9. The Control should have programmer protection for X-ray Tube.
10. It should have automatic line voltage compensation.
11. The control should have anatomical program selection for various body parts with body type.
12. The generator should have microprocessor based electronic overload system.
13. It should have self-diagnostic circuit with error code reporting.

TUBES:

One in number. One over coach. X-ray tube should dual focus, rotating anode, and high speed, compatible with the generator. Anode heat storage capacity 200 KHU or more.

MOTOR DRIVEN TABLE:

1. The table should be all positioned motor operated table i.e. from +90deg. To -12 deg. Trendelenburg.
2. It should have automatic stop at horizontal, vertical and Trendelenburg position.
3. The table should have arrangement for manual operation in case of power failure.
4. The motorized bucky with grid of 17 ¼" X 18 3/4" 8:1/103 lines should be provided.
5. The bucky tray should accept cassettes up to 14x17 size.

SPOT FILM DEVICE:

a) It should be mounted on table.

b) It should consist of 14X14 fluoroscope screen lead glass and grid of ratio 8:1, 103 lines/inches.

	c) It should be capable of taking 4 spot on 8" x 10" and 1 spot on 10" x 12" cassette. d) The spot film device should have lateral parking. **COLUMN STAND:** It should be floor to ceiling column stand with vertical counter balanced travel. It should have 360 deg. Rotation. **VERTICAL BUCKY STAND** Vertical Bucky motorized Bucky with counter balanced height adjustment should be there. The grid size should be 17 1/4 x 18 ¾, 8:1 ratio, 103 lines/inch. Should be able to accommodate detachable chest stand for taking exposure up to 14X17. **POWER SUPPLY** The unit should run on power supply 3 phase, 440 volts, 50Amps (32KVA). Valid AERB type approval for quoted model. Quoted equipment should be demonstrated in working condition preferably in a large institution. Vendor should have established service centres in Karnataka with adequate installations of quoted or similar equipment. Please provide details of the same. Certified radiation safety lead aprons to be supplied, minimum two. **Note: Technical Specifications mentioned above are of minimum parameters; Products offered must meet these or exceed all requirements herein.**
16	**100 mA Portable X –Ray unit**
	X-RAY MACHINE: High Frequency (40 KHz) X- Ray Generator suitable for General Radiography. **I. GENERATOR RATING:** a. Output Power: Should be 6 KW or more. b. KV Range: Should be 40 to 120 KV. c. mA Range: Should be 100mA or more. d. mA Range: Should be upto 250mAs e. Collimator: One Manual Collimator should be provided. **II. CONTROL PANEL:** The Control Panel Should be compact, pleasant and ergonomically designed with soft Touch Switches. Following Switches & indicators should be available on the control panel:

a. Machine ON/OFF Switch.
b. KV & mAs Increase & Decrease Switches.
c. Digital Displays of KV & mAs .
d. Collimator Lamp 'ON' Switch with auto shut off facility
e. Standby & Exposure Release Switch.
f. X- Ray on Indicator.
g. Self-diagnostic Program with indicators for:
   - Earth fault Error
   - KV Error
   - Filament Error
   - Tube head Thermal Error

III. A Hand Switch with Dual action for exposure release with Retractable Cord should be provided for Radiation Protection to the operator.

IV. X-Ray TUBE: Should be stationary Anode type, tube head vertical rotation greater than 290 degrees, tube head horizontal rotation greater than 360 degrees.

V. STAND: Should be Floor to Ceiling Stand with Counter Balanced Tube Head, 360o rotation and mounted on Floor Ceiling Rails for convenient movements.

VI. Power Supply Requirements:

Should have single phase, 230V, AC, 50/60Hz. 15 Amps with Line regulation of ± 10% Line Resist: <0.4 ohms.

VII. Trolley arm extension: 23 degrees to 139 degrees vertical or equivalent

VIII. Other Requirements:

Should be CE & US FDA Approved products.

a) The unit should be approval by AERB.
b) The company should be having a local Service center.
c) The Company should be approved by BIS.
d) The unit and the supplied accessories should be BIS approved for the mechanical and electrical safety norms.

Maintenance, guarantee, warranty and AMC/CMC norms as per the general tender conditions.

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