प्रेषक,

आलोक कुमार,
प्रमुख सचिव
उ0प्र0 शासन।

सेवा में,

महानिदेशक,
चिकित्सा शिक्षा एवं प्रशिक्षण,
उ0प्र0, लखनऊ।

चिकित्सा शिक्षा अनुभाग-1 लखनऊ : दिनॉक नवम्बर, 2021

विषयः- राजकीय मेडिकल कालेजों एवं संस्थानों में क्रय किये जाने वाले उपकरणों हेतु मानकीकृत तकनीकी विशिष्टियों के निर्धारण के संबंध में।

महोदय,

उपर्युक्त विषयक अपने पत्र संख्या-एम0ई0/पर्चेज/2021/03, दिनॉक 01.04.2020 का कृपया संदर्भ ग्रहण करने का कष्ट करें।

2- इस संबंध मे मुझे यह कहने का निदेश हुआ है कि राजकीय मेडिकल कालेजों/चिकित्सा संस्थानों/विश्वविद्यालयों में समस्त इकाईयों पर ई-प्रोक्योरमेन्ट, गर्वनमेन्ट ई-मार्केट के माध्यम से उपकरणों का प्रोक्योरमेन्ट किये जाने तथा निविदा प्रपत्रों व अनुबन्ध पत्र का मानकीकरण सुनिश्चित किये जाने हेतु उपकरणों की आवश्यकता एवं औचित्य तथा स्पेसिफिकेशन के निर्धारण हेतु एस0 के0 अग्रवाल, आचार्य, सी0टी0वी0एस0, एस0जी0पी0जी0आई0, लखनऊ की अध्यक्षता में गठित समिति द्वारा कुल 136 उपकरणों के क्रय हेतु निर्धारित किये गये स्पेसिफिकेशन संलग्न प्रपत्र के अनुसार निर्गत किये जा रहे है। संलग्न स्पेसिफिकेशन के आधार पर उपकरणों का क्रय किये जाने में निम्न निर्देशों का अनुपालन सुनिश्चित किया जायः-

(1) राजकीय मेडिकल कालेजों/संस्थानों में उपकरणों की स्थापना के स्पेसिफिकेशन संलग्न है, तद्नुसार उपकरणों को संलग्न तकनीकी विशिष्टियों के आधार पर स्थापित किया जाय।

(2) राजकीय मेडिकल कालेजों एवं संस्थानों में उपकरणों के क्रय/स्थापना हेतु समिति द्वारा निर्धारित तकनीकी विशिष्टियॉ 02 साल तक वैध रहेंगी। उक्त विशिष्टियों के आधार पर वर्ष 2021-22 एवं 2022-23 में उपकरणों का क्रय किया जाना सुनिश्चित किया जाय।

(3) उपकरणों का क्रय व स्थापना करने से पूर्व यह सुनिश्चित किया जाय कि उपकरणों की वास्तविक रूप से आवश्यकता है।

(4) प्रश्नगत उपकरणों का क्रय कोविड-19 के दृष्टिगत हास्पिटल की चिकित्सकीय आवश्यकताओं एवं एम0सी0आई0 मानकों के दृष्टिगत किया जायेगा तथा प्रश्नगत उपकरणों के मानक व गुणवत्ता की जिम्मेदारी महानिदेशक, चिकित्सा शिक्षा एवं प्रशिक्षण, उ0प्र0/संबंधित प्रधानाचार्य/संबंधित निदेशक की होगी

(5) यह भी सुनिश्चित कर लिया जाए कि उपकरणों की स्थापना हेतु स्थान, भवन आदि उपलब्ध है तथा संचालन हेतु मानव संसाधन उपलब्ध है।

(6) राजकीय मेडिकल कालेज/संस्थान में उपकरणों का क्रय/स्थापना किये जाने में व्यापक प्रचार-प्रसार किया जाय।

(7) संलग्न सूची में उल्लिखित उपकरणों का क्रय/स्थापना किये जाने के सम्बन्ध में समस्त औपचारिकतायें नियमानुसार पूर्ण किये जाने के पश्चात उपकरण क्रय किये जाय। उपकरण का क्रय सक्षम स्तर का अनुमोदन प्राप्त करनें के पश्चात ही किया जाय।

(8) राजकीय मेडिकल कालेजों एवं संस्थानों में उपकरणों के क्रय में 05 वर्ष की वारण्टी/ सी0एम0सी0/ई-प्रोक्योरमेन्ट में इस बिन्दु को अनिवार्य रूप से सुनिश्चित किया जाय।

1- यह शासनादेश इलेक्ट्रानिकली जारी किया गया है, अतः इस पर हस्ताक्षर की आवश्यकता नहीं है ।

2- इस शासनादेश की प्रमाणिकता वेब साइट http://shasanadesh.up.nic.in से सत्यापित की जा सकती है ।

(9) राजकीय मेडिकल कालेजो एवं संस्थानों में उपकरणों का क्रय सर्वप्रथम जेम पोर्टल से किया जाए। जेम पोर्टल पर उपकरण उपलब्ध न होने पर ई-टेण्डर के माध्यम से किया जाए।

(10) उपकरण की क्रय प्रक्रिया में सूक्ष्म लघु एवं मध्यम उद्यम तथा निर्यात प्रोत्साहन विभाग के सुसंगत शासनादेश तथा उ0प्र0 प्रोक्योरमेन्ट मैनुअल 2016 का अनुपालन सुनिश्चित किया जाय।

(11) सूक्ष्म, लघु एवं मध्यम उद्यम एवं निर्यात प्रोत्साहन अनुभाग-2 के शासनादेश संख्या-1/2018/868/18-2-2017-2(एस0पी0)/2017, दिनॉक 15.01.2018 में विहित व्यवस्था का अनुपालन सुनिश्चित करते हुए कार्यालयाध्यक्ष (रू0 1.00 लाख तक) तथा विभागाध्यक्ष (रू0 50.00 लाख तक) द्वारा क्रयाधिकार संबंधी सीमाओं के अन्तर्गत ही क्रय प्रक्रिया सम्पादित की जायेगी। उक्त सीमा से अधिक के प्रस्ताव पर सक्षम स्तर का अनुमोदन प्राप्त किया जायेगा।

(12) संलग्न उपकरणों हेतु निर्गत की जा रही विशिष्टियों के तकनीकी पहलुओं की उपयुक्तता का दायित्व कार्यालय ज्ञाप दिनॉक 10.07.2020 द्वारा गठित विशेषज्ञ समिति का होगा।

(13) इस सम्बन्ध में राजकीय मेडिकल कालेजों/संस्थानों में उपकरणों के क्रय हेतु शासनादेश संख्या-3964/71-1-2017-जी-283/2017, दिनॉक 11.12.2017 एवं शासनादेश संख्या-4090/71-1-2017-जी-243/2017, दिनॉक 28.12.2017 में दिये गये निर्देशों का अनुपालन सुनिश्चित किया जाय।

(14) "As per demonstration" को अति विशिष्ट श्रेणी के उपकरणों के क्रय के संबंध में ही लागू किया जायेगा। सामान्य प्रकार के उपकरणों के क्रय के संबंध में इसका उपयोग नहीं किया जायेगा।

(15) "As per demonstration" श्रेणी के उपकरणों का क्रय सम्बन्धित संस्था के प्रधानाचार्य एवं क्रय समिति द्वारा उपकरणों की उपयोगिता एवं मानक के अनुरूप गुणवत्ता से संतुष्ट होने के उपरान्त ही निर्धारित प्रक्रियानुसार क्रय किया जायेगा, यदि किसी भी प्रकार की अनियमितता अथवा विसंगति होती है तो उसका सम्पूर्ण दायित्व सम्बन्धित प्रधानाचार्य तथा महानिदेशक, चिकित्सा शिक्षा की होगी।

संलग्नक-यथोक्त।

भवदीय

Signed by आलोक कुमार
Date: 03-11-2021 15:42:59
Reason: Approved

(आलोक कुमार)
प्रमुख सचिव

संख्या:- उपरोक्त तद्यदिनांक

प्रतिलिपि निम्नलिखित को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित:-

1. निदेशक, एस0जी0पी0जी0आई0, लखनऊ।
2. कुल सचिव, के0जी0एम0यू0, लखनऊ।
3. कुल सचिव, उ0प्र0 ग्रामीण आयुर्विज्ञान संस्थान, सैफई इटावा।
4. निदेशक, डा0 राम मनोहर लोहिया आयुर्विज्ञान संस्थान, लखनऊ।
5. निदेशक, गवर्नमेन्ट इंस्टीट्यूट आफ मेडिकल साईंसेज, ग्रेटर नोएडा।
6. निदेशक, सुपर स्पेशियलिटी बाल चिकित्सालय एवं स्नातकोत्तर शिक्षण संस्थान, नोएडा।
7. निदेशक, सुपर स्पेशियलिटी कैंसर संस्थान, लखनऊ।
8. समस्त प्रधानाचार्य, स्वशासी एवं राजकीय मेडिकल कालेज, उ0प्र0।
9. निदेशक, हृदय रोग संस्थान, कानपुर तथा जे0 के0 कैंसर संस्थान, कानपुर।
10. चिकित्सा शिक्षा अनुभाग-2, 3 एवं 4
11. गार्ड फाइल।

आज्ञा से

(एस0 पी0 सिंह)
अनु सचिव

1- यह शासनादेश इलेक्ट्रानिकली जारी किया गया है, अत: इस पर हस्ताक्षर की आवश्यकता नहीं है ।

2- इस शासनादेश की प्रमाणिकता वेब साइट http://shasanadesh.up.nic.in से सत्यापित की जा सकती है ।

संलग्नक

1- IUI EQUIPMENT SPECIFICATION

1. CO2 INCUBATOR AIR JACKED SS BODY

- Incubator should be of 30 liter capacity to get best result for IUI set up
- Unit should have seamless internal chamber with rounded corners.
- It should have humidity with completely dry wall chamber
- Temp. range Ambient +5.0 ^{0}C ~ 50.0 ^{0}C
- Unit should have TC CO2 sensing
- Unit should have CO2 control: +0.2
- Unit should having range 0.2-10% or 0.2-20%
- Unit should have recovery rate: More than 1.5% per min

2. SPERM COUNTING CHAMBER

- The sperm counting chamber should have 10 microns deep 1/10
- Constructed should be of two pieces
- Upper layer should serve as a cover glass, with a 1sq mm fine grid in the center subdivided into 100 squares of 0.1x0.1mm each
- Lower part should be optically flat glass
- Spacing is firmly secured by four quartz pins
- For safety there should be metal frame in both pieces
- Unit should be easily rinsed with water for reuse.
- Unit should have special lense paper for wipes contact surfaces after washing

3. DOUBLE STAGE CO2 REGULAR

- Unit should have dual gauge
- Unit should have diaphragm
- Unit should have security feature

4. LAMINAR FLOW ANDROLOGY WORK STATION SIZE "3X2

- Andrology work station non heated with stainless steel table
- Work station should produce class 100 air space and should have differential pressure indicator
- Noise level should be less than 63db
- The table should be minimum 900(L)X600(D)
- Unit should have inbuilt TFT monitor with FGC Card
- Unit should have differential pressure indicator.

5. TEST TUBE WARMER

- Unit should have seamless construction
- Unit should have minimum capacity of 18 tubes (14 ml.)
- Unit should have inbuilt sensor for self calibration as well checking
- Unit should have PID Controller

6. **CENTRIFUGE- TEMPERATURE REGULATED CENTRIFUGE**

- The centrifuge should have with swing out rotor head
- Machine should have adaptors for 8 tube of 15ml/ 14ml tube with compulsory sealed bucket
- Should have rpm indication maximum limit of 2222rpm
- Should have G force indication
- Centrifuge chamber should be having provision of maintaining desired heating (30-40dc in)
- Centrifuge should be programmable
- Each program can be independently set for temperature time G force and or RPM
- Centrifuge should have brushless AC motor for low minimum vibration
- Centrifuge should have on screen tube selection
- Centrifuge should have programmed acceleration and deceleration

7. **TRINOCULAR MICROSCOPE FOR ANDROLOGY WITH CAMERA SYSTEM CAPABLE FOR DISPLYING (INCLUDING CABLE + MONITOR)**

- Microscope should be std unit on semen analysis
- Should have all std objectives 10x,20x,40x and 100x (oil)
- Unit should have light (in built)
- Should have 5-10x eyes piece
- Should have dust cover
- Should have halogen bulb (6v-20watt)

8. **CONSUMABLES**

- 14ml round bottom test tubes
- 6ml round bottom test tubes
- Semen collection container
- BD tuberculin syringes with needle 1ml
- 3ml transfer pipettes
- IUI Cannula (IUI catheter)
- 15ml Conical tube
- 20G Needles BD
- All the equipment should be compatable with each other
- Service of equipment must be prompt by the equipment supplier.
- Equipment must be CE/ISO/Or any other equivalent certified
- The equipment must have 5 years warranty

2- TECHNICAL SPECIFICATION FOR ELECTRO SURGICAL UNIT

- The unit should be a microprocessor controlled electrosurgical unit with tissue impedance feedback system
- It must have digital display for power setting of monopolar cut, monopolar coagulation, bipolar cut and bipolar coagulation
- Should have monopolar coagulation with dual output facility
- Should have split patient plate contact quality measurement facility with display of bar graph showing percentage of patient contact connectivity

- The unit should have soft, force and spray coagulation in monopolar mode. It must have at least 4 levels of haemostasis settings & separate audible tones for cut and coagulation modes
- The unit should have multiple programmable settings and multiple preset memory for different specialty applications. It must have auto-self test facility
- The unit should have user settable auto start and auto stop facility in bipolar coagulation
- The unit should have a double pedal explosion protected footswitch for monopolar & bipolar applications and a separate connector to connect the resectoscope / TUR applications.
- The generator should have at least HF power of 300 watts for monopolar cut and 120 watts for soft, force and spray coagulation, bipolar cut and bipolar coagulation
- It must have patient plate monitoring circuitry to monitor connectivity between the patient plate and the unit along with audible and visible warning against malfunction and disconnection of patient plate.
- The safety class should be class I, Type CF and the unit should be manufactured at an ISO 9001:2000 certified factory
- Should be supplied with standard accessories: cable for patient plate, reusable silicon rubber patient plate, 2 set of split patient plate, double pedal explosion protected foot switch, knife electrode, Ball electrode, reusable electrode handle and power cord.
- CE/FDA Certified
- Equipment must have five year warranty
- Service should be prompt by the equipment provider.

3- SPECIFICATION FOR OPERATING MICROSCOPE:-
MICROSCOPE:

- Compact microscope body with high quality & complete apochromatic Optics with 1:6 zoom ratio.
- Magnification factor 0.4 to 2.4
- Focusing range 50mm
- Binocular tube :Tiltable tube with F=200
- Eyepieces: 10X with +8D to -5D compensator
- Objective lens f=200mm, 65mm diameter.
- Deepview: Depth of field management system for optimal depth perception and maximum light transmission.

ILLUMINATION

- Stereo Coaxial Illumination system for unique detail recognition, high contrast & stability of Red reflex even strongly pigmented decentered and ametropic eye.
- Retina Protective Device and contrast enhancement aperture.
- Intergated 408nm UV barrier filter/Blue blocking filter/fluorescence filter.

X-YCOUPLING

- Motorized foot controlled X-Y coupling with automatic re-centering and X-Y inversion facility.

- Range 61mm x 61mm adjustable range.

SUSPENSION SYSTEM:

- Motorized foot controlled Zoom and focus with re-centering of focussing position through foot control. Image inversion facility on foot control.
- High quality floor stands with long spring balance suspension arm with effective length of 1 metre or more having load bearing capacity of 14 kg or more.
- Stand should have touch screen LCD display with programming facility for setting the speed of XY, Zoom and focus, Foot pedal.
- Stand should have cold light fiber Optic illumination 12v 100w Halogen lamp with in built lamp housing with two lamps, with automatic Lamp changeover facility.

CCTV ATTACHMENT

- Full HD Camera.

WIDE ANGLED FUNDUS VIEWING SYSTEM

- Wide angled Non Contact observation/Viewing system (autoclave able) with aspheric lenses 60D, 128D, safety range – minimum 110mm.

4- SPECIFICATION FOR PHOTO SLIT LAMP
FEATURES

- Illumination boost
- DC-4 digital camera
- High resolution
- Smart capture function
- Still image with auto exposure function
- Seamless integration
- Infrared sensitivity
- Blue free Filter for superior fluorescent viewing.
- BG-5 LED background illumination
- Meibomian gland observation capability.

LED FEATURES

- Illumination boost
- Brighter illumination enhances observation of the eye structures.
- LED wavelength characteristics allow for easy visualization of subtle details such as flare & inflammation.
- Consistent color temperature throughout the entire light intensity adjustment
- Energy efficient & cost saving
- No tearfilm vaporization due to low temperature of LED illumination

5- SPECIFICATION FOR YAG LASER

YAG Mode

Laser source	Q-switched Nd-YAG
Wavelength	1,064nm
Pulse width	3ns
Pulse repetition rate	3 Hz(single/1.5Hz (burst)
Output energy	1, 2 and 3 pulse per trigger
Spot size	8 micronm
Cone angle	16 degree
Focus shift	0 to +500 micron metre
Aiming beam	635nm/OFF, 0.5 to 25 micron metre

SLIT LAMP

Illumination	LED Lamp
Magnification (field of view)	5x(40.7mm), 8x(7mm), 12.5x(16.1mm) 20x(10.1mm), 32x(6.4mm)
Power supply	ZC 100 to 240V, 50/60Hz
Optional Accessories	Foot switch stand for control Box, Safety Goggles
	Illumination tower (tilting)

6- TECHNICAL SPECIFICATION FOR RIGID OESOPHAGOSCOPY UNIT(PEDIATRIC & ADULT)

ACCESSORIES AS FOLLOWING:

RIGID ESOPHAGOSCOPE (ALL SIZES)

1. Oval operating esophagoscope length 50cm size 12x16
2. Esophagoscope, oval, for digital and proximal illumination, length 40cm, OD 12mmx16mm, for use with fiber optic light carrier 12061 AV and/ or prismatic light deflector 10101 FA
3. Oval operating Esophagoscope length 30cm, size 12x16
4. Oval operating Esophagoscope length 50cm, size 10x14
5. Esophagoscope, oval, for digital and proximal illumination, length 40cm, OD 10mmx14mm, for use with fiber optic light carrier 12061 AV and/ or prismatic light deflector 10101 FA
6. Oval Esophagoscope length 30cm, size 10x14
7. Oval Esophagoscope length 50cm, size 8X12
8. Esophagoscope, oval, for digital and proximal illumination, length 40cm, OD 08mmx12mm, for use with fiber optic light carrier 12061 AV and/ or prismatic light deflector 10101 FA
9. Oval operating Esophagoscope length 30cm, size 8X12
10. Oval Esophagoscope length 30cm, size 7X10
11. Pristmatic light deflector autoclavable with connection to fiber optic light cable (not to be used with 8574K/KB/KT/KW)

RIGID ESOPHAGOSCOPE FORCEPS (COIN, DENTURE, FOREIGN BODY)

1. Forceps, pointed, serrated, for coins and flat foreign bodies, double action jaws, sheath diameter 2.5mm working length 55cm
2. Forceps with round cupped jaws, for biopsy and foreign bodies, double action jaws, cupped diameter 5mm sheath diameter 2.5mm working length 55cm

3. Forceps alligator, for hard foreign bodies, double action jaws, sheath diameter 2.5mm working length 55cm
4. Forceps, universal for biopsy and foreign bodies, double action jaws width 3mm, sheath diameter, 2.5mm, working length 45cm
5. Forceps, whit round cupped jaws for biopsy, double action jaws, cupped diameter 4mm, sheath diameter 2mm, working length 45cm
6. Forceps, alligator grasping for hard foreign bodies, double action jaws, sheath diameter 2mm, working length 45mm
7. Forceps pointed serrated for coins and flat foreign bodies, double action jaws, sheath diameter 2mm, working length 35cm
8. Forceps whit round cupped jaws, for biopsy, double action jaws, cupped diameter 4mm, sheath diameter 2mm, working length 35mm
9. Forceps, alligator grasping for hard foreign bodies, double action jaws, sheath diameter 2mm, working length 35cm

LIGHT CABLE AND LIGHT SOURCE

1. Fiber optic light cable, with straight connector, extremely heat resistant, with safety lock, increased light transmission, diameter 3.5mm , length 230cm, can be used for ICG application
2. LED Nova 150, High Performacne LED Cold Light fountain with one light outlet, power supply 100-240 VAC, 50/60Hz including 400A, mains, cord

HYPOPHARYNGOSCOPE

1. Hypopharyngo- scope length 20cm size 11x16
2. Hypopharyngo- scope length 20cm size 10x14
3. Hypopharyngo- scope length 20cm size 8x12

1. 5 Year warranty
2. 5 year AMC/CMC after 5 year warranty
3. USFDA/CE(E) certification

7- **Technical Specification for Non Invasive Cardiac Pump**

1. The device should able generate chest compression & provide consistent compression with no interruptions.
2. It should have facility to provide chest compression to patient while carrying to staircase.
3. The compression device should deliver uninterrupted chest compression even if the patients in a 45" elevation or beyond.
4. It should he battery operated.
5. The device should have a easy to understand user interface.
6. It should able to achieve uniform load distribution by squeecing entire chest.
7. The chest compression bank should have an ability to do the high quality compression and this should be confirmed by providing studies that prove improvement in ROCS. Vital signs and survival compared to manual CPR done on humans.
8. It should have an LCD backlit screen to show compression modes.
9. The device should be capable to deliver customized compressions.

10. The system should be capability to provide both 30:2 (30 compressions and 2-ventilation pause) and continuous compression just by pressing buttons.
11. The system should come with three batteries, 1 Battery charger and three load distributing band.
12. The battery should be made LI-ion technology which enable to provide continuous compression of minimum 30 minutes in full charge.
13. The quoted unit should be US FDA approved.
14. The device should be capable to integrate with a defibrillator.
15. The device should come with a technology proven to increase the chance of terminating ventricular fibrillation such as shock Sync.

Features

1. Fully automatic operation.
2. Touch Screen user friendly Interface for ease of operation
3. Memory for 50 cycle's storage
4. Inbuilt printer tor washing and disinfection report
5. USB port for data retrieval.
6. Leakage testing facility.
7. Visual indication for disinfection chemical level.
8. Specially designed tub to ensure minimum wastage of disinfectant & detergents.
9. Powerful channel drying mechanism post cleaning & disinfectant cycle.
10. Can be operated in manual modes as well.

8- Specifications Ottomed Automated Endowasher (Qubey-T)

Ambient temperature	10 to 40 deg C
Relative humidity	30 to 85%
Water supply requirements	Flow rate - 12 to 16L/min Pressure - 0:1 to 0.4 Mpa
Leakage test	Yes
Operating procedure	Auto mode Manual mode
Time	Water - 1-20 minutes Detergent - 1-99 minutes Disinfectant - 1-99 minutes Dry - 1-10 minutes
Tank capacity (Disinfeclanl)	15 litres
Alarms	Low level & End of process
Display	Touch screen panel
Memory Storage	50 cycles
Operating voltage	220v+ 10% AC 50 Hz
Dimension	W-600 x L-600 x H-600 (mm)
Weight	55 kg approx

9- TECHNICAL SPECIFICATIONS OF ADVANCED PHACOEMULSIFICATION SYSTEM (PROPRIETARY ITEM)

The Phacoemulsification system should be o the latest model with advanced features and facilities as specified below :

FLUIDICS :

1. The system Fluidics should allow the surgeon to target intraocular pressure in the eye for the "system" during surgery.
2. The system Fluidic should detect and compensate for dynamic changes occurring in the fluidics system (including Irrigation Pressure detected at IPS & Aspiration Pressure detect at APS) to maintain the surgeon selected target IOP in the fluidics system comprising the eye as well.
3. The system Fluidics should lead to excellent chamber stability via less variation in pressure during the procedure compared to other system with

- Highly non complaint tubing.
- Slow almost zero venting of air in fluidics system

4. Optical Pressure Sensor (OPS)

- Measures deflection of irrigation & Aspiration pressure Sensor diaphragms
- Reads 2D Barcode with calibration info.

5. Dual Segment Pump with Advanced Fragmented Pump design

- High Capacity
- Low Pulsations (Wave from cancelling)

6. Should have the facility to use Vaccum level of 650+mm Hg and reach Aspiration Flows rates of 60CC/min

PHACOEMULSIFICATION :

1. Best in class Phaco: Torsional Hand piece and facility with high efficiency "Balanced Tip" which accounts for the least heat generation at the wound site.
2. Capability to perform MICS with sub 2.0 MM sizes as well with the sue of Balance Tip and
   appropriate disposables.
3. The system should indicate the Patient Eye Level (PEL) at all times during the surgery.
4. The system should also give warning for the Irrigation Empty Bag.
5. System should have the ability to drive Torsional Hand Piece with an oscillating frequency of 32 KHz.
6. The Torsional handpiece should be able to drive latest generation phaco tips like Kelman. Flared, mi flared and aspiration by pass (ABS) tips in both 1.1 MM or 0.9 configurations.

OTHER FEATURES :

1. Autosert- Motorized/Automated IOL Injection.
2. Ergonomic Wireless Footswitch

3. Facility for Integration with "Digital Surgical Guidance" system and also display of machine parameters and guidance parameters as Heads Up Display in the microscope as well by means of external accessory/adaptation as described below :

- Integration with Surgical Guidance System
- Seamless integration of guidance steps in to the procedural sequence.
- Phaco parameters overlay in surgeon's
- Patient/Eye confirmation in the OR: registration of eye with respect to pre-operative

  reference image.

- Eye tracing and guidance overlay
- Incision
- Capsulorhexis
- IOL centration and /or orientation.

4. Facility to integrate "High Definition Media Center" archiving system when connected to the system.

- HD Recording buit-in hard drive or USB
- Centurion data embedded in each video frame
- Basic editing capabilities.
- Remote Control

5. The system should be able to drive 23 GA anterior vitrectomy probe with high speed cut rates of 4000 CPM.
6. System should have a wireless remote control for easy changing of functions etc during surgery, a full fledged Graphic User Interface (GUI) complete with voice feed parameters are changed etc.

10- TECHNICAL SPECIFICATION OF ALGOMETERS

- The system should quantify and records levels of tenderness via pressure threshold measurement and pain sensitivity via pain tolerance measurement.
- It should be providing reliable measure of pain in muscle, joints, tendons, and ligaments
- It should have digital display for instant reading
- Supplied with tip of 1cm sq. diameter
- Automatic/ set Zero key
- In built rechargeable battery
- Range – 0-20 kg
- Units Kg, N. lbs
- Division 0.01 Kg
- Accuracy $\pm$ 0.5%

- Acquisition and software for monitoring of the force application rate facilitates the generation of repeatable results.
- Probe tips of different size give the possibility to adapt the instrument to different testing sites.
- A dedicated software that provides all set-ups and running of test, as well as storage of the results in a standard access database, that facilitates the generation of various types of reports.
- Extra battery to be provided
- Test results can be saved, exported to excel and printed s a customizable report.
- Graphic display of test including applied pressure change rate with test statistics according to selected test methods.
- Patient response switch would be preferable/ optional.
- Compatible computer to be provided.
- Certification ISO/CE/BIS/FDA.

11- TECHNICAL SPECIFICATION OF DIGITAL PHYSIOGRAPH

- System should be a three channel or more digital physiograph
- Should be supplied as a standalone recorder to monitor & record the data on three channel colored TFT monitor
- System should have built in stimulator
- System should have facility to store the recording and review the recorded data on inbuilt TFT screen without need of any computer
- A software should be provided free of cost along with the system to review and printing the recorded data from PC whenever required (No need to quote cost of computer).
- Should be supplied with Force Transducer, Isotonic Transducer & Volume transducer
- For human experiment, transducers/ electrodes to perform following tests i.e. ECG, EEG, EMG, GSR, Pulse, Respiration, Hand dynamometer, Phonocardiogram & Temperature should be supplied.

12- TECHNICAL SPECIFICATION OF VAN SLYKE'S APPARATUS

- System should be designed on Single trolley, easy to move from one place to another
- System should have latest ultrasonic flow sensor
- System should be free from volume calibration
- System should have capability to perform single breath & intra breath
- System should be able to measure values for DLCO, KCO, VA, TLC, RV, FRC, RV%TLC, FVC, FEV1, FEV6, FEV1%FVC, MEF75, MEF50, PEF.
- System should have good quality gas analyzers which should not be required any periodic changes.
- System should be free from breathing bags in order to avoid wastage of gas.
- System should have facility for online BTPS Correction during measurement.
- System should have facility to connect for HL7 interface, DICOM Connectivity.
- System should be USFDA/ European CE approved product.
- Technical requirement:

Flow measurement
Principle- Ultrasound transit time
Range – 0-20 ltrs.

- Volume measurement

Principle- Digital Integration
Range – 0-20 ltrs.

- CO Analyzer

Principle- Non dispersive Infrared Analyzer
Range- 0-0.5%

- He Analyzer

Principle- Ultrasound based
Range – 0-20% He
System should be supplied as complete unit for smooth functioning of machine.

- **MC NO. 221 – BABY WEIGHING SCALE**

Measuring range in kgs – 0.01 to 15
Base size (mm)550x300x125, Pan size (mm) 550x300x125, LCD display

- **MC NO. 226 – ICE-LINED REFRIGERATOR**

Should be of branded company
Door type –hinged, air tight door, Horizontal
Defrosting Automatic,
Type of cooling – Direct,
Storage –at least 350 litres
Minimum achievable temperature at room temp should be 0^{0}C, temperature controller and display should be present

- **MC NO. 257 – EAR PLUGS**

Noise Reduction Range (dB) 20-30
Cord Length 30-40cm, Length 10-20mm, Diameter 6-7mm

- **MC – 258 – SAFETY HELMET**

Material – Polypropylene, Helmet Sizes 591 mm – 600mm

- **MC- 247 – GLOBE THERMOMETER**

Range 0-50 ^{0} centigrade / 32-122 ^{0}F

- **MC-237 – HORROCK'S APPARATUS**

6 White cups of 200ml capacity, One black cup with a circular mark on the inside, 2 metal spoons, 7 glass stirring rods, One pipette, Two droppers, Starch – iodide indicator solution

- **MC-245 – KATA THERMOMETER**

Material – Glass, Element- Alcohol
Temperature Range – 35-38 ^{0} Centrigrade

- **MC-249 – SOUND LEVEL METER**

Measuring Range (dB) 30-130,
Accuracy of db meter (dB) – 1.5 to +1.5

- **MC-238- MUAC TAPE**

Type – 3 colour Mid- upper Arm Circumferences (MUAC) tape, Measures length in centimeters, non- stretchable, measures length in centimeters

- **MC-229- TELEVISION**

Should be of branded company
Type- LED, Screen Size (inches)- 43 or more, Smart TV
Screen Mirroring / Screen Casting feature should be present,
Number of HDMI Ports -2 or more
Number of USB Ports -2 or more
With built in WiFi

- **MC-282 – LAPTOP**

Should be branded company
Processor – INTEL i3
Screen size (Inches) – 14 inch or more,
RAM – 8GB or more

LAPROSCOPY INSTRUMENT SET (PEDIATRIC)

1. TELESCOPE

Should have scope of 5mm and 10mm size, 30 cm long, one each
30 degree angle
Fibreoptic light transmission
Autoclavable
Should have distortion free image

2. INSUFFLATOR
Should have Fully automatic, electronically controlled gas fill
Flow rate 30 to 45 litre per minute
Optical and acoustic warning signals in case of malfunction or excessive pressure
Facility for preheating of gas to body temperature
Control of keys on front panel
Clear and adjacent display of actual and present flow rate, actual and present pressure, gas consumed
Should include silicone tubing set, universal gas filter, pin index connection to small and big gas cylinder

3. LIGHT SOURCE
LED or xenon 300 watts
Manual and automatic adjustment of light intensity
Long (250cm or more) fluid and fibre optic light cable of diameter 4.8 to 5cm

4. SUCTION IRRIGATION UNIT
Pump for irrigation and suction
Accessories should include silicone tubing
Maximum irrigation pressure 400mm hg

5. VIDEO CART
Made of stainless steel
Required number of shelves for housing all the units of the set
Cable manager
Power box with wiring for providing electrical connection of proper rate to all the units

6. MONITOR
At least 32 inch diagonal screen
HDTV display in
LED
Resolution: 1920x1200 pixels (minimum)
SD/HD-SDI, Composite, S-Video RGB, OVI-D and VGA input
All required cables and connectors
Dustproof and drip water protected

7. CAMERA CONTROL UNIT (CCU)
Digital HD technology
Progressive scan
CCD chip having hi-fidelity image transmission
System should be able to optimize all the settings and should be ready as soon as connected to camera control unit
CCU should be compatible with all camera heads i.e. single chip or 3- chip

8. CAMERA
Image sensor= 3x1/3 CCD chip
Pixels= 1920x1080
AGC= Microprocessor controlled
Video output = composite to BNC, Y/C to S-VHS, RCB to D socket, DV for recording
Input = key board for character generator, 5 pole DIN socket

13- TECHNICAL SPECIFICATIONS FOR SURGICAL INSTRUMENTS (CAESEREAN INSTRUMENTS) FOR DEPARTMENT OF OBSTETRICS AND GYNAECOLOGY, MLN MEDICAL COLLEGE, PRAYAGRAJ (AS PER REQUIREMENT OF DEPARTMENT)

1. All surgical instruments should be European CE certified / USFDA and equivalent Indian standard certificate.
2. All surgical instruments should meet criteria – ISO 9001-2008.
3. All surgical instruments should be made of 4 series AISI 420 and AISI 410 steel and should be rustfree and autoclavable and certified copy must have to submit at the time of tender submission.
4. All surgical instruments/ Microsurgical instruments must have stoneware coating, high surface hardness and anti glaring surface for better vision.
5. In case of Indian manufacturer must have to submit their manufacturing and NSIC certificate.
6. The bidder should submit original literature/ brochure of quoted model of surgical instruments.
7. The surgical instrument's manufacturer should clearly mention (A) warranty period (B) shelf life of instruments (C) IFU (Instruction for Users) of surgical instruments regarding recommended method cleaning and sterilization of the instruments.
8. All instruments should be of same parent company or same manufacturer and must be clearly mentioned in original catalog.
9. All instruments should have engraved logo of UP government at the time of supplies.
10. The surgical instrument's manufacturer should provide the offer as per required surgical instruments list.
11. The list of required instruments and their numbers are attached (as enclosure)

LIST OF SURGICAL INSTRUMENTS (CAESEREAN INSTRUMENTS) AND THEIR QUANTITY FOR DEPARTMENT OF OBSTETRICS AND GYNAECOLOGY, MLN MEDICAL COLLEGE, PRAYAGRAJ

Sl. No.	Name of surgical instruments (Caeserean Instruments)	Quantity Required
1.	Sponge holder	80
2.	Bowl	50
3.	Kidney Tray	50
4.	Abdominal retractor	50
5.	Needle holder	100
6.	Green Armitage	30
7.	Babcock	50
8.	Curved long arteries	150

9.	Curved small arteries	150
10.	Allis forcep long	100
11.	Dilator set	2 sets
12.	Ovum forcep small	20
13.	Ovum forcep (medium)	20
14.	Curettes (small)	20
15.	Curettes (medium)	50
16.	Baby receiving tray	30
17.	Cusco's speculum	50
18.	Abdominal hystetrectomy clamps	50
19.	Dressing drum with cover (big size)	50
20.	Dressing drum with cover (medium size)	50

14- **SPECIFICATION C-ARM MACHINE (FOR CARDIAC PACING)**

X-RAY GENERATOR

1. The generator should be high frequency with microprocessor controlled minimum 40kHz or more.
2. Power of generator should be 2.2 KW or more
3. Inherent filtration at least 1mm al eq.

X-RAY TUBE

1. Anode type - stationery or rotating
2. It should have focal spot of min0.6mm or lesser
3. Heat storage capacity of Anode/ tube housing should be minimum 2,70,000 Heat units or more or maximum anode heat content should be 48 KHU or more suitable for prolonged interventional procedures.
4. Cooling methods for heat dissipation (preferably active) should be available.

COLLIMATOR SYSTEM

1. Collimator rotation $\pm$ 90 ^{0} or more
2. Iris & slot collimation
3. Virtual collimation without radiation

C-ARM

1. Motor driven vertical travel should be minimum 40cm
2. Horizontal travel should be minimum 20cm
3. Orbital Rotation should be minimum 135 ^{0}
4. Angulation : $\pm$ 180 ^{0}
5. Swiveling (panning) : $\pm$ 10 ^{0}
6. C-Arm vertical free space: 75cm or more
7. C-Arm depth: more than 61cm
8. Touch screen user interface on the C-Arm should be provided.

IMAGE INTENSIFIER

1. 9" or more image intensifier
2. Camera resolution 1k x1k matrix or better.

OPERATING VALUES
FLUOROSCOPY :

1. kV Range: 100 kV or more
2. mA RANGE: 0.2 TO 8mA or more
3. Pulse rate: upto 12 pulses per second or more

RADIOGRAPHY

1. 40-110 KV or more
2. Upto 20mA or more

MONITORS & MONITOR CART:

1. Monitors should be of High resolution & high brightness twin flat screen LCD Monitors
2. Screen size: 19" or more
3. Resolution: 1280x1024 pixels
4. Contrast ratio 300:1 or more
5. Viewing angle (horizontal and vertical) : 170 ^{0}
6. CD/DVD reader/ writer or USB storage for archiving/ transfer of images in DICOM format

IMAGE ACQUISITION:

1. Automatic exposure control
2. Anatomical programs to determine ideal noise reduction, etc. specific to anatomy should be possible
3. Cine should be possible upto 12.5 FPS or more
4. DSA should be possible upto 12.5 FPS or more
5. Last image hold, fluoro loop /save
6. Multifunctional footswitch should be provided
7. System should be DICOM facility for sending images to PACS/ RIS/ HIS

The following real-time and post processing & digital processing functions should be possible:

1. Edge enhancement filer.
2. Zoom 3 levels (radiation post processing)
3. Windowing
4. Digital image rotation and reversal should be possible without radiation
5. Grayscale inversion
6. Digital shutters (image cropping)
7. Digital measurement functions
8. Annotation
9. Multi image display with patient data should be possible
10. DSA package (real time) should be available with remasking capability, road mapping, landmarking, pixel shift
11. Digital memory with storage capacity of at least 20,000 Images or more.

ACCESSORIES :-

1. Four light weight Lead Apron (0.5mm Pb).
2. Thyroid shield (4 no.) gonad shield (4 no.)
3. Trolley with suitable integrated UPS (APC) to give at least 30 minutes backup and suitable voltage stabilizer should be provided.
4. Sterilizable cover for C Arm, x-ray tube and Image intensifier – 2 nos. Disposable covers for C-Arm and flat panel detector -50 nos.

OTHERS :

1. Quoted model must be US-FDA approved and European CE certified.
2. The C-Arm unit should be AERB approved. AERB certificate should be provided.
3. At least 2 components from X-Ray tube, Generator, mechanical components should be from the same manufacturer.
4. The quoted model should already be installed in the India and in usage for at least 6 months to one year. Bidders must provide a list of institutions of repute in India (preferably government institute) where the quoted units have been installed.
5. The vendor should provide a letter of satisfaction from the reputed institutions where the quoted models have been installed.
6. The vendor should preferably have a full fledged and established service centre in Lucknow. The address of the service center with number of the service engineer locally based in Lucknow, U.P. should be provided.
7. Five years comprehensive unconditional onsite warranty should be provided for the entire unit including X-Ray tube, image intensifier, all quoted items, including accessories.
8. Also quote for CMC (all items as in above warranty clause) for 5 years after warranty period.
9. Up time guarantee 95% should be provided .
10. Catalogue & product datasheet of all items including X-Ray tube, image intensifier should be attached.

15- **Technical specification TMT Machine**

ECG MACHINE

Acquisition	Simultaneous 12 leads, 14 bits
Sampling rate	3600 samples/sec
Input Impedance	>100M ohms
Time Constant	3. 2 sec
CMRR	>100db
Patient Leakage	<10µ
Frequency Response	• 05Hz to 100 Hz
Digital Filters	50hz, muscle tremor 20, 35 or more
Base line correction	DSP technique to remove ECG wandering
Sweep Speed	5,12.5,25, 50 and 100 mm/sec
Sensitivity	• 25, 0.5, 1.0, 2.0 and 4.0 cm/ mV

ECG Computations

Calculated Parameters	ST-Level, ST-Slope, HR, Mets, Axis etc.
Fiducial Points	Auto/Manual
Enlarges median Lead	Configurable
Median update Interval	10 second
HR Computation	6 beats, updated every second

Protocol

Standard	Bruce, Modified Bruce, Balke, Ellestad, Naughton
Custom	Unlimited customized protocols can be created

Display

Display Resolution	1024x 768 pixels
ECG Display format	4 leads + medians+ enlarge median, 6x2 leads + medians, 12 leads + medians+ enlarge median 3x4 + R, 12 leads (3.2/10 sec)
Data Display	HR, Target HR, BP, stage time, test time, speed time, grade, METS, Protocol name, protocol stage, STL, STS and patient information etc.
Full Disclosure	Beat to Beat ECG record
Event marker	Yes

Printing

Printer	Laser or Deskjet
Paper size	A4 size

Reports

Online	12 L+ Medians, Linked Medians 3x4+R, 12 Linked Medians + Enlarge Median, summary
Auto report	Online reports, 6L frontal, 6L Precordial, 12L Rhythm, Average, 12L+ comparison, trends, ST tables, comparison
Offline	All of the above, linked medians summary, Total Disclosure

Connectivity

Export/communication	PDF, TCP/IP, DICOM (optional)
Network Interface	File storage, Distribution and E-mail

Treadmill

Speed	• 1 t0 9.3 mph
Evaluation	0 to 22
Belt drive motor power	2HP AC Motor
Conveyer Belt	Anti Skid
Safety	Optical isolation, emergency stop
Communication	RS 232
User capacity	250 kg
Walking area	1520x510mm
Dimension	2180x815x1165mm (LxWxH)
Weight	145 kg

Operating Conditions

Operating temperature	10 ^{0}C to 50 ^{0}C
Storage temperature	0 ^{0}C to 40 ^{0}C
Relative humidity	15 to 90% non condensing
Cart dimension	1070(H) x 780 (W) x 435(D) mm
Standard kit	Treadmill, Acquisition Box, Patient Cable, A4 size paper set, Disposable Electrodes, User Manual, Software CD and Trolley
Options	PC Workstation, Printer, UPS for PC
Minimum Computer	OS: Windows 7 Professional 32bit/ 64bit, Processor: core 2Duo 2.5GHz or higher, RAM:2GB or higher, 500GB harddisk or higher, CD/DVD optical Drive, Screen Resolution 1024x768 or higher
Remote Service Program	Online technical support is available from RMS Head office, customer has to provide internet connection.

16- TECHNICAL SPECIFICATION OF PHOTOCOPIER AND SCANNER

1. System overview
2. System memory: 4GB minimum
3. System hard disk: 250 GB Standard minimum
4. Interface: Ethernet, USB 2.0
5. Networkprotocols: TCP/IP (IPv4/IPv6)
6. Frame types: Ethernet 802.2, Ethernet 802.3, Ethernet II, Ethernet SNAP
7. Dual scan document feeder: up to 100 originals (80gsm, A4)
8. Printable paper size scanning/ copying: up to A3 printing: up to A3
9. Printable paper weight: 52-300gsm
10. Paper input capacity: 1,150 sheets/ max: 6,650 sheets
11. Tray 1-500 sheets / A5-A3/52-256 gsm
12. Tray 2- 500 sheets/ A5-SRA3/52-256gsm
13. Manual bypass: 150 sheets/A6/Custom paper sizes/ 50-300gsm
14. Automatic duplexing: A5-SRA3/52-256gsm

15.Power consumption: 240V/60Hz, less than 0.5kW (system)
16.System dimensions: 458/558: 615x755x921mm 308/368: 615x725x779mm

COPIER SPECIFICATION

1. Copying process electrostatic laser copy
2. Toner system: Polymerized toner
3. Print speed (A4) : up to 55 ppm (BW)
4. Copy resolution: 600x600dpi
5. Multi copy 1-9,999
6. Original format up to A3
7. Magnification 25-400% IN 0.1% steps, auto zooming
8. Copy functions: electronic sorting, multi-job, adjustment (contrast, sharpness, image density), proof copy, interrupt mode, colour mode, separate scan, sort/ group, combination, original selection, ID card copy, 2-in-1, 4-in-1

SCANNER SPECIFICATIONS

1. Scanner speed: B & W up to 160 ipm
2. Scan resolution: Max 600x600dpi
3. Scan modes: Scan to email, scan to SMB, Scan to FTP, Scan to Box, Scan to USB, Scan to webDAV, Scan to DPWS, Network TWAIN scan
4. File formats: JPEG, TIFF, PDF, PDF/A 1a and 1b (optional), compact PDF, encrypted PDF and searchable PDF (optional), XPS, Compact XPS, PPTX and searchable PPTX (optional), searchable DOCX / XLSX (optional)
5. Scan destinations 2,100 (shared with fax)

Properly embalmed

36. EMBALMING MACHINE

1. Embalming machine with its specialized noise less pump, provide suction and delivery at optimum pressure with a fluid delivery rate of 10 litres/ hr with salient features such as SS Inner tank to store fluid capacity 10-15 liters.
2. Should be fitted with rotary compressor suitable for embalming the cadaver with stellate and required needle
3. Should be mounted on castors for easy movement and grips provided for lifting should have IV stand fixed for mounting cannula tubing and mains cable with mains on and in use indication.
4. Should be complete stainless steel outer body and cadaverous injector for injecting formaldehyde solution in Cadaverous at much higher speed than normal gravity process.
5. Unit should be fully covered and mounted on a portable trolley having four castor wheels for easy movement.
6. Unit should consist of one air compressor fitted with 1/2hp motor which is connected with a stainless steel tank of 10 liters capacity meant for storing and Injecting the solution.

7. Tank should be fitted with a safety valve, pressure gauge and rubber tubing having provision for injection and supplied complete with electric cord, plug and suitable to work on 220V, 1ph 50hz, AC supply.
8. Manufacturer should be ISO13485 certified.

37. LAPTOP

1. CPU: Core i5 chip or more for the best balance of performance & price.
2. RAM: Roll with 8 GB or more
3. Storage: 256 GB SS D or better
4. Screen: Atleast 1920x1080 resolution
5. Battery: long battery life (at least 8 hour)
6. Windows version latest

17- TECHNICAL SPECIFICATION FOR OPTICAL BIOMETER

1. It should have swept source technology
2. It should be CE certified
3. It should measure axial length at least 14mm to 36mm
4. It should measure corneal radius at least from 5mm to 10mm
5. It should measure the AC depth at least from 2mm to 6mm
6. It should measure corneal thickness at least from 0.2mm to 1.2mm
7. It should measure corneal white to white a least 8mm to 16mm
8. It should have SRK-2, SRK-T, Holladay, Hoffer-Q and Haigis formula
9. It should have optimization of A-constant according to IOL need
10. It should have report printer
11. It should be compatible to Indian Electrical system
12. It should measure lens thickness at least 2mm to 6mm
13. It should come with two years of warranty
14. It should come with 5 years of post warranty CAMC
15. It should have a satisfactory prior installation in India.

18- TECHNICAL SPECIFICATION OF MANIKIN

1. It should be full body manikin for CPR training.
2. It should have inbuilt integrated mechanical monitoring instrument as well as digital sensors which gives instant feedback on ventilation volume, stomach inflation, chest compression depth and wrong hand position.
3. It should have adjustable stiffness of the chest which allow students to train on different body builds
4. Should have airways open only when head is correctly hyperextended.
5. Chest rise should be with correct ventilations
6. Should activate carotid pulse during correct chest compressions
7. Manikin should have training mat integrated in the carrying bag with 5 face piece and 100 hygiene bags.
8. It should have intra venous training Arm with Intra Muscular with Deltoid Muscles.
9. With replaceable skin and veins, idle for training the insertion of cannulas and catheters, the infusion of fluids and the injection of medication, blood sampling and pulse measurement.

10. Skin & veins should be made of natural latex, which features hole closure after penetration and it should have valve system to avoid air pockets
11. It should have movable wrist and rotating arm and indicator panel that should represents each blood vessel, and should be visible for immediate visual feedback.
12. It should be supplied with 5 sets of skins and veins and carrying case.
13. Replaceable skin and veins prices should also be quoted separately.
14. IM Injection mannequins with replicable skins
15. Skin & veins should be made of natural latex.
16. IM & Sub Q simulator fits on the area of the deltoid muscle as well as the vastus lateral is, rectus femoris, ventrogluteal, and dorsogluteal areas for realism.
17. Manikin and all accessories should have ISO 13485 certified.

19- TECHNICAL SPECIFICATIONS FOR HIGH END COLOUR DOPPLER ULTRASOUND SYSTEM

This ultrasound machine should be a state of the art high end Colour Doppler System with full digital technology for the applications of whole body to include full cardiac and peripheral vascular applications, paediatrics, small parts and intracavitary applications.

1. **Description of Function**

   COLOUR DOPPLER SYSTEM WITH ADVANCED 2D FACILITY.

2. **Operational Requirements:**

   2.1 Latest generation Electronic Phased array Doppler system with Minimum 1200 Electronic independent channels, and desirably 4000 Electronic independent channels. System should be DICOM ready and capable of being interfaced with HIS/RIS/PACS.

   2.2 Should be field up gradable to next generation system on site. All new software should be upgraded free of cost for at least 3 years

2.3 Frequency compounding or better technology for better resolution and penetration.

3. **Technical Specifications**

   3.1 Latest generation Electronic Phased array Colour Doppler system with Minimum 1200 Electronic independent channels.

3.2 256 gray shades for sharp contrast resolutions

   3.3 Adult Trans thoracic Cardiac Probe to be supplied which should be latest generation wide band transducers.

   3.4 Harmonic Imaging- System should have Harmonics on all the probes following modes in harmonic with separate setting for:

3.5 Trapezoidal Image on B / Colour.

3.6 Automated Gain control for additional level of flexibility to image quality control.

3.7 Real time high frequency 2D for higher resolution.

   3.8 Advanced 3D imaging package with multiplanar views & surface and volume rendering tools.

3.9 Frame rate should be 1000 FPS or more

   3.10 High-definition acoustic zoom for enlarging sections of 2D and Colour flow images with more acoustic information for greater clarity and detail while maintaining an optimal frame rate.

   3.11 Modes –2D, M-Mode, Steerable PW/CW Doppler, Colour Doppler, and High Definition Colour flow with Colour power angio imaging and full Colour Doppler

echocardiography system.2D Duplex, and Colour Doppler, colour Power Angio, Directional power angio and colour panoraimic .

3.12 Monitor should be 15" or more, high-resolution Colour Monitor.
Tilt and Swivel monitor should be able to view in all angles and all light conditions.

3.13 Colour Flow Imaging for

a) Increased lateral & spatial resolution.

b) Detection of even subtle areas of turbulence, displaying a more physiological blood flow appearance without loss of frame rate.

c) Colour flow with capability of automatically picking up colour flow as a function of focal depth

3.14 Tissue Colourization (B-Colour) for improved contrast resolution

3.15 Application software for Adult, Pediatric, Fetal and Peripheral Vascular (All application package should be built into the system)

3.16 Cine loop memory- more than 1000 frames.

a. High Frame rate review for better clarity of playback images study in slow motion.

b. Quad loop with memory for pre and post image comparison of any procedure.

c. Memory- 256 frames or more in quad loop. M Mode & Doppler Scroll Memory-40 seconds or more.

d. Frame grabber facility for post analysis.

3.17 Various maps for pre and post processing.

3.18 ECG facility.

3.19 User defined system and application presets for multi-user department.

3.20 Minimum 4.8 GB optical disc drive / 80 GB hard drive for image storage and retrieval.
(Standard with system)

3.21 Three or more transducer ports.

3.22 Facility for high definition digital acquisition, review and editing of complete patient studies.

3.23 Facility of Real Time perfusion studies with contrast (micro bubbles) for liver applications.

3.24 PC based Peripheral system comprising of dedicated computer at least 100 GB storage space (Hard disc) with 1 GB RAM or more with a Microprocessor speed of more than 3.00 GHz, frame grabber incorporated (All Software Inclusive) interfaced with the echocardiography machine with DVD writer and a high quality Colour Laser printer. CD/DVD produced should be playable on any system.

3.25 Anatomical M mode, M-Mode.

4. System Configuration Accessories, spares and consumables

4.1 Colour Doppler System with all application packages for serial studies with High frame rate review. Harmonic imaging capability in all modes. Digital Storage and Retrieval

4.2 Phased Array Transducer with frequency range of 2-4 MHz for adult cardiac application.

4.3 B/W thermal printer of latest model

4.4 Colour laser printer for direct printing of images from the system (with CE or FDA mark) –min dpi of 1200

4.5 DVD/CD Recorder with DICOM media transfer

5. Environmental factors

5.1 The unit shall be capable of operating continuously in ambient temperature of 30 deg C and relative humidity of 80%.

5.2 Pre Requisites should be clearly spelt out in terms of room requirements.

6. Power Supply

6.1 Power input to be 220-240VAC, 50Hz fitted with Indian plug

6.2 Resettable overcurrent breaker shall be fitted for protection

6.3 Suitable Servo controlled Stabilizer/CVT

6.4 Online UPS of suitable rating with voltage regulation and spike protection for 30 minutes back up.

7. Standards, Safety and Training

7.1 Should be FDA or CE approved product

7.2 Electrical safety conforms to standards for electrical safety IEC-60601 / IS-13450

7.3 The product shall comply to IEC 60601-2-37 ed1: Medical Electrical Equipment - Part 2-37: Particular Requirements for the Safety of Ultrasonic Medical Diagnostic and Monitoring Equipment

7.4 Type of protection against electric shocks -- Class I Degree of protection against electric shocks for ultrasound probes Type "BF" For ECG electrodes Type 'CF"

7.5 Manufacturer/Supplier should have ISO certification for quality standards.

8. Documentation

8.1 User manual in English.

8.2 Service manual in English.

8.3 List of important spare parts and accessories with their part number and costing available in stock with the supplier.

9. Maintainance and Serviceability

9.1 Remote Service Network Connectivity

20- SPECIFICATIONS OF 800 MA HIGH FREQUENCY X-RAY UNIT

High frequency X-Ray machine suitable for general radiography.

X-RAY GENERATOR:

- High Frequency X-Ray Generator having frequency of 40 KHz or more should be provided.
- Power output of generator should be 65KW.
- Radiographic KV Range should be 40 to 150KV in 1KV/Step.
- mA Range (Rad.): 800mA
- Exposure time (Rad.):1ms to 3Sec.
- mAs Range (Rad.): 200mAs or more.

CONTROL:

A very compact, Soft Feather Touch Control Panel having following functions & indications should be provided. The panel can be supplied in Floor Mount with Spill Proof design.

Following features should be available on the control panel.

- Machine ON/OFF Switch.
- Digital Display of KV &mAs.
- KV &mAs increase and decrease switches.
- Tube focal spot selection Switch.
- Ready and X-Ray on switch with Indicators
- Bucky Selection Switch.
- Self-diagnostic Programme with Indicators for Earth fault error, KV error, filament error & Tube's Thermal Overload.

- Anatomical Programming Radiography (i.e. APR) should have preprogrammed parameters of human Anatomy Up to 216 programs, which helps the user to select exposure parameters based on body part, examination view and size of the patient.

A dual action hand switch with retractable cord should be provided for Radiation Protection of Operator.

X-RAY TUBE:

- One no. Dual focus Rotating Anode X-Ray tube thermally protected.
- Anode heat storage capacity of the Tube should be more than 250KHU
- One Pair of 08 meters H.V. Cable.
- One No. Multileaf Collimator with auto shut off facility should be provided.

TUBE STAND:

- Floor to Ceiling Stand with Counter Balanced Tube Head (Rotatable ± 180 Degree), 360 Degree Rotatable; mounted on Floor Ceiling Rails for convenient movements should be provided.

TABLE:

Table should be with 4-way movement of the table top i.e. x axis and y axis. The Table should consist of consist of motorized reciprocating bucky with Grid of size 17 ¼" x 18 7/8" having Grid Ratio of 8:1 – 85 lines/inch & a stainless steel Cassette Tray. The Bucky should travel the entire length of the table and should be locked at any desired position by an Electromagnetic lock.

VERTICAL BUCKY STAND:

- Vertical Bucky Stand with oscillating Grid of Ratio 8:1, 85 lines should be provided.
- The Bucky should moves up & down & is equipped with a stainless steel cassette tray.
- The stand should be floor-mounted type & can accommodate cassettes up to 14" X 17". The Bucky should be tilted in 6 steps of 15 degree Angle each for various Radiographs.

POWER REQUIREMENT:

The unit should be operable on 3 Phase, 440Volts AC 50Hz with line resist less than 0.4 Ohms. Line Regulation ± 10%.

OTHER REQUIREMENTS:

T. he company should be ISO-9001: 2008, ISO-13485: 2012 certified.
U. nit should be approved by B.I.S. (Bureau of Indian Standards) for Mechanical & Electrical Safety.
V. he unit should be approved by AERB.

W. he company should have a local Service center.
X. he company should have proven record of accomplishment in Govt. sector.
Y. he unit should be European CE Certified from notified body.

21- TECHNICAL SPECIFICATION OF FULL FIELD DIGITAL MAMMOGRAPHY UNIT

GENERAL FEATURES

Product Description
Full Field Digital Mammography Unit
Operational Requirement:
1. Full field digital mammography system capable of producing high resolution images at the lowest possible radiation dose.
2. All technical specifications must be supported with technical literature and product data sheet.

Technical Specification X-ray Generator::
1.High frequency generator of at least 5 kW.
2. kV range: at least 23-35 kV in steps of 1 kV
3. mAs range: 3-400 mAs or more.

X-ray Tube:
1. Mammography X-ray tube unit with rotating-anode tube (tungsten and/or molybdenum) with large focal spot of 0.3 mm and small focal spot of 0.1 mm size.
2. Heat storage capacity (tube unit) 150 KHU or more.
3. Anode heat dissipation (KHU/min) > 40
4. Collimation for both sizes

Gantry Assembly

1. Fully motorized vertical movement and isocentric rotation
2. Movement locks - Electromechanical/Electromagnetic
3. Rotation angle (Minimum) -165° to +180°
4. Vertical Travel (cm) ≥ 69
5. Source to image receptor distance (cm)≥ 65
6. Hand Switch
7. Compression System - Manual, Automatic
8. Display of compression force
9. Force (Newton)≥ 195
10. Automatic decompression after exposure
11. Magnification 1.8x

DIGITAL FLAT PANEL DETECTOR

1. Detector Type - Direct conversion type
2. Detector Size - 24x30 cm (± 1 cm)
3. Pixel size - 100 micron or less
4. Image Depth≥ 13 Bit

5. DQE of detecter system≥ 50 % at 1 LP/mm
6. Should specify image matrix (in pixel) and image size (in MB)

GENERIC

Grid Ratio - 5:1

1. Power Requirements - Single phase 220-240 Volt, 50 Hz (AC Supply)

ACQUISITION WORKSTATION

1. Acquisition workstation with all necessary software should be provided
2. Medical Grade Diagnostic monitor for Acquisition Workstation - Color
3. Monitor Type for Acquisition Workstation - LED
4. Monitor Size for Acquisition Workstation ≥ 19 inch
5. Monitor resolution for Acquisition Workstation - 3 megapixel or more
6. Operating System for Acquisition Workstation - Windows
7. Processor for Acquisition Workstation - Intel Xenon E5
8. RAM Size (GB) for Acquisition Workstation ≥ 8 gigabyte
9. Minimum Storage Capacity for Acquisition Workstation - 8000 images
10. Integrated CD/DVD writing facility
11. USB Connectivity
12. Automatic selection of KV, mAs, best anode and filter combination and the lowest dose for the individual breast characteristic
13. Parameters Displayed - KV, mAs, Focal spot selected, mode detected
14. Anatomical programme radiography (APR) Facility

REPORTING WORKSTATION

1. Reporting workstation with all necessary software to be provided
2. Number of Medical Grade monitor in reporting workstation - 2
3. Medical Grade monitor for reporting workstation - Color
4. Each Monitor Type for reporting workstation - LED
5. Each Monitor Size for reporting workstation ≥ 19 inch
6. Each Monitor resolution for reporting workstation - 5 megapixel or more
7. Operating System for reporting workstation - Windows
8. Processor for reporting workstation - i3 or better
9. RAM Size (GB) for reporting workstation ≥ 8 gigabyte
10. Minimum Storage Capacity for reporting workstation - 10000 images
11. Integrated DVD ROM drive
12. Dedicated mammography workflow key pad to be provided
13. Multi modality viewer to integrate with PACS and to view DICOM images from other modalities
14. Customizable workflow, image layout and image orientation
15. Capable of sending, receiving and printing DICOM images
16. User selectable auto contrast and brightness modes
17. Networking should follow TCP/IP Protocol

IMAGE DOCUMENTATION AND TRANSFER

1. It should be possible to transfer images to USB drive in DICOM and PC format from Acquisition workstation and Reporting workstation

STANDARD ACCESSORIES

1. Dual Foot Pedals (2Nos)
2. Radiation Shield with 0 point 3 mm lead equivalent (1 Nos)
3. Removable Patient Face Shield (1 Nos)
4. Large paddle (1 Nos)
5. Size of large paddle - 24 x 31 cm (± 1 cm)
6. Sliding paddle (1 Nos)
7. Size of sliding paddle - 19 x 23 cm (± 1 cm)
8. Spot sliding or sliding compression paddle (1 Nos)
9. LED X-ray film viewer (3 Nos)
10. Mammography compatible Dry film camera (1 Nos) with minimum 500 DPI or more with 500 films
11. Quality control tool kit (1 Nos)
12. Online UPS of suitable rating with atleast 30 minutes of power back up for entire system to be provided

CERTIFICATIONS & REPORTS

1. Availability of test report/QA and QC report
2. Product certification - US-FDA/EU-CE/BIS
3. The system should be AERB Type Approved
4. Certification, performance and safety standards specific to the device - IEC 60601-2-45 or equivalent BIS
5. Submission of copies of all the certifications and test reports to the buyer along with supplies

INSTALLATION & TRAINING

1. Supplier to perform installation, commissioning, safety and operation checks before handover
2. Training of users in machine operation, trouble shooting aspects and basic maintenance shall be provided

WARRANTY & MAINTENANCE

1. Warranty in years (Option of comprehensive warranty is available through bidding only, which if opted will supersede normal warranty in the catalogue) - 5
2. All user,technical, digital and maintenance manual in English detailing complete maintaining schedule with routine maintenance should be provided
3. Contact details of manufacturer, supplier and local service agent to be provided

4. The supplier shall provide regular calibration and QA during the warranty and CMC period
5. System should have facility to be upgraded and supplier must ensure free software update during warranty period
6. In scope of Supplier to be registered in eLORA of quoted Model for Buyer

Optional (Depending on users requirement)

1. Provision of Digital Breast Tomosynthesis Facility/ Upgradable to Tomo synthesis
2. Provision of Digital Stereotactic Breast Biopsy Facility/ Upgradable to digital stereotactic breast biopsy

22- BASIC MAMMOGRAPHY USED THE LOW ENERGY X-RAY TO EXAMINE THE HUMAN BREAST WHICH IS USED AS A DIAGNOSTIC AND SCREENING TOOL

X-RAY GENERATOR

- High Frequency 50KHz X-Ray Generator should be provided
- Power of generator should be more than 3 KW
- Maximum mA output should be more than 60mA
- KV range should be 22 to 35 KV or more in steps of increment of 0.5 KV each
- mAs Range for large filament should be from 1 mAs to 600 mAs or more.
- 1 no. High Voltage cable should be provided.

X-RAY TUBE

- Rotating Anode X-Ray Tube having dual focus should be provided
- Focal Spots:

  Small Focus = 0.1
  Large Focus = 0.3

COLLIMATOR:

- Light Beam automatic collimator with Auto shut off timer
- Cone for radiation Protection.

CONTROL PANEL

- Soft feather touch panel with LCD display for parameters, mode selected & error messages should be provided.

OPERATING MODE	• APR Modes for automatic selection of Exposure Parameters (KV & mAS) as per Large, Medium & small breast sizes with manual override to select parameters manually. • AEC one point technique for automatic selection of exposure

	parameters.
DIGITAL DISPLAY	Following parameter displayed on LCD: • KV • mAs • Interlocks indicating the fault in the machine • Focal Spot Selected
SWITCHES	• Machine ON & OFF Switch • Focal Spot Selection Switch • KV Selection Switch • mAS Selection Switch • Ready & Exposure Switches on Panel with indicators • Hand Switch with Retractable Cord for initiation of exposure.

BUCKY :

- Table Top Size & Material: 24cm x 30cm with Carbon fiber table top
- Cassette Interlock: "Change exposed cassette" Interlock avoid 2 nd exposure on exposed cassette
- Compatible cassette size: Conventional & any type of CR Cassettes of 18 x24CM and 24x30CM Size
- Magnification device: 1.8x

COMPRESSION
MAIN FEATURES :

- Automatic release of compression at the end of each Exposure.
- Automatic release of compression if there is Power Failure.
- Step movement of compression Paddle after 1.5 kg
- Automatic compression locking after maximum compression of compression paddle.

DISPLAY

- Digital Display of compression Force (In Kg)
- Digital display of compression Breast Thickness (CBT)
- Compression force upto 20KG
- Movement of compression paddle up to 200 + 10mm
- Compression Paddles: Normal Size 24x30 CM, Spot Paddle (Square)
- Foot Switch: 1set of foot switches for compression up & Down Movements.

STAND ASSEMBLY

- A Compact Stand on which C-Arm containing X-Ray Tube & Bucky Assembly is mounted should be provided.
- Vertical movement (Motor operated) should be 500mm or more

- Rotation: +90 degree -90 degree or more
- Source to Image distance (SID) should be 600mm or more.

PROTECTIVE BARRIER
Transparent Lead Glass Screen for Operator Protection
POWER SUPPLY REQUIREMENT

- Single phase, 230 Volts ± 10%, AC, 50Hz, 15 Amps with Independent earthing on the wall socket.

ACCESSORIES

- 18cmx24cm cassette frame for 24cm x30cm Bucky
- Magnification device 1.8X
- Suitable capacity UPS should be supplied

OTHER REQUIREMENTS :

- The company should be EN-ISO certified and unit should be European CE Certified from Notified Body no.
- The unit should be approved by AERB
- The company should have a local service center
- The company should have proven track record in Govt. Sector.

23- TECHNICAL SPECIFICATION OF REVERSE OSMOSIS SYSTEM

1. RO Water Production Capacity 1000 ltr/ hr
2. Facility to rinse, disinfect, clean the RO
3. Facility for online monitoring:

- Raw Water conductivity
- Pure water conductivity
- Rejection flow rate

4. Microprocessor based control unit
5. RO Modules have 3 phase multistage centrifugal pump with auto over head cut off
6. RO module should have facility to indicate:

- Low flow reject alarm
- High conductivity alarm
- High conductivity warning
- Low level Inlet pressure alarm
- Motor protect alarm

7. Facility to connect indication lamp (to monitor machine operation) and alarm lamp and buzzer at the HD unit.
8. Easy addition / up gradation of membrane for higher water output capacity (without change of pump capacity)
9. RO Membrane material: Spiral wound, modified polyamide

10. Operating Voltage 3 Phase, 50 Hz, AC 380-415 V
11. Raw water pump (with auto cut off) -2 nos. (with one stand by)
12. Filters: Sand Filter 01 unit, Particle Filter, Iron Filters
13. Activated carbon filter 02 units
14. Antiscalant dosing pump
15. Water softner 01 unit
16. Softened water storage tank 1 unit
17. Softened water feedpump- 2 units (with 1 standby)
18. UV Lamp
19. Storage tank 3 unit minimum capacity 2000 ltrs/ hr
20. RO Distribution pump- 2 sets
21. Ultra filtration system – minimum capacity 1500 ltr/ hr
22. RO Skid- 1 unit (pump and motor- 2 unit with 1 stand by)
23. Distribution pipeline made of CPVC
24. Automatic and programmable chemical disinfection / decalcification facility using commonly available disinfection / decalcification chemicals.
25. Output water to AAMI Standards.

24- **Specification for ClincialBinocular Microscope**

Stand and Body	Ergonomic Design and Aluminium die cast body for ease of use and longevity, the features robust mechanics combined with improved optical performance for the student level.	
Optics	Infinity corrected optics.	
Eypieces	Wide Field WF10X/20mm eyepieces.	
Objectives	Plan achromatic objectives	
	Objectives	NA
	4x	1. 10
	10x	• 25
	40x (Spring Loaded)	• 65
	100x oil (Spring Loaded)	• 25
	All optics should be antifungus treated.	
Observation tube	Ergonomic Binocular Head, 45 degree inclined tube for 360 degree rotating comfortable viewing, IPD:55-75mm.	
Nosepiece	Revolving, interchangeable Quadruple nosepiece to hold 4 objectives.	
Condenser	N.A. 1.25 Abbe condenser, Rack & Pinion focusable.	
Focusing	Co-axial coarse & fine focusing control on both side. It should have upper limit focus stopper preventing contact between objective and specimen in higher magnification.	
Stage	Built-in mechanical stage with coaxial controls, stage size: 125mmx115mm, stage movement:70mmx20mm with handle on right side.	
Illumination	3W LED with intensity control with 4-6 hours battery backup.	
Power	Universal Voltage Power Supply 110V ~ 240V.	

Antifungal	Anti mould treatment
Warranty	Five year warranty should include LED illuminator
System should be Europeon CE and /or USFDA approved.	

25- **Specification for Advanced Clinical Binocular Microscope**

- Infinity corrected optics.
- Built-in Koehler illumination (6V, 30W halogen bulb) or equivalent LED light source with field diaphragm.
- Focus: Fine 0.1 mm to coarse 1.5mm per rotation, Torque adjustment for coarse focus.
- Eyepiece tube: Wide field (FN 22)
- Ergonomic Tilting binocular, with adjustable interpupillary distance.
- Nosepiece: Revolving, interchangeable quintuple.
- Eyepiece lens : 10X with diopter adjustment (F.O.V 22 mm)
- Objective lens : Plan achromat 4X NA 0.10, 10X NA 0.25, 20X, NA 0.40, 40X NA 0.65, 100Xoil NA 1.25
- Condenser : Compatible Abbe for 4X-100X
- Stage: Rectangular with stay in position stag handle on right side.
- Anti mould treatment
- 5 years warranty including LED light source
- System should be Europeon CE and /or USFDA approved.

26- **TECHNICAL SPECIFICATIONS OF UPPER GI ENDOSCOPE (GASTROSCOPE)**
VIDEO PROCESSOR

1. Should be compatible with Analog, HD-SDI and DVI output & 16:9 & 16:10 output for a HDTV monitor should be available.
2. Should contain the long-life LED source equivalent to minimum 300 watt Xenon lamp with lamp life of at least 6000 hours or Xenon lamp of equivalent wattage and life (may include extra bulb for ensuring life of Xenon lamp).
3. Equipped with high resolution HDTV Imaging capacity.
4. Compact, lightweight (10-15 kg) and ergonomically designed.
5. Portable Memory & USB Slot for image recording.
6. Automatic IRIS control & automatic white balance equipped with memory back up for setting & Lithium battery.
7. Should have pre freeze function for image stabilization.

VIDEO GASTROSCOPE

1. Lighter and possess standard definition/HD resolution image quality.
2. Fully immerssible in disinfectant solution with cap.
3. Four or more no. of remote control switches on control body.
4. Compatible with leakage testing device with its airflow and pressure regulation through light source air pump or separately.
5. Scope features:

Field of view : 140° or more

Direction of view	:	0 degree forward viewing
Depth of Field	:	2 to 100 mm or better
Distal end outer diameter	:	9-10 mm
Insertion tube outer diameter	:	9-10 mm
Tip Bending Range	:	Up 210°, down 90°, Lt 100° & right 100°
Working length	:	1030 mm or more
Channel inner diameter	:	2.8 mm or more
Minimum Visible distance of Instrument Used thru channel	:	3mm of closer from distal end

STANDARD ACCESSORIES

White cap holder
Foot Holder
Scope cable holder
Keyboard
Portable memory (2GB)
Keyboard cover
Water container
Operation Manual
White balance cap
Cleaning Brushes

NOTE:

1. Manufacture ergonomic movable Trolley of same make should be included.
2. Monitor HD Medical Grade 21 inch or more of same make
3. Compatible Biopsy forceps (Three).
4. One foreign body forceps (Dormia Basket or three pronged grasper).
5. UPS-5 KVA or better
6. Endoscope Hangers -02
7. Air leakage Tester
8. Provision of Loaner Endoscope with in 72 hrs. of detection of any major breakthrough defect in endoscope system.

27- **TECHNICAL SPECIFICATIONS OF AUTOMATED IDENTIFICATION AND DRUG SENSITIVITY SYSTEM**

- Identification and sensitivity system should be totally automated for sample standardization, loading, incubating and reading the results.
- It should be used for identification and antimicrobial susceptibility of clinically significant bacteria and yeast.
- It should enhance workflow, reduces hands-on time & enables rapid reporting.
- It should have the qualities like simple test setup, same day results, minimal reagent preparation, optimized safety with closed disposable & reduced handling, traceability with pre-applied barcode, easy-to-access results with multiple filters, automatic validation & transfer of preliminary results.
- It should have different panels for identification and antimicrobial susceptibility testing.

- It should have different identification panels for Gram-negative bacteria, for Gram-positive bacteria, and for yeasts and yeast-like organisms.
- Detection principle of the system for identification of the organism should uses a fluorogenic methodology by doing optical reading of the colorimetric reagent cards.
- Cards should have different wells containing individual test substrate to measure various metabolic activities such as acidification, alkalinization, enzyme hydrolysis, and growth in the presence of inhibitory substances.
- Cards should have bar codes that contain information on product type, lot number, expiration date, and a unique identifier that can be linked to the sample either before or after loading the card onto the system.
- Detection principle of the system for antimicrobial susceptibility testing should uses turbidimetric method based on the broth microdilution minimum inhibitory concentration technique using a card that a barcodes with information on card type, expiration date, lot number.
- Capacity of system should be at least 60 positions for ID/AST.
- There should be no need to add any additional reagents after incubation.
- Automated identification and susceptibility testing system should provide rapid, accurate and reliable detection of known and emerging antimicrobial resistance. The system should provide highest discrimination between species.
- The system should have on board incubation chamber.
- System should have Auto quality control and calibration facility to avoid any manual daily maintenance. User intervention for routine QC/calibration should not be required.
- Result should be obtained on same day (between 5-10 hrs.)
- System should have external printer for direct report print outs.
- The software of the system should window based, user-friendly, LIS-compatible.
- Automated identification and susceptibility testing system should identify and interpret results as per CLSI guidelines.
- The automated microbial identification system should provides highly accurate and reproducible results.
- System should be USFDA and /or CE approved.

28- TECHNICAL SPECIFICATIONS OF AUTOMATED ELISA PROCESSOR

1. System should be Fully Automated Walkaway Microplate System
2. Should have a sample capacity of 144 a time
3. Should have independent flexible (to be able to accommodate any kind of sample tubes available in the market (10 to 16mm diameter) sample racks for sample loading with a capacity of 16 sample tubes/rack.
4. Should be Multi-tasking system (simultaneous functioning of different processing steps)
5. Should have a capacity of 3 microplate at a time.
6. System should be able to perform minimum of 12 parameters per batch.
7. The system software should have inbuilt option for Assay Optimization for faster processing.
8. The system should have pipetting safety features with capacitance, barometric &Colorimetric.

9. The system should have a Minimum pipetting volume of 10ul or less.
10. Should have QC software inbuilt.
11. System should detect Clots/bubbles in sample tubes.
12. System should accommodation different reagent vials from various manufactures.
13. Should be a single probe system.
14. System should have independent Robotic arms for Sample/reagent dispensing and Microplate transportation to minimize breakdowns.
15. Should use Carbonized or graphite disposable tips for reagent & sample dispensing.
16. System should be able to perform Primary Tube sampling.
17. Should have options for tube dilution, plate dilution & in tip dilution to minimize cost and assay time.
18. Should have 72 positions for tube dilution and 192 positions for plate dilution.
19. Should have On board capacity of 384 Sample/Reagent Tips.
20. Should have inbuilt automatic bar-code reader for sample tubes, Reagents, and Controls.
21. System should be able to perform Sample dilutions from 1:1 to up to 1 to 1:10000.
22. Should have capacity of 16 positions for reagents & 16 positions for calibrators/controls.
23. System should process sample dispensing (100ul/well) in 16 minutes and reagent dispensing (100ul/Well) in 4 minutes in a 96 well microplate.
24. Should have 8 Channel washer manifold with separate needles for aspiration and dispensing with Cross well aspiration facility.
25. Should have inbuilt microplate Reader with Bichromatic and Monochromatic reading options and 8 filter positions (3 preinstalled filters 450, 492, 650nm).
26. Should have Spectrophotometric reading range - 0 to 3.5 OD.
27. Should have 3 incubators with temp options from 5 to 45°C and at least 2 incubators at ambient temperature.
28. Should be able to do Bi-directional interface.
29. Startup time should be less than 10 minutes.
30. System should have Option for performing individual functions like Washing, reading, incubation and sample addition.
31. The system should have in built touch screen monitor for easy operation.
32. The supplier should provide minimum of 5 year warranty.
33. Pipetting precision should be less than 4% at 100ul.
34. Accuracy should be less than 5% at 100 μ l.
35. Quoted model should be USFDA and /or European CE approved.
36. The supplier should have more than 30 installation references in India for the quoted item.

29- TECHNICAL SPECIFICATIONS FOR ROTI MAKING MACHINE

- Capacity : 700-1000 chapati per hour
- Type : Fully Automatic with ball cutter
- Body Type : Stainless Steel
- Thickness of Chapati : 7"-8"

- Power : Electric & LPG
- Electric Power : 3-3.5 kw/hr
- LPG Consumption : 2.0kw
- Dimensions (up to 10% variation acceptable):
  - Length : 13-15 ft
  - Width : 4.5-5 ft
  - Height : 5-5.5 ft
- Dough Kneader Specifications:
  - Capacity : 20-30 kg/hr
  - Machine body : Stainless Steel
  - Type : Automatic
  - Weight : 120-130 kg
  - Power : Electric motor 1hp-2hp
- Certification:
  - ISO/ISI
- Note:
  - In house training for kitchen workers is required at medical college, Meerut
  - Five year warranty on the complete machine.
  - Terms of warranty & Guarantee with policy of spares are required.
  - Policy and cost of AMC/CMC are required.

30- TECHNICAL SPECIFICATIONS OF HIGH END COLOR DOPPLER ULTRASOUND SYSTEM

1. It should be robust state of art, fully digital high end latest Color Doppler Ultrasound System with S vision or similar architecture capable of precision beam forming, capable of performing imaging applications in abdominal, obst/gynae, Fetal Heart, musculoskeletal, small parts, Urology, Breast, Pediatric etc.
2. System should have broad band beam former capable of processing signals from 1-15MHz.
3. System should have latest state of the art Hybrid Beam forming technology to ensure no compromise between temporal and special resolution.
4. System processing channels must be more than 5,50,000.
5. Frame rates more than 1900 frames/sec preferred.
6. System with Digital TGC control is preferred.
7. System should come with five probe ports including pencil probe.
8. The machine should have a battery backup of at least 1 hour.
9. The boot up time should be less than a minute.
10. System must contain inbuilt gel warmer.
11. System should incorporate facility for high resolution 2D, M-Mode, PW, Color Flow Imaging, Color Power Angio Imaging, Power Inversion Harmonics, Directional Color Power angio Imaging modes, Auto IMT, Elastography and Comprehensive 4D Package.
12. System should have Full Spectrum Imaging. Tissue Harmonic Imaging, Spatial Compound Imaging, Pulse Inversion Harmonic Imaging, Trapezoidal Imaging, Quad Imaging, Dual Imaging in Horizontal Split,

2D/C Live Imaging, Automatic PW Doppler Adjustment and Auto 2D Adjustment.

13. System should have fully digital real time Multi recording with live voice annotation recording in DVD.
14. System should have scan depth of 2 to 38 cm or more. Please specify through data sheet.
15. System should have 256 shades of gray display.
16. System should have feature to volume shade imaging for skin tones and shading to improve visualization of 3D/4D with variable light source time.
17. System should have feature to volume shade imaging for skin tones and shading to improve visualization of 3D/4D variable light source time.
18. System should have facility for real time or frozen, pan or point zoom.
19. System should have cine loop review minimum 12000 frames and Loop Review for 8,192 Lines. Please specify through data sheet.
20. System should have panoramic extended field of view.
21. System should have fetoscopic view technology, that displays detailed volume rendering, enabling users to easily identify suitable anatomical structures with change in position of light source. Anatomies should look realistic when viewed in color.
22. System should be upgradable to Spatio temporal Image Correlation tool (STIC) for Fetal Echo.
23. System should be upgradeable to Cardiac Stress, Strain Imaging with Bull's Eye reporting to assess the Cardio Vascular Risk.
24. System should have automatic tool to trace and measure Follicles and generate report.
25. Console height should be adjustable for user's comfort. Linear probe for MSK and Breast Imaging, with automated quantification for easier identification of breast neoplasm.
26. Convex Probe with Single Crystal will be accepted for higher frame rate and deep penetration.
27. System should have Advanced Image Processing algorithm to analyze between targets and artifacts so as to sharpen target anatomy, reduce the sparkle & artifacts to improve image quality.
28. System should have Dynamic range 256 db or more.
29. It should have extensive software and automatic and user programmable calculation package for gray scale, color Doppler, 3D and 4D applications.
30. System should have 21" or more, Flat LED Monitor.
31. System should have 10" or more, wide LED Touch Screen Control.
32. System should support single button to customize the workflow of Operator.
33. System should have lock for all four wheels.
34. System should be able to show hemodynamic color flow (Alpha blending).
35. System should be DICOM ready.
36. System should have built in Image Management Software, for off line application when patient has gone after examination, such as Image Manipulation, Multi Planner reformatting, surface & volume rendering etc. It should have hard disk memory of 512 GB or more with built in CD/DVD read write.
37. The quoted model should be US FDA approved.

38. System should be upgradeable to Single Crystal Convex Volume (4D) Probe, minimum frequency should be 1 to 8 MHz to ensure deep penetration.
39. Please respond to each specification in the same format and order and support it with Product Data Sheet.

System should be provided with following transducer:

A. 2D Convex Abdominal probe with frequency range from 1 to 7 MHz. with Single Crystal Technology.
B. 2D Linear Probe for Doppler, breast and MSK from 3 to MHz.
C. B/W Thermal Printer of latest model (with CE of RDA mark) for Image Printout.
D. Compatible online UPS 30 Minutes Power Back up 01 No's.
E. Price to be quote for destination and installation free of cost
F. Comprehensive Warranty 5 years from the installation.
G. Warranty will commence after complete and successful installation of the main equipment and all the supplied accessories.
H. Comprehensive annual maintenance for the system to be quoted for the next 5 years after expiry of warranty periods.
I. An uptime of 95% is to be ensured during warranty and comprehensive AMC period.

Comprehensive Warranty:
It should be given for the system and accessories for a minimum period of 5 years from the date of successful commissioning of the system.

Comprehensive Annual Maintenance Contract (CAMC):
The supplier must quote for service AMC charges and comprehensive AMC charges separately which shall become effective after the warranty period. The AMC shall include yearly calibration from reputed agency in a standard format. The supplier must give and undertaking to cover AMC for the High End Ultrasound Unit, including its up-gradation (Hardware as well as software) for the lifetime of the system.

Installation:
Delivery, Installation and Commissioning of the entire system at the Hospital.

User Manual:
A Printer operating manual in English must be supplied.
The supplier shall indicate the conformity of the specification point wise and also finish additional features of the system if any clearly. Rules must be quoted for the system and accessories separately.

31- TECHNICAL SPECIFICATIONS OF APPLICATIOR FOR BRACHYTHERAPY TO BE USED WITH EXISTING MICROSELECTRON v3 BRACHYTHERAPY SYSTEM (30 CHANNEL) AT J.K. CANCER INSTITUTE, KANPUR (UP), THE SUPPLIED APPLICATOR SHOULD BE:

APPLICATOR

- Vaginal Applicator of different sizes with obturator (reusable) – Qty 3
- Each set include intrauterine tube of three different angles 15 & 45° of each length 40,50,80 cm and cylinders (4 part cylinders with marker or better) of each size 20mm, 25mm, 30mm, 35mm.

- It should have provision to treat with or without intrauterine tube.

MUPIT

- Template set for carcinoma cervix for perineal implant with Needles (reusable MUPIT template with needles).

INTERSTITIAL RING APPLICATOR

- Ring Applicator with interstitial needles Qty1.
- It includes intrauterine tubes of three different lengths 30, 40 and 50mm, ring tube of size (preferable 26mm or better), interstitial needle set & x-ray catheters accessories.
- Compatible with existing MHDR V3 Brachytherapy System.
- On-site clinical/application training on existing Treatment planning system in the Institute.

32- TECHNICAL SPECIFICATIONS OF GREEN LASER

1. Frequency doubled solid state, diode pumped and continuous wave laser.
2. Wave length should be 532 mm Green having Two Delivery Ports.
3. Power output should be up to 2000 mW.
4. Exposure/Pulse duration single pulse; 10-2500 ms.
5. Exposure/auto pulse Interval: 10-3000 ms.
6. Aiming beam-635 mm Diode Laser nominal
7. Patterns: Grid (2x2-7x7) Circle, Triple Arc and all other applicable patterns for green laser
8. Pattern Spacing: Confluent (Zero), 1-, 2-, 3- spot spacing in 0.25 diameter Increments.
9. Laser delivery must have a spot size of 50-1000 microns and continuously adjustable.
10. The unit should have micro pulse software and be capable of delivering Micropulse laser.
11. Machine should be supplied with suitable motorized table.
12. Laser indirect ophthalmoscope should be light weight power supply from laser console. Spot size – 350 microns compatible with 810 nm red laser also.
13. Electrical connection: 100-240V, 50/60 Hz.
14. Multi-spot laser with optiondelivering up to 12 spots at the press of a button – Three retinal laser therapy options (Focal coagulation, Grid coagulation, Panretinal photocoagulation).

33- TECHNICAL SPECIFICATIONS OF OCT ANGIOGRAPHY

1. Should have various applicable scan modes of OCT angiography viz. Macular Cube, Combo etc.
2. Should have capability for auto fovea and disc finder

3. OCT angiography image angle should be up to 50 °
4. Axial resolution: 5 μ m (in tissue) Transverse resolution: 15 μ m (in tissue)
5. OCT scanning: Scan speed – 27000-68000 A-Scans per second A-scan depth: 2.0mm (in tissue), 1024 points, Optical Source: super luminescent double (SLD), 840 nm.
6. Fundus Imaging – Live during scanning Transverse Resolution: 23 μ m (in tissue), Optical source: 750 super luminescent diode (SLD). Field of view: 36 degree x 30 degree.
7. Anterior Chamber Scan with scan depth of 5mm or more and Scan length of 15 mm or more.
8. Anterior segment tomogram: Scan range-Horizontal within 3 to 16mm. vertical within 3 to 16mm, Scan pattern – 3D Scan Linear scan (Line-scan/Radial-scan), scan speed – 100,000 A-scans per second. Should have variety of possible scans of anterior segment imaging to help with treating anterior segment with more accuracy and details.
9. Photographic diameter of pupil – 2.0 mm or more.
10. OCT angiography – Non invasive imaging of Retinal microvasculature for Glaucoma & Retinal disease management. 9mm Raster, 8x8 Cube, Scan Depth 2.0mm, OCTA up to 50Deg F to V.
11. Various OCTA scan protocols: 3*3mm, 4.5mm*4.5mm and 6*6mm. Must be capable of capturing all possible OCT imaging.
12. Homogenous scanning from macula to disc in one command.
13. Operational through different direction.
14. Complete fundus examination and analysis with retinopathy screening along with facility for scanning optic disc as well as anterior segment.
15. Compatible printer indigenous.

34- TECHNICAL SPECIFICATIONS OF A-B SCAN WITH UBM PROBE

1. Should be compact size B scan with minimum 10"screen.
2. Should have sealed magnetic-drive B-probes with 12 MHz or 20 MHz B probes with focused transducers.
3. Minimum 256-ray scan with 2048 sample points for each ray (should have > half-million sample points per transducer sweep)
4. 500GB or more Hard disk for data storage.
5. Should have fully adjustable me-varied gain (TVG), baseline, log gain, and exponential gain (e-gain) Adjustable velocity (for eyes with silicone oil)
6. Axial Resolution 10MHz Probe: Not more than 0.1mm;
7. Lateral Resolution 10MHz Probe: Not more than 0.2mm;
8. Should have A SCAN Ultrasound Probe: 10MHz A-probe
9. Should have IOL Formulas and Selection: Refractive IOL Formulas: Binkhorst,

   Regression;II, Theoretic/T, Holiday, Hoffer-Q, Haigis Post-Refractive IOL Formulas: Latkany Myopic, Latkany Hyperopic, Aramberri Double-Klntegrated customizable lens database with selectable user profiles.

10. AL Biometric Measuring Range: Axial Length (AL): 15mm-49mm;
11. AL Biometric Measuring Accuracy: Not more than 10.05mm.
12. Total gain: 98dB, users adjustable gain scope: 1 ~ 60dB

13. Measuring mode: 5 groups (Normal, Aphakic, Special, Cataract and manual measurement).
14. Should have the option for upgrade to pachymeter
15. Should have UBM Probe: HD magnetic-drive water path probe with 35 MHz or 50 MHz focused transducers.
16. Export of image to pendrive must be possible.
17. Video recording capabilities should be available in the equipment

35- TECHNICAL SPECIFICATIONS OF FUNDUS CAMERA

Sl. No.	Description	
1	Angle of Coverage	45"
2	Working Distance	• 7 mm
3	Pupil Diameter for Photography	Ø4.0 mm or more
4		Ø3.3 mm or more when the small pupil diaphragm is used
5	Type of Photography	Colour Photography, Red Free Photography and FA Photography
6	Patient Diopter Correction Range	Without Correction Lens:-13d to +12d (Where split lines are used)
7		With Minus correction Lens: -12d to -33d
8		With Plus correction Lens: +9d to +40d
9	Auxillary Function for Photography	Auto Focus Function (Used only in the split line working range. It should be possible to turn it on/off.)
10	Fixation Target	Internal/External Fixation Target should be possible to be selected
11		Center/Periphery
12		Right/Left Eye Automatic Detection
13		Optional Position Presetting Function
14	Base Movement	Back-Forth: 46mm, Right-Left: 100mm, Up-Down: 30mm
15	Chinrest Movement	67mm
16	Power Source	Frequency 50/60hz, Voltage Ac110, 120, 230, 240v Selectable
17	Weight	25 kg or less
18	Dimensions	274(W)X508(D)X536-566(H)Min
19	Power Consumption	400VA (Maximum), 100VA (Normal)
20	Should have versatile and economical full function retinal camera with color, Red Free and FA capabilities	
21	Should have Auto Focus and auto capture facility	
22	Should have Tri-functional fully digital retinal camera	
23	Should have at least 12.3 megapixel resolution	
24	Should have at least 9 internal fixation targets for image consistency when composing wide-field views	

- Should be supplied with Motorized Table.
- Company should be ISO, CE and / or US FDA Certified.
- 5 Years Warranty & 5 Years CMC after expiry of Warranty.

36- **Specification for High Frequency Mobile Digital X-Ray Unit**

State of Art, High frequency microprocessor controlled Mobile X-Ray having following features:

- **The Generator:**

a. Microprocessor controlled high frequency/inverter type of high frequency (100 KHz or more) for constant output.
b. It should have power rating of 3.5 KW or more.
c. It should have a digital display of mAs and KV.
d. KV range: 40kv to 110kv or wider range.
e. Max mA 100@40 kva or more.
f. mAs selection: 1 to 200 mAs or more.
g. The system should have APR of minimum 155 anatomical programs.

- **X-Ray Tube and Collimator:**

a. Stationary anode and focal spot size should be 0.8-2 mm^2.
b. Should have collimator with on/off switch from Console.

- Display: Digital display of mAs and KV for easy parameter settings.
- Should display the Errors in case if any malfunction occurs in the system.
- The unit must have an effective breaking system for parking and transport. The tube stand must be fully counter balanced with rotation in all directions.
- The machine should have concealed cable in arm design.
- The system should have dual articulated arm design to keep the tube-head straight always during up-down movement of Tube head.
- The system should have storage space to keep accessories, etc.
- The system should have the storage space for Flat Panel Detector:
- The machine should be equipped with double step exposure switch with long cord.
- The system should fully safe with respect to:

a. Over current (b) Over Voltage (c) Maximum loading of tube

- **Flat Panel Detector:**

a. The Detector should be Wireless, Size 14x17 and direct deposition CSI material.

b. The weight of detector should be 5 Kg or less
c. The active area should be 358 x 430[7] mm or better
d. The Pixel Pitch should be 150µ or less
e. The Resolution should be 2k x 2k Pixels or better
f. The system should have control panel of 12" or more for Detector Imaging.
g. The detector should have IPX4 or more rating against ingress protection.
h. The detector should be supplied with protection cover with integrated handle.
i. The detector should have 100 or more images storage memory.
j. Two nos. rechargeable batteries should be supplied with one charger.
k. The software and Flat Panel Detector should be from same manufacturer.

- The unit should operate on single phase power supply and should have plug in facility to any standard wall outlet with automatic adaptation to line voltage 190 to 260 volts, 15 Amp. plug.
- Should be AERB& European CE from a notified body approved product.
- Should comply with AERB Guidelines for Table Top Dose & radiation leakage.
- User manual to be supplied in English.
- Company should have well established after sales service network with Toll Free Service Call login facility. Companies should also have a local service representative or service facility to provide fastest response time in case of breakdown of the equipment.
- Down time should not be more than a 48 hours.

37- Technical specifications of the Cath Lab

1. **C-arm gantry**
    1. -1. C-arm gantry should be Floor/ceiling mounted type which can apply free setting of surrounding equipment. Manual override facility should be available.
    2. -2. Minimum C-arm angulations coverage should be LAO/RAO 105deg /105deg, and CRA 45deg / CAU 45deg when C-arm gantry is positioned at head side of patient.
    3. -3. Minimum C-arm angulations coverage should be LAO 45deg / RAO 45deg, CRA 45deg / CAU 45deg when C-arm gantry is positioned at left side of patient.
    4. -4. Minimum C-arm angulations coverage should be LAO 45deg / RAO 45deg, CRA 45deg / CAU 45deg when C-arm gantry is positioned at right side of patient.
    5. -5. C-arm positioning speed is 15deg/sec (LAO/RAO) or more, and 15 deg/sec (CRA/CAU) or more when C-arm is placed at head position.
    6. -6. The coverage of rotation angulations in vertical axes should be 180 deg or more in order to be accessible from every direction.
    7. -7. Longitudinal imaging range should be more than 180cm without table rotation and changing patients' positions, and should be available for peripheral examination and treatment.

8. -8. Lateral imaging range should be such that enables trans-radial/trans-brachial approach from both sides.
9. -9. For table side C-arm controller, either Grip type or Lever type, or both of them should be mounted.
10. -10. C-arm position memory should contain more than 100 patterns, and position memory should be controlled at table side.
11. -11. C-arm position memory should apply direct memory method which can call out clinical angulations directly from simple illustration by one touch action.
12. -12. FPD up/down coverage should be 25cm or more, and this function should be controlled easily from C-arm controller and from the button on FPD itself.
13. -13. Inner diameter should be more than 90cm.
14. -14. Parking switch should be equipped as standard which can move out C-arm in emergency cases.
15. -15. Anti-collision safety function by sensor and software should be equipped.
16. -16. Beam hardening filter should be equipped with 3 types or more and either filter should be activated automatically depending on radiography or fluoroscopy.
17. -17. X-ray detecting chamber should be equipped, and sum value of area doses, or standard value in IVR point /Air Kerma point should be displayed on the monitor in real time.
18. -18. The height of ISO center should be less than 107cm.
19. -19. Collimation should be available both from control room and from examination room.
20. -20. C-arm re-positioning function should be equipped which can place C-arm at the same angulations as it is shown in reference image.
21. -21. The reference image at the same C-arm positioning as current C-arm angulations can be automatically called out.
22. -22. The same function of table side C-arm controller should be equipped in control room as well. (*1)Remote console in control room is necessary to apply this condition.
23. -23. Other general specifications-

1. All Gantry angulations & rotations should be user selectable to optimize clinical imaging needs as required
2. Gantry movement should be controlled from the joystick on the table-side as well as from the control room panel.
3. System should allow access to the patient from both sides of table.
4. Imaging should be possible from any position of the C-arm, as deemed by operator.
5. Motorized parking of the C-arm in case of catastrophe for resuscitating the patient.

2. Flat Panel Detector (FPD)

1. -1 FPD should be in a square shape, and FOV size should be 12-inch x 12 inch or more. FOV size can be changeable by 4 FOV sizes or more.
2. -2 Pixel size should be 200μm or less.
3. -3 DQE should be 70% or more.
4. -4 FPD dynamic range should be 14 bit or more.

5. -5 FOV size switching should be controlled both from examination room and from control room.

3. **Monitor**

1. -1 In examination room, equal or larger than 19" high luminance monitor should be equipped with 1 set of LIVE monitor (display for radiography/fluoroscopy image under acquisition), and 1 set of REFERENCE monitor (display for reference image).
2. -2 In control room, equal or larger than 19" high luminance monitor should be equipped with1 set of LIVE monitor (display for acquiring radiography/fluoroscopy image), and 1 set of REFERENCE monitor (display for reference image)
3. -3 Registered image should be observed as still image or/and as dynamic image on REFRENCE monitor.
4. -4 Dynamic reference function should be equipped which can display reference image in "dynamic image" on LIVE monitor.
5. -5 ECG waved data can be acquired maximum 2ch, and ECG output should be available on live monitor with angiography image.
6. -6 Monitor specification in Examination room/Control room should be matrix: 1280x1024 or more, and maximum luminance: 500cd/mi or more.
7. -7 The connection of monitor and digital equipment should be digital (DVI) connection.
8. -8 Monitors should be ceiling suspended, high resolution medical grade TFT/LCD. It should be possible to position them on either left or right side of patient table. The monitor should be able to display live and reference image, patient hemodynamic monitoring, 3D images etc

4. Digital processing unit in Radiography/Fluoroscopy/Image processing

4. -1 **Fluoroscopy function of digital processing unit**

1. -1-1 Pulse fluorscopy should have variable pulse frequencies from 10 to 30p/s, with real time filter & motion detection.
2. -1-2 Additional reduced pulse frequencies should be available for long procedures.
3. -1-3 The system should be capable of algorithm defined dose compensation.
4. -1-4 Pulse fluoroscopy should be available by grid control which cuts off unnecessary wave tail (soft radiation).
5. -1-5 Pulse fluoroscopy should be equipped with maximum 30pps and selectable rate from 10 types or more.
6. -1-6 Fluoro mode can be changed from both the Table side module as well as digital controller in examination room.
7. -1-7 Fluoro image is displayed in matrix: 1024x1024 or more, and 30fps or more.

8. -1-8 Fluoro image can be magnified not only by FOV switching, but also by real time d i gital magnification.
9. -1-9 Last image hold function should be equipped which displays last fluoroscopy image automatically.
10. -1-10 Virtual collimation should be available which can define collimation edge on last image hold, which does not require exposure in case of collimation.
11. -1-11 Reference image should be displayed in dynamic image on REFERENCE monitor in 1024 matrix or more under fluoroscopy.
12. -1-12 Fluoroscopy image recording function should record for at least last 60 seconds and should consist of following 2 method; "back fluoro record" for tracking back certain frames from last taken image and start recording the images, "real time fluoro record" for starting the fluoroscopy record immediately during examination.
13. -1-13 Recorded fluoroscopy images can be stored in media as DICOM image same as radiography image, and images can be transferred by network.
14. -1-14 Dynamic image frequency processing should be equipped which enables digital image filter processing for catheter examination/treatment.
15. -1-15 Fluoroscopy image should be automatically displayed on monitor with appropriate brightness, contrast.
16. -1-16 Real time edge enhancement function should be equipped.
17. -1-17 Road map function should be available which superimposesblood vessel map on fluoroscopy image under fluoroscopy.
18. -1-18 DSA-MAP should be equipped which creates blood vessel map using DSA images. And Fluoro-MAP should be equipped which creates blood vessel map using peak detection by injection of contrast media under fluoroscopy. If DSA-MAP, Fluoro MAP and Trace-MAP are proprietary, then similar functions should be available from the manufacturer with similar features.
19. -1-19 For both DSA-MAP and Fluoro-MAP, the following two modes are available. One is mode which deletes background information such as bone(DSA-MAP and Fluoro MAP). The other is mode which keeps background bone information(DSA-MAP Live and Fluoro-MAP Live) If DSA-MAP, Fluoro MAP and Trace-MAP are proprietary, then similar functions should be available from the manufacturer with similar features.
20. -1-20 Trace MAP function should be equipped which extracts vessel wall automatically from DSA image and displays only vessel wall on fluoroscopy image. If DSA-MAP, Fluoro MAP and Trace-MAP are proprietary, then similar functions should be available from the manufacturer with similar features.
21. -1-21 Each mode of road map should be switchable freely during examination both from control/examination room.
22. -1-22 Fluoroscopy image and Road MAP image should be observed on different monitor independently and simultaneously during above Road MAP.
23. -1-23 Above Road MAP image can be stored in HDD as fluoroscopy image in the same way as radiography image storage.
24. -1-24 Road MAP fluoroscopy can be operated without resetting the Mask. Even if radiography is performed during Road MAP, Road MAP fluoroscopy can start again by just stepping fluoroscopy pedal.

4. -2 **Radiography function of d i gital processing unit**

25.-2-1 Radiography image should be acquired at matrix: 1024x1024, 12bit, 30fps or more.
26.-2-2 Digital filtering should be available for restraining halation.
27.-2-3 Taken images should be automatically played back at "loop playback" on monitor.
28.-2-4 Key flame in radiography images can be registered both from control/examination room.
29.-2-5 Radiography condition should be automatically set up according to previous fluoroscopy condition.
30.-2-6 Program customize of radiography condition should be available according to certain examination or treatment.
31.-2-7 Radiography condition can be selected from the preset conditions by digital system controller in examination room.
32.-2-8 Real time DSA should be worked out which is equipped with 1024matrix, 12 bit, 12fps or more. Rotational DSA imaging should also be available.
33.-2-9 Sophisticated software for automatic device marker detection, and real time display of "stent enhanced image" on LIVE monitor should be equipped.
34.-2-10 Stitched image of lower limb Bolus chase should be available as standard even on manual Table panning.
35.-2-11 One or two ROI(Region of Interest) including device marker should be able to set using LIH(Last Image Hold) image and given device marker should be detected and displayed as stent enhanced image in real time.
36.-2-12 Motion free DSA imaging should be available by combination of C-arm precession/pendulum movement and real time frequency subtraction imaging.
37.-2-13 Software for angle and distance measurement should be available and system should be provided withcomplete software/hardware for image quality improvement and management.
38.-2-14 Post processing software facilities with all latest facilities including imageinversion, background display, zooming, magnifying with text and annotation functions, real time edge enhancement, vascular analysis and quantification including stenosis quantification, auto-calibration (to the catheter ID) automatic contour recognition, etc.
39.-2-15 All requisite post processingfunctions should be possible from table side consoles and from the control room.
40.-2-16 The system along with workstation should be networked and connected to DICOMcompatibility.
41.-2-17 Should be possible to copy and transfer from the main system as well as the workstation for rapid review & copy. It should be possible to download images in AVI format onto an external USB device & CD from the workstation, hence requisite ports to be provided in the system or the workstation.

4-3 Image processing function of d i gital unit

1. -3-1 Digital system console in Joystick type /Touch screen should be equipped which can control digital system from table side easily.
2. -3-2 Digital system console can operate every necessary function for interventions as playback/stop, reference image registration, zooming, stop watch, fluoro record.

3. -3-3 Angle and distance measurement software should be available.
4. -3-4 Additional independent workstation for Printing, viewing and processing should be available.
5. -3-5 Minimum image storage capacity of 50,000 images in 1024X1024 matrix.
6. -3-6 Image can be stored on CD-R or on DVD in DICOM format.
7. -3-7 The images on CD-R or on DVD can also be displayed on Windows PC which does not have DICOM viewer by writing on simple reference viewer.
8. -3-8 CD-R/DVD writing or Network transfer can be done in back ground.
9. -3-9 Patient name input/ message display in English language is available.
10. -3-10 DICOM Storage, MWM, Print should be applicable.
11. -3-11 Annotation on image monitor can be switched ON/OFF.

5. **High voltage Generator**

1. -1 Generator should be high frequency microprocessor controlled with high reliability for constant output
2. -2 Output should be at least 100 KW at 100 kv or more
3. -3 Radiography KVP range should be 40 KV - 120 KV or more.
4. -4 Should have digital display for KVP &mAs.
5. -5 Should have over loading protection.
6. -6 Pulsed fluoroscopy at variable rates for reducing the x-ray dose should be possible without image drag during pulsing intervals.
7. -7 High voltage generator should be high frequency 50kHz, inverter type with high reliability and high image quality.
8. -8 Tube current range should be 10-800mA or more.
9. -9 Radiography time should be set by 1ms or less.
10. -10 Quantity survey of fluoroscopy time should be displayed in examination room.
11. -11 Function of monitoring X-ray tube burden should be equipped, and the value should be displayed in examination room.

6. X-ray tube

1. -1 Maximum anode heat capacity is 2,100kHU or more, having latest technology (please specify in the offer) for optimal heat dissipation and noiseless operation.
2. -2 The anode rotation type should be liquid bearing.
3. -3 Small foci, high speed anode tubes with high outputsNominal focal spot size should be 0.6mm (small focus) or less, and 1.0mm (large focus) or more. Specific use of the different focal spots in respective programs should be indicated in the offer.
4. -4 The small focal spot should provide at least 15kw and maximum 40 kw& the large focal spot at least 80kw output for extended runs.
5. -5 Anode cooling rate is 400kHU/min or more for uninterrupted performance and should have a long shelf life.

6. -6 Cooling method is water-cooling by oil circulation.
7. -7 Automatic focus replacement when filament damage happens which helps to continue examination in case of emergency.
8. -8 Adequate filtration for clinical setting should be provided. Leakage radiation should conform to standards. Filtration and leakage radiation dose should be mentioned in the offer.

7. Catheterization Table

1. -1 The table should be ergonomically designed, Have trendelenburg tilt facility of atleast 15°. (Confirm that this is ok for all)
2. -2 Equipped with soft, easy to clean mattress to support patients
3. -3 The table should have motorized longitudinal, vertical and floating table top for longitudinal andtransverse movements with electromagnetic locking facility, and swivel in case of an emergency
4. -4 All patient positioning accessories to be supplied (Head holders -2, Chin support –2, Abdominal compression device-2, Arm support for upper limb approach -2, body straps -2, shoulder harness –2, anklerestrainer – 2, as well as sand bags for thickness compensation for the head – adult & pediatric)
5. -5 Table should have full head to toe coverage without repositioning of the patient.
6. -6 Gantry, Collimator & table operations must be possible from control room as well as console room
7. -7 Table material should be carbon fiber, and flame less, and should be easily operated for positioning.
8. -8 Table longitudinal stroke is 120cm or more.
9. -9 Table lateral stroke is 10cm or more.
10. -10 Table rotation range should be 180degree (from -90deg to 180deg) or more.
11. -11 Table height should be lower than 79cm, and higher than 102cm.
12. -12 Table length should be 288cm or more.
13. -13 Table width should be 45cm or more, which is broad enough for placing patients' arm easily.
14. -14 Longitudinal / lateral movement can be done both by table side C-arm console and by table side grip switch, which can be easily operated by non-medical staffs.
15. -15 Maximum allowable weight is 220kg or more, and +80kg can be over weighted in case of cardiac massage.
16. -16 Table mat should be made of less rebound materials to reduce the burden for patients.
17. -17 Inherent filtration should be 1.0mmequivalent or less.
18. -18 Arm rest mat should be made of carbon fiber with less rebound materials.

8. Accessories

1. -1 Pressure injector of standard make along with 200 disposable syringes and all spare partscompatible with the system should be supplied
2. -2 Lead aprons: of standard state of the art make, light weight with a lead equivalent of 0.5mm. should be double sided 6 such aprons too be

provided 3 of which should be two piece and 3 should be single piece, design should be wrap around Thyroid guards: Six to be provided. **(The number of lead aprons can vary with institution depending upon the need of the institution)**

3. -3 Lead spectacles: Four to be provided. **(The number can vary with institution depending upon the need of the institution)**
4. -4 Lead lined gloves: two pairs to be provided. **(The number can vary with institution depending upon the need of the institution)**
5. -5 Focused celling mounted light.
6. -6 Celling suspended radiation shield.
7. -7 Additional Table mounted radiation shield to be provided
8. -8 ETO sterilizer: of approved make at least 4.5 cu ft.- One **(Not to be asked as standard accessory with Cath lab but may be approved for this particular tender for Kannoj Medical College as it is not a part of the equipment)**
9. -9 State of art antra-aortic balloon pump (IABP) system:- State of art, latest, imported model one no. A Hemodynamic Recorder (For Cardiac Catheterisation) with 4 pressure and 12 ECG should be offered One no Lead Glass: 100*150 cm **(Not to be asked as standard accessory with Cath lab but may be approved for this particular tender for Kannoj Medical College as it is not a part of the equipment)**
10. -10 Dehumidifier 02 nos
11. -11 UPS minimum 150 KVA for the entire cath lab system including X-ray generator with a minimum power backup for 30 minutes.
12. -12 Patient monitoring system to monitor ECG, heart rate, invasive and non-invasive pressures in the exam room with slave monitor to display all the parameters in the control room should be supplied.
13. -13 Lead glass 100x150 cm for console room.
14. -14 Ceiling suspended radiation protection system and table side protection system should be supplied.
15. -15 Focussed ceiling mounted light with handle for positioning the light.

9. Essential

a. The system should have AERB Type approval / NOC From AERB
b. List of installations national / international to be provided of the same equipment
c. It should have US FDA and/or European CE approval / certification.
d. At least 2 major components from X-Ray tube, Generator, and mechanical components should be same manufacturer.

Note:

1. For installation of Cath lab all Civil work, Electric work, Wood work, Furniture, Aluminum work, Air-conditions, Paneling Wall Doors by Lead etc should be provided by the enduser/ Institute/ Nodal Agencies **(Normally it should be a turn key project to smoothen the installation process in timely manner but may be approved for this particular tender for Kannoj Medical College as it is being procured as a project)**
2. Equipment should be quoted with 1 year warranty & CMC for next 9 Years. Otherwise bid May be liable of rejection, **(Normally it should be asked**

with 5 years comprehensive warranty and 5 years CMC thereafter so that the equipment functions smoothly for at least 10 years without break downs. but may be approved for this particular tender for Kannoj Medical College as it is being procured as a project)

3. Consumable item Whichare not Covered under warranty and CMC list should be enclosed along otherwise all item will be considered to be covered under warranty & CMC. **(Normally all consumables/accessories except patient related consumables are covered under warranty and CMC and should be strictly followed to avoid difficulties during breakdowns)**
4. Experience of Supply will be considered either of Manufacturer/ Distributor/ Dealer in India or Abroad with performance certificate to be enclosed along with bid.

Essential Criteria (Should be included with all the items to be tendered as part of specifications):

1. Demonstration mandatory at hospital premises at OEM cost, if required by the tenderer.
2. CMC offered for the quoted equipment should not be more than 5% of the quoted model per year.
3. CMC offered for the quoted equipment must be on OEM letterhead for further years. (CMC offered on distributors/ Vendor letterhead will not be considered).
4. Installation process should be performed by OEM trained service engineer/ service representative on OEM's letter head/ service report, with a mandatory provision of providing preventive service visits of OEM trained service engineer/ service representative quarterly per year till completion of warranty period (i.e. 20 visits for first five years) and further quarterly visit (04 visits/ year) till the completion of CMC period.
5. The installation process must be completed by the OEM/ Service provider within 30 days of supply.
6. The accessories/ consumables utilized during the period of installation process should be taken care FOC by OEM/ Service provider.
7. The equipment complies with the requirement of the Medical Device Directive of class I equipment and Electromagnetic compatibility; all supporting documents must be provided.
8. **Equipment should have brand name / model number embossed/ etched on the equipment.**
9. In case of technical snag/ failure/ breakdown, the response time for Inspection should be within 24 Hour and repair within 5 days, otherwise provide a service machine until the period of recovery of breakdown of the unit. Failing which will attract penal action as per the decision of the University (Uptime guarantee of 95%).
10. The page of technical bid should be numbered and checklist should be duly filled as per the annexures and all annexures should be in accordance with the format, otherwise it may be the reason for disqualification.
11. 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 as per below mentioned format for the compliance statement.

S. No.	Technical Specification	Compliance Yes / No	Page No. in the proposal submitted where documentary evidence is enclosed as per tender Specs with highlighting, Numbering & flagging
1			
2			

12. Should be quoted with 5-year comprehensive warranty (including all spares, batteries, circuit and other accessories) and five year of Comprehensive maintenance contract (CMC) thereafter.
13. Warranty and CMC should include all spares/accessories including preventive maintenance kits, batteries etc.
14. Rate of consumable, it any, should be quoted separately and they will also be fixed for five years. These should not include any spares/accessories.
15. Only the manufacturer or its Indian subsidiary can apply. In case there is no Indian subsidiary, only authorized dealers with original authorization letter mentioning authorization for sales as well as after sales services.

38- TECHNICAL SPECIFICATION FOR AUTOMATED COMPONENT SEPARATING DEVICE

1. BASIC REQUIREMENTS

- Device for separating plasma, buffy coat and RBCs
- Adaptive colormatic sensors for detecting all blood components and tube materials.
- Automatic air release from the plasma bag.
- Compatible to both top and top and top and bottom bags.
- Separation time 3-4 minutes
- High platelet recovery from Buffy coat and PRP
- No compressor required – press movement by motor drive.

2. ELECTRICAL REQUIREMENTS

- Voltage requirements: 90-270v single phase AC/DC, 50/60 Hz
- Complies with IEC 61000-3, IEC 61000-4, CISPR 15/EN55015

3. CONTROL SYSTEM

- Integrated ICD display
- Integrated sensor system with level sensors (11 level sensors in two rows), color sensors (detects red cells in tube to plasma bag), position sensors (measures distance between the plates) and pressure sensor (measures pressure on the blood bags).

4. OTHER REQUIREMENTS

- Working temperature + 10 to +40 ^{0}C
- Humidity 20 to 95%
- Storage and transport temperature -20 ^{0} to 70 ^{0}C

39- TECHNICAL SPECIFICATION FOR DESKTOP COMPUTER WITH COMPUTER

Desktop Computer with C.P.U.

Processor:- Intel Core i3 or more
Ram – 4 GB or more
Operating System: Windows 10 Home + office
HDD – 1000 GB or more
Connectivity: Wireless 802.11 (WiFi) + Bluetooth 4.2
With Experimental Pharmacology suffwear for UG &PG
Animated Pharmacological videos for demonstration.
SSP

Monitor

Monitor Panel, Stand base, VESA screw cover, 1 x HDMI cable, Power Cable, Setup guide & documents
IPS Monitor
Monitor 17 Inch or more

UPS

It is generator compatible. Output voltage regulation
(Batt. Mode) : +/- 10%
Protects from overloading
Micro controller based
Sleep mode charging
LED indicator
Capacity 600VA
Transfer time Typics 4-8 ms
This specification does not matches to the specifications of the Instrument of any company

40- Technical Specifications For Drill Machine

- Universal hand drill; comprise saggital saw head piece, mini hand drill, transverse saw, triple drill guide130 angles as well as open gear hand machine drill with S.S. check and key. These are precision designed in line with defined safety standards and for cadaver use. Should have ISO 13485 certification

41- Technical Specifications For Hand Saw

- Hand saw with high carbon steel blades made at HRD to 52 degrees, hard and durable, anti rust and smoothness, which leads to less friction, blades chrome plated blades.

  Specifications :
  For HRC, Blade materials reaches 52 degrees and teeth reaches 60 degrees (+ - 3) Chrome treatment, antirust, smooth resulting in less friction, Elegant Handles, ergonomic, Special Teeth Design, sharp at edges, Versatile assortments

Should have ISO 13485 certification

42- Technical-Specifications For Band Saw For Sectioning Body And Limb

Max Job Height in mm 200.

- Max. Throat in mm 200.
- Table size (L x W) in mm 600 x600. Blade speed in mtr/min 20-100
- Blade size (L x W x T)in mm 3505 x 27x0.9.
- Saw motor capacity in HP 3.
- Coolant motor capacity in HP 0.16.
- Overall size (LxWx H) in mm 900 x 700 x 2100. Aprrox Weight in kg 400.
- Should have ISO 13485 certification.

43- Technical Specifications For Brain Knife

- Knives are of. Premium quality in cutting instrument segment, high quality stainless steel with heat-treat our blades.
- **Features:** Edge technology creates a blade that is sharper out of the box, holds its edge longer and is easier to re-sharpen; Handle materials usedare selected from a variety of man-made and natural materials, providing the best appearance and performance or S.S.,. Should have ISO 13485 certification

44- Technical Specifications for Mortuar Cooler with Arrangement to Keep upto 8 Bodies

- Corrosion Free interior and exterior
- Audio visual alarm for high and low temperature.
- Designed for long storage of cadaverous.
- PUF insulation on all sides
- Special Design ensuring best hygiene with washing & draining facility.
- Reliable
- Special Loading trolley.
- Energy efficient and sturdy construction
- Light weight
    - 10, Digital temperature indication
- Low maintenance
- Microprocessor based / PLc temperature control.
- Double walled cooling units
    - Outer body of the mortuary chamber is constructed out of thik S.S. sheets. The inner chamber made of heavy gauge stainless steel sheet of SS-304 grade. The_ 10Omm gap between the walls filled high grade poly urethane insulation, which ensures maximum thermal efficiency.
    - The doors connected by very sturdy chrome plate hinges and fitted with hard chrome plated Lubricated latches for opening of the door.
    - The door made of galvanized steel sheets, lined with stainless steel for extra protect ion and long life.

- All the doors fitted with high quality neoprene rubber gaskets for air light fittings with very sturdy casters
- CFC free compressors, conforming to last international standards and guidelines. Tw in compressors of which one is standby.
- Vapour proof lamp inside
- Temperature range 2 to 4°c with temp failure alarms.
- Suitable Voltage automatic stabilizer 0/13 230 +/- 10% I/P 150-280 volts. to be installed at each site as per the site conditions.
- The unit should be (3x2) x2 or (2x2) x3 format.
- Mortuary cooler with arrangement to keep at least 8 bodies or suitable alternative arrangement.
- Mortuary chamber Temp. 2° to 5° C Two bodies four bodies Eight bodies With Voltage Stabilizer
- As per ISO 13485 certification

45- Technical Specifications For Storage Tank to Hold 10 Cadavers Made of Concrete with Copper Lid with Tilting

- Storage tank to hold 10 cadavers, made of concrete with copper lid Type 304 stain less- steel construction Built-in cadaver submersion storage system with an.integral cadaver platform that can be raised when needed for study and lowered for atorage.

46- Technical Specifications For Plastic Tank For Storing Soft And Dissected Parts

- Should be &best quality.
- Should be a medical grade product.
- Should have ISO 13485 certification

47- Technical Specifications For Meat Cuttin: Machine For Thin Bod Section Trans and Vertical) For Gross Anatomy Sectional Study

- Useful for preparing specimen for big size in Anatomy and Meat Departments. Fitted with large moving table and extension table operated on four ball-bearing rollers. Used extensively in the meat packing, and wholesale fish industry, for handling sword fish and large halbutes etc.
- Specifications (Approx. Size)
- Size of cutting table 785 x 585 mm
- Total table travel 1245mm
- Extension table 455 x 760mm
- Size of wheel 455 mm
- Height 1700 mm
- The table is made of thick S.S. sheet with special heavy axles for easy and firm movement. Supplied complete with one blade, starter, cord and plug, works on 220 V, single phase, 50Hz ' AC supply.

48- Technical Specifications For Embalming Machine Master Flex For Cadaverous

Operating temperature: 0 ^{0} to 40°C (32° to 104°F)
Storage temperature : -45° to 65°C (-49° to 149°F)
Chemical Resistance: ABS plastic case with a polyester label, gold, irridite-coated aluminum chassis and zinc-plated screws.
All materials withstand standard cleaning solvents.
Line Voltage Limits: 90-130 V or 190-260V, 50-60Hz
Power output: 0.075 kW (0.1 hp)
Maximum Current:

115 V Units:	controller: 2.2A, shorted
Output condition	
230 V Units:	1.1A, shorted output condition
Start/Stop-Local Control:	
Input Voltage:	
Function Disable:	15V DC Typ.
Function Enable:	0.8V DC Max.
Input Current:	
Function Disable:	100uA Max. leakage
Function Enable:	1.5mA Max.
Maximum Torque:	
300, 600 rpm Units:	13 kg'cm (180 oz-in)
100 rpm Units:	26 kg'cm (360 oz-in)
Speed Regulation	
Line:	±1%
Load:	±2%
Speed Drift:	±10%
Enclosure rating:	IP23 per IEC529
Humidity (non-condensing):	10% to 90%
Altitude:	Less than 2000 m
Display:	Green LED
Dimensions (L 3 W 3 H):	292 mm 3 203 mm 3 184 mm
(11-1/2 in 3 8 in 3 7-1/4 in)	
Weight:	5 kg (11 pounds)
Remote Control	

4-20 mA Input: 250 ohms typical input impedance referenced to signal ground.
4 mA, (Stop); 20 mA, (Full Speed)
Accuracy: 3% F.S., Linear Resolution
Overload Capability: 10V or 40 mA max.

2-10 V Input: 10 K ohms typical input impedance referenced to signal ground.
2 V, (Stop); 10 V, (Full Speed)
Accuracy: 3% F.S., Linear Resolution Overload Capability: 15V max.
Compliance:

115V	115V: UL508C, CSA C22.2, No.14
230V	230V (For CE Mark):

EN61010-1
(EU Low Voltage Directive) and EN61326
(EU EMC Directive)
Pollution Degree: Pollution Degree 2
(Indoor usage — lab, office)

49- Technical Specifications For Monocular Microscope

- The standard microscope shall be equipped with:-
  One 10x wide Field. Eye piece.
- 4 Nos. Objectives, Par focal Achromatic, 4x, 10x, 40x SI oil immersion. Stage: Horizontal Mechanical of size 120x125mm, Illumination: High intensity compact light source 6V, 20W Halogen lamp with on/off switch, light intensity regulator and Plano concave mirror attachment suitable for 220v, 50Hz. AC supply

50- Technical Specifications For Dissecting Microscope

- Binocular dissecting microscope Looming body zoom ratio 6.3:1. Eyepiece 10x (FN 22) with diopter adjuster, rubber eye shield, reticle lead. Low eye level binocular eyepiece , tube 20 degree inclined. Plan 1x objective. Diascopic stand (transmitted light illuminator) transparent stage glass. LED illumination.

Magnification:4x-200x

51- Technical Specifications For Microtome Rotary

-
  - Ergonomic design., Compact dimensions. Vertical guidance by zero-backlash and maintenance free cross roller bearings
  - Electronic precision feed mechanism with stepping motor technology
  - Total Section thickness range from 0.5 up to 100 um
  - Especially smooth running hand wheel. One hand quick clamp change
  - Fine orientation with one hand operation and zero positioning, Easy exchange of specimens
  - Specimen retraction during return travel, can be turned off. Indication of all relevant information such as section thickness, trim thickness, number of sections, section thickness sum remaining travel of the specimen feed as well as time and date. Reduced number of buttons for intuitive operation.
  - Patented and ergonomic one kpob operation of the specimen feed with variable speed adjustment.
  - Indication of cutting parameters, can be switched over to large indication.
  - Large section waste tray, covering the entire working area.
  - Ergonomically optimized operating elements for non tiring usage.
  - Design with highest demands concerning operational safety and ergonomics.

- Integrated removable storage plate.
- Stepping motor micrometer mechanism
- Specimen retraction during return travel: 0-200 urn, selectable
- Fine section thickness feed,via precision stepping.
- motor from 0.5 to 100 microns: up to 2 urn in 0.5 urn increments, up to 10 urn in 1 urn increments, up to 50 um in 2 urn increments, up to 100 urn in 5 urn increments,.
- Trimming thickness feed via precision stepping motor 0.5 urn to 300 um:
- Horizontat feed range 28 mm. Vertical specimen stroke 60-70 mm.

- Specimen orientation universal 8M, can be rotated 360, Specimen feed memory: 2 positions, programmable
- 230 V 50 Hz 480 x 610 x 350 mm (W/D/H) Wt: 33 Kg
- To be supplied with Disposable Blade holder common for both High and Low Profile Blades
- 1 pkt each of High and Low profile Disposable Blades (50/pk)
- Manufacturer must be ISO certified and product must conform to European CE or American FDA.

52- Technical Specifications For Microtome Sledge Large Cutting

- Sledge microtome/sliding microtome for cutting large blocks of paraffin and resin embedded material for material for light microscopy. The knife holding clamps shall allow the knife to be offset to the direction of cut, a major advantage when sectioning large, hard blocks. The microtome which is very heavy for stability and not usually subject to vibration, with a feed range of 0 —20microns Should have ISO 13485 certification

53- Technical Specifications For Paraffin Embedding Bath

- Temperature range from ambient temperature to 95°C. Thermostatic control with an accuracy of ± 1 ^{0}C. Double walled, inside stainless steel and outside mild steel sheet painted in epoxy powder coating. Top of the bath and concentric rings of stainless steel. To work on 220/230 volts A.C. with standard double walled water bath but provided with cups & sleeves for glass tubes.
- 6 cups & 8 sleeves.

54- Technical Specifications For Hot Plate

- Body is fabricated out of thick mild steel duly finished in white stoving enamel/powder coated paint with mat finished colour combination. The hot plate made of cast iron or top is made of highly polished stainless steel sheet precisely machined & smoothed duly finished in heat resistant black paint is firmly mounted on the body. Heavy duty heating elements are securely layed under the plate to operate on 220V AC 50Hz single phase. Temp. is controlled by a three-heat rotary switch / energy regulator as per demand.

55- Technical Specifications For Skeletons Articulated

- Mounted Skelton, one with the various parts connected in such a way as to demonstrate normal relationship and allow motion between components as in the living body.
- Technical Specifications:
- The articulated adult skelton should be ideal for teaching the basics of human anatomy. The model should be replica of a life size human skelton and should show all Ske lton part in high details.
- The arms, legs and skull cap should be removable for study. Should be made of washable and unbreakable material
- All of the joints, sutures, fissure, formina and processes should be portrayed with at most accuracy
- Height-170cm(approx.) Weight -10Kg. (approx.)
- Should be supplied with 5 castor roller stand.
- Should have ISO 13485 certification

56- Technical Specifications For Skeleton Disarticulated Bones

- Should be of best quality.
- Should be a medical grade product.
- Should h ave ISO 13485 certification

57- TECHNICAL SPECIFICATION FOR MICROSCOPE OIL IMMERSION

- Optical correction and magnification 100X oil and numerical aperture 1.25 working distance mm 0.20. Spring loaded object lens.

DEMONSTRATION EYE PIECE - as per demonstration.
DOUBLE DEMONSTRATION EYE PIECE - as per demonstration.
STAG INCUBATOR - as per demonstration
WASTERGEN'S PIPETTES FOR E.S.R ON STAND (WITH SPACE PIPETTE) . - as per demonstration
HAEMOGLOBINOMTRERS SAHIL OR HELLIGE (WITH SPACE) (IMPARTED) .- as per demonstration
HAEMOCYTOMETER - as per demonstration
TUNING FORKS TO TEST HEARING 32-10000CPS (SETS) - as per demonstration

58- TECHNICAL SPECIFICATION FOR MARY'S TAMBOUR-

- MAREY'S TAMBOUR 22 mm dia. & stainless capillary lever,
- MODIFIED BRODIES TAMBOUR, with slip ring for fixing diaphragm, stainless capillary lever.

59- TECHNICAL SPECIFICATION FOR PERIMETER PRIESTLY SMITH S/LP 984B&T .

- Perimeter Priestly Smith Table model with 100 charts.

- CHARTS for PERIMETER Pkt. Of 100

60- TECHNICAL SPECIFICATION FOR SPHYGMOMANOMETER - as per demonstration

61- TECHNICAL SPECIFICATION FOR STETHOSCOPE:

- High acoustic sensitivity with both a tunable diaphragm and open belt
- Tunable diaphragm: Hear high or low frequency sounds by slightly adjusting pressure on the chest piece and there is no need to turn over the chest piece,
- Non-chill rim and diaphragm > Soft-sealing ear tips for excellent acoustic seal and comfortable fit
- **Application** - For physical assessment and diagnosis.
- **Chest piece Finish** - Black, Machined Stainless Steel.
- **Chest piece Size -** 1.75 Inch / 4.4 cm.
- **Chest piece Technology -** Double Sided.
- **Chest piece Weight -** 2.3 Ounce.
- **Chest piece Weight** (metric) - 65 g.
- **Diaphragm Diameter** - 1.75 Inch.
- **Diaphragm Material -** Epoxy/Fiberglass.
- **Ear tip Type -** Soft Sealing.
- **Headset Material -** Wide diameter aerospace alloy /Anodized aluminum.
- **Length** - 28 inch.
- **Length** (Metric) - 71 cm.
- **Net Weight** - 4.8 oz.
- **Net Weight** (Metric) - 135 g.)1

Tube Color –Any

62- TECHNICAL SPECIFICATION FOR VENUS PRESSURE APPARATUS . - as per demonstration

63- TECHNICAL SPECIFICATION FOR S PIROMETER

- Window based mobile spirometer, having multiple options for calculation of Best PEF,FEV% and FEF. In kklitiott interPretatiOn options ;are, available for ventilation function, sPirometrY findings and the test.

64- TECHNICAL SPECIFICATION FOR Electronic time markers , 100/sec

- Frequency continuously variable from .1 Hz. to 100 Hz. In 3 decades of .1 to 1, 1 to 10 and 10 to 100 selectable through push -button controls, and one continuously variable control.
- Output voltage continuously variable from 0 to 30 volts in two steps of 1 to 3 & 1 to 30, selectable through a switch.
- Fixed pulse duration 1 mm sec.
- Single & External trig. Single pulse facility.
- Sensitive speaker to give audible indication of each output.
- High stability new circuitry minimises external artifacts

65- TECHNICAL SPECIFICATION FOR DOUGLAS BAG COMPLETE - as per demonstration

66- TECHNICAL SPECIFICATION FOR BASAL METABOLISM APPARATUS .

- SPIROMETER 6 litre capacity. Stainless steel chamber with chain compensated counter balance to float. Pulley calibrated to denote volume, inlet & outlet tubes. Complete with corrugated rubber tube, mouth piece & recording lever.

67- TECHNICAL SPECIFICATION FOR EROGOGRAPH MOSSO'S

- MOSSO'S Ergograph for recording work done on to the drum surface with special arm fixation rests sun — mica topped base board with weight set.

68- TECHNICAL SPECIFICATION FOR CLINICAL THERMOMETER -as per demonstration.

69- TECHNICAL SPECIFICATION FOR *THERMANAESTHEISIOMETER* .

- COMPASS AESTHESIOMETER : Stainless steel with well formed points & an adjusting screw giving movement of *app.* 1 mm. per half turn read on a scale.

70- TECHNICAL SPECIFICATION FOR ALGOMETER -as per demonstration

71- TECHNICAL SPECIFICATION FOR APPARATUS FOR PASSIVE MOVEMENT -as per demonstration

72- TECHNICAL SPECIFICATION FOR KNEE HAMMER -as per demonstration

73- TECHNICAL SPECIFICATION FOR STETHOGRAPH -as per demonstration

74- TECHNICAL SPECIFICATION FOR BICYCLE ERGOMETER

- MARTIN BICYCLE ERGOGRAPH

- The cycle frame is supported by a sturdy metallic frame, from the front of which two uprights ascend & carry a desk and a cross piece which provide for the attachment in front of the tension balances. The back wheel, 168 cm in circumference & about 22 kg in weight carries in its circumference a stout calico the ends of which are attached to spring balances through two set of adjustable pulleys. An adjustable counter records the revolutions of the wheel. With audio indication of each revolution.

- MOSSO'S ERGOGRAPH: For recording work done on to the drum surface with special arm fixation rests sun - mica topped base board with weight set.
- GRIP DYNAMOMETER : With parallel grips & indicator for registering maximum excursion of the pointer. Calibrated pressure scale.

75- TECHNICAL SPECIFICATION FOR OFLACTOMETER -as per demonstration

76- TECHNICAL SPECIFICATION FOR OPTHALMOSCOPE -as per demonstration

77- TECHNICAL SPECIFICATION FOR SCHEMATIC EYE -as per demonstration

78- TECHNICAL SPECIFICATION FOR PHAKOSCOPE -as per demonstration

79- TECHNICAL SPECIFICATION FOR PERIMETER WITH CHARTS -

80- TECHNICAL SPECIFICATION FOR *COLOUR PERCEPTION LANTERN EDRIDGE GREEN*- as per demonstration.

81- TECHNICAL SPECIFICATION FOR MEDOX ROD

- NEWTON'S COLOUR DISC : Fitted on heavy base with rotating handle.
- ELECTRIC COLOUR MIXER : Colour Mixer fitted with motor & regulator for speed, 220 V. 50 cycles A. C.
- COMPASS AESTHESIOMETER : Stainless steel with well formed points & an adjusting screw giving movement of app. 1 mm per half turn read on a scale.

82- TECHNICAL SPECIFICATION FOR NEWTON COLOUR WHEEL

- NEWTON'S COLOUR DISC : Fitted on heavy base with rotating handle.

83- TECHNICAL SPECIFICATION FOR TUNING FORKS

- Tuning forks to test hearing 32-10000cps(sets) (Sets -100,256 & 512 hz)

84- TECHNICAL SPECIFICATION FOR DYNAMOMETER -as per demonstration

85- TECHNICAL SPECIFICATION FOR OTORHINOLARYNGOSCOPE -as per demonstration

86- TECHNICAL SPECIFICATION FOR STOP WATCHES -as per demonstration

87- TECHNICAL SPECIFICATION FOR PHYSIOGRAPH3 CHANNEL COMPLETE WITH ACCESSORIES

-
  - Inco Student Physiograph Three channel with time & event Console with 9 speed chart drive & stimulator.
  - Couplers: Strain guage, Isotonic, Pulse Respiration, temperature, EKG and Bio-Potential.
- Transducer: Pressure, Volume, Actoivity/Force, Respiration belt, Fine movement, Pulse, Respiration & Temperature.
- Accessories: EKG electrodes, EEG & EMG paste, V-Pin junction Box, Ill Pin Junction box, action potential electrode, 10 Pkts of Chart paper Z fold and fuse.

88- TECHNICAL SPECIFICATION FOR STUDENT PHYSIOGRAPH (SINGLE CHANNEL WITH ACCESSORIES

-

- Inc° Student Physiograph single channel with time & event Console with 9 speed chart drive & stimulator.
- Couplers: Strain guage, Isotonic, Pulse Respiration, temperature, EKG and Bio-Potential.
- Transducer: Pressure, Volume, Actoivity/Force, Respiration belt, Fine movement, Pulse, Respiration & Temperature.
  Accessories: EKG electrodes, EEG & EMG paste, V-Pin junction Box, Ill Pin Junction box, action potential electrode, 10 Pkts of Chart paper Z fold and fuse.

89- TECHNICAL SPECIFICATION OF COLORIMETERS PHOTOELECTRIC

- Pharmacology Varnishing tray with foot levers
- Digital Photo Colorimeter 8 Filters mains operated with optical density in 21A Digit LED Display,lml solution measurement.

90- TECHNICAL SPECIFICATION FOR pH METER

- pH range must be from 0.0 to 14
- Must have electrodes and swing arm
- Accuracy oft 0.01 is required
- Temperature range 0.0 to 100*C with resolution of 0.1°C and accuracy of 0.3°C
- Must have LCD display.
- Must have three-point calibration with percent slope calculation system.

91- TECHNICAL SPECIFICATION FOR ELECTRONIC STIMULATOR

- Frequency continuously variable from .1 Hz. to 100 Hz. In 3 decades of .1 to 1, 1 to 10 and 10 to 100 selectable through push -button controls, and one continuously variable control.
- Output voltage continuously variable from 0 to 30 volts in two steps of 1 to 3 & 1 to 30, selectable through a switch.
- Fixed pulse duration 1 mm sec.
- Single & External trig. Single pulse facility.
- Sensitive speaker to give audible indication of each output.
- High stability new circuitry minimises external artifacts.

92- THERMOMETER (DIGITAL): SPECIFICATIONS

- Type: digital, rigid tip
- Function: waterproof, fever beep
- LCD display at least 13.5x 6mm
- Unit weight <15gm including battery
- Response time: it:minute or less
- Range: 32.0- 42.9 in centigrade (90-109.9 F), should indicate low / high if beyond these limits
- Accuracy: 0.1 C, 0.2 F
- Last reading memory, fever alarm, auto shut off

- Battery: 1.5v, button battery include, replaceable
- Battery life: 2 years for average use
- Dimension: <15cm x2cm xl cm (lx Wx H)
- Warranty: at least 1 year
- Certificate: ISO/ FDA/ CE

93- TECHNICAL SPECIFICATION FOR BALANCE

- Capacity-300g
- Readability- 0.001 g (1 mg)
- Readability (±)-0.001 g
- Linearity (±)- 0.002 g
- Pan Size (mm)- 90 mm
- Five year warranty / CMC & Five year AMC

94- TECHNICAL SPECIFICATION FOR GLASSWARES AND ACCESSORIES

S.No	Items	Specifications
1.	Beaker 100 ml	Glass Ware high quality, can be heated and used for boiling water, graduations 25 ml.
•	Beaker 250 ml	Glass Ware high quality, can be heated and used for boiling water, graduations 50 ml.
•	Beaker 500 ml	Glass Ware high quality, can be heated and used for boiling water, graduations 100 ml
•	Measuring cylinder 10 ml	Transparent, accurately marked, graduations max. 0.2 ml, material glass or polypropylene
•	Measuring cylinder 50 ml	Transparent, accurately marked, graduations max. 1.0 ml, material glass or polypropylene
•	Measuring cylinder 100 ml	Transparent, accurately marked, graduations max. 1.0 ml, material glass or polypropylene
•	Volumetric flask 250 ml	calibrated to contain a precise volume at a particular temperature
•	Volumetric flask 500 ml	calibrated to contain a precise volume at a particular temperature
•	Pipette 1.0 ml	Least count 0 .01 ml
•	Pipette 2.0 ml	Least count 0.02 ml
•	Pipette 5.0 ml	Least count 0.05 ml
•	Pipette 10 ml	Least count 0.1 ml
•	Burette 100 ml	Least count 0.2 ml
•	Conical (Erlenmeyer) flask 250 ml	Least count 50 ml
•	Burette stand	

•	Glass rods	
•	Funnel	
•	Sprit lamp	

95- TECHNICAL SPECIFICATION OF 12-CHANNEL ECG MACHINE

Description of function:

ECG Machine is a primary equipment to record ECG Signal in various configurations, 12 channels with interpretation is required for recording and analyzing the waveforms with special software. It should have the optional facility to measure and display waveforms of 6 more ECG of back and right chest region.

General requirements:

1. The ECG Machine should be able to acquire all 12 Leads simultaneously for both adult and pediatric patients.
2. Should have optional facility to interpret 12 lead and derive 6 more ECGs of back (V7, V8, and V9) and right chest region (V3R, V4R, V5R). (Price to be quoted separately)
3. Must be able to display all 12 lead ECG and other data on bright color backlit LCD with minimum 7 inch display.
4. Should display all ECG waveforms, patient information, heart rate, QRS mark, error messages.
5. Should have optional facility to display ST- segment of all leads in Polar diagram representation. (Price to be quoted separately)
6. Should be easy-to-operate, compact and lightweight, with weight not exceeding 5 kg including battery.
7. Should have alphanumeric keyboard for patient data entry.

Operational Requirements

1. Machine should have inbuilt thermal recorder to print 12 lead ECG with analysis results on 210mm wide thermal ECG paper.
2. Machine should have different formats of recording ECG like 3, 4, 6 and 12 channels ECG.
3. Should have rhythm recording (cascaded ECG) for 1 or 3 channel ECG lead.
4. Should have extended recording in case of arrhythmia detection, recording of rhythm and effected lead group should be automatically extended.
5. Should have both manual and automatic recording.
6. Should have large memory capacity: up to 300 ECG files in internal memory and 2000 ECG files in SD memory card/USB.
7. Should operate on both battery and mains power supply.
8. Should operate with line voltage range from 100-240 VAC, 50/60Hz.
9. S h ou l d h a ve inbuilt b a tt e r yfor a t l e a s t30 min c o n ti n u o us ECG r ec o r d i n g.

Technical Requirements

1. Should have AC and EMG suppression and high pass frequency filters.

2. Should display Real time ECG waveforms with signal quality indication for each lead in case of any electrode detachment or noise.
3. Should have

    a. Sampling rate: 6000 sample/s.
    b. AC interference filter: 50/60Hz
    c. High cut filter: 75,100, 150 Hz
    d. EMG suppression filter: 25, 35 Hz
    e. CMRR: >105db

4. It should save ECG data and waveform in PDF format and can be transfer to SD memory card/USB.
5. Should have the facility to review and manage ECG data on a Windows® PC with optional viewer software.
6. Machine should have facility to connect to Hospital network (HIS) through LAN (optional).

Other Requirements

1. Should comply with IEC standard for digital electrocardiographs specifying accuracy of signal processing, ECG measurement and analysis.
2. Should be European CE approved.
3. The company should have local service engineer to rectify any technical problem immediately.
4. Scope of supply should include

b. ECG Machine 12 Leads with Interpretation- 01 No.
c. Patient ECG Cable- 02 No
d. Chest Electrodes Adult (set of six)- 01 No
e. Limb Electrodes (set of 4) - 01 No.
f. Thermal Paper A4 Size (210mm x 100m) - 50 Nos.
g. Trolley- 01 No.

96- TECHNICAL SPECIFICATION FOR ANALYTICAL BALANCE(DIGITAL)

- CD Display, weighing range: 0-500 gm, accuracy .01g, Battery Operated, Tray Glass Shield and Power Adapter

97- TECHNICAL SPECIFICATION FOR HOT AIR OVEN

-
    - Construction: Double walled.
    - Outer Chamber, Outer Chamber is made of Mild Steel with epoxy powder coated.
    - Size in mm - 600 X 600 X 600 mm
    - Inner Chamber: Made of Stainless steel 304 grades
    - Insulation: The gap between the walls 234 mm. is filled with insulation of high grade glass wool Non Hygroscopic K-Factor to prevent any heat loss and ensure constant temperature.

- Shelves: Inner chamber has ribs for placing the shelves at convenient levels. Supplied with 2 Nos, removable shelves of S.S. for keeping the samples under test.
- Heating Element: Heating Element is made of high quality A 1 nickel /chrome plated nichrome wire which are put inside beads and placed at the bottom and in both side ribs for uniform temperature all over the work space.
- Temperature Control: Temperature is controlled by microprocessor based PID electronic digital temp.
- Controller cum indicator.
- Temperature range: Temperature range ambient to 250°C + 1°C.
- Ventilation: Air ventilator will be provided on top.
- Control Panel: The equipment will be provided with main switch, pilot lamp & temp.
- Controlling knob.
- Power: Suitable to operate on 220/230 volts, 50 Hz, Supplied with cord and plug.
- Five year warranty / CMC & Five year AMC

98- TECHNICAL SPECIFICATION OF DIGITAL COLORIMETERS

- Pharmacology Varnishing tray with foot levers
- Digital Photo Colorimeter 8 Filters mains operated with optical density in 21A Digit LED Display,lml solution measurement.

99- TECHNICAL SPECIFICATION OF STUDENT MICROSCOPE

Specifications	
Optical System	Infinity optical System F=200mm
Viewing Head	Seidentopf Binocular Tube, Interpupillary distance 52-75mm, 30°inclined, 360° rotateable
Eyepiece **Focusing**	WF10X/18mm with the high point
Nose piece	Quadruple Inward
Objectives	Achromatic 4X/0.10 Achromatic 10X/0.25 Achromatic 40X/0.65 Achromatic 100X/1.25 (S,O)
Condenser	Swing type NA=1.25 (O) with the Iris diaphragm
Focusing	Coarse and fine Knob Division 0.001mm, Max: 20mm.
Stage	StageSize:142x135mm Moving Range: 76x52mm
Illumination	6V 20W Halogen Lamp, Adjustable
Filter	Blue
Mobility/portiblity	Portable
	Five year warranty / CMC & Five year AMC

100- TECHNICAL SPECIFICATION FOR GLUCOMETER

- Should be a hand held meter
- Should required no routine matntenance
- Should have reading range/linearity from 20 to 600 mg/dl
- Should have a maximum reading time of less than 10 seconds
- Should use electrochemical technology
- Should use a minimum blood sample less than 1.51.d
- Should have a LCD display
- Should have measuring unit in mg/di.
- Should have wide operating temperature
- Should have a minimum memory of 50
- Should have life time replacement offer
- Should have easy code entry technique
- Battery should be replaceable without using any tools.
- Should have facility to ensure accuracy of measurements.
- Should be supplied with three types of control solutions of each at least 20 ml
- Should have safety certificate from a competent authority CE / FDA (US) / STQC CB certificate / STQC S certificate or valid detailed electrical and functional safety test

101- TECHNICAL SPECIFICATION FOR GLUCOSE STRIPS

- Should be able to use capillary blood samples.
- Should have a minimum 4 months shelf life after opening the strip vial.
- All strips should have at least one year expiry date from the date of supply.
- 50 strips should be supplied along with the equipment.
- Strips should be available In the local market.

102- TECHNICAL SPECIFICATION OF THERMOMETER (Digital)

  - Type: digital, rigid tip
  - Function: waterproof, fever beep
  - LCD display at least 13.5x 6mm
  - Unit weight <15gm including battery
  - Response time: it:minute or less
  - Range: 32.0- 42.9 in centigrade (90-109.9 F), should indicate low / high if beyond these limits
  - Accuracy: 0.1 C, 0.2 F
  - Last reading memory, fever alarm, auto shut off
  - Battery: 1.5v, button battery include, replaceable
  - Battery life: 2 years for average use
  - Dimension: <15cm x2cm xl cm (lx Wx H)
  - Warranty: at least 1 year
- Certificate: ISO/ FDA/ CE

103- TECHNICAL SPECIFICATION FOR WATER BATH

- Ambient +5 ^{O}C to 99 ^{o}C operation

- temperature stability of 1°C
- Drain tap included in models
- Small volume microtube water bath ideal for life science applications
- Fixed thermal cut-out - protects the user if the bath is accidentally run without water or in
  the very unlikely event of failure of both control systems
- User settable, over-temperature sample protection - protects samples from over-heating
- Digital PID control for quick heat-up and precision control throughout the temperature
  range
- Clear, wide-angle viewing digital LED display
- Stainless steel tank - high grade steel with durable polished finish
- Clean, painted steel case - maximum chemical and abrasion resistance
- Stainless steel upper lid
- Raised feet - allow lifting whilst holding base of tank
- Volume range----------18-20 litres
- Five year warranty / CMC & Five year AMC

104- TECHNICAL SPECIFICATION FOR CENTRIFUGE CLINICAL

- Maximum speed: up to 6500 RPM, Stepless speed regulator with zero start interlock, Swing type rotor heads with various size test tubes, Speed holding accuracy 100 RPM, Safety lid interlock to prevent cover opening during centrifugation, Imbalance detector with cutoff, Minimum 0-60 minutes digital countdown timer, Dynamic brake, Digital speed indicator, Self-diagnosis for errors.

105- TECHNICAL SPECIFICATION FOR DIGITAL,WITH DIGITAL PH METER PH METER

- Auto Temp. Compensation,Combination PH Electrode and RTD Probe 3 3(2 digit LED Display,Table Model

106- TECHNICAL SPECIFICATION FOR PH METER OF WIDE RANGE DIGITAL

- pH range must be from 0.0 to 14
- Must have electrodes and swing arm
- Accuracy oft 0.01 is required
- Temperature range 0.0 to 100*C with resolution of 0.1°C and accuracy of 0.3°C
- Must have LCD display.
- Must have three-point calibration with percent slope calculation system.

107- TECHNICAL SPECIFICATION FOR PIPETTE

- Ergonomic design of Tip Cone, optimal fit to the tip (not in 5ml and 10ml tips).

- Adjustment Opening: Adjust your pipettes to a specific liquid & volume.
- Control Button: Very low operating force, colour indicates pipette volume.
- Volume Display: 4 digits, Magnifying shape.
- Perfect Piston System: Ultra light system made of Forton/ PTFE/PEEK/SS.
- Quick Connection Clip: Remove lower part easily.
- Fully Autoclavable
- With Pipettes stand
- Five year warranty / CMC & Five year AMC

Different Volume Range for single channel:
Two sets:

-
  - 0.1-2 microlitre
  - 0.5-10 microlitre
  - 2-20 microlitre
  - 10-100 microlitre
  - 20-200 microlitre
  - 100-1000 microlitre

108- TECHNICAL SPECIFICATION FOR PCR MACHINE

- System should have Asymmetric independently controllable dual block with total 96 well
- System should have block to accommodate PCR tube / strips of 0.2 ml, 0.5 ml.
- System should have well block which is capable of testing temperatures at Denaturation, Annealing and Extension steps.
- System should be capable to run eight different temperatures at a time with minimum 12°C gradient range.
- System should be implemented with gradient technology to ensure identical ramp rates in both gradient and normal operations.
- System should have gradient temperature ranging from 30°C to 99°C.
- System should have heating and cooling of block through Peltier technology.
- System should have block temperature control ranging from 4°C to 99°C.
- System should have fast, standard and safe temperature control modes for operation.
- System should have lid temperature ranging from 37°C to 100°C.
- System should have block temperature accuracy of minimum or better than +/- 0.2°C
- System should have block homogeneity of minimum or better than +/- 0.4°C.
- System should have heating rate of minimum 3°C/s and cooling rate of minimum 2°C/s.
- System should be incorporated with Flex lid technology to accommodate PCR tubes with flat or domed caps.
- System should have option for thermal sample protection to maintain the block at lower sub-optimal temperatures until the lid reaches the desired temperatures.
- System should have an option to export the data collected to the USB in excel format, pdf format or any suitable format which will be compatible to open in the computer system to analyse the data.
- System should operate at 230 V/ 50 Hz.
- System should have calibration certificate according to NIST (USA), DKD/PTB (Germany), UKAS/NPL (UK), UL/CUL Listed.
- The system should be CE/ ISO certified.
- The system should have the warranty for 3 years.
- The system should be supplied with all accessories required to function.

- The product should be as per CE/IEC guideline and certificate from authorized body should be submitted.
- No self-declaration will be accepted.
- The service team should be in Bangalore. Contact details of Engineer should be submitted withthis offer
- The system should be installed by the trained Engineer and users should be trained on Application, operation and maintenance.
- Compliance to each of the above points should be separately indicated and evidence presence for each of them (Product brochures should be highlighted wherever required).

109- TECHNICAL SPECIFICATIONS OF BLOOD GAS ANALYSER (ABG MACHINE)

- Fully automatic, upgradeable, fast electrolyte & blood gas analyzer.
- Essential Measured parameters; pH, pCO2, pO2, Hematocrit Lactate, glucose, Na+, K+, Ca++. All these parameters should be measured simultaneously
- Calculated parameters should include Hemoglobin –cHgb, actual bicarbonate – cHCO2, total Carbon Dioxide – cTCO3, base excess of extra cellular fluid.- BE(ecf), base excess in Blood -- BE(b), Oxygen Saturation – cSO2.
- Sample volume - less than 100 micro litre.
- Fast analysis time – less than 60 sec.
- Fully automatic test card technology – rectangular shape with built in gold plated electrodes and concealed calibrated fluids lines with micro technology for fluid movement.
- Data display should be on well-illuminated, adequate size screen display.
- Power Supply Using Rechargeable battery (lithium ion battery)
- Back up of 6 hours with Rechargeable battery.
- Connectivity – Via Blue tooth and WiFi for HIS and LIS .
- Data Storage for atleast 1000 patients.
- Calibration – Auto Calibration before every sample is inserted.
- Operating the machine- User Friendly Touch Screen.
- Ambient working temperature – 15 to 30 Degrees.
- Test cards Storage – At Room Temperature
- Upgradeable to future parameters like Cl-, Creatinine on the same card.
- System should come along with a Windows based Personal Digital Assistant to control the entire system & printer.
- Stand by blood gas cum electrolyte analyzer in case of breakdown.
- Should have local service facility
- Should supply test cards for 3 years (1000 cards/year) in a staggered manner as per expiry date of test card.
- Warranty of 3 years and 5 years CMC after completion of three years
- It must be UF-FDA /CE (Conformité Européenne) approved.
- Must submit User list and Performance report
- Demonstration is compulsory.
- Training of hospital engineers & staff.
- Operating and detailed service manual should be supplied.
- Rates of consumables & accessories should be freezed for 8 years

110- TECHNICAL SPECIFICATION FOR AUTO-ANALYZER :-

- Fully automated random access chemistry analyzer bench top with stat sample priority.
- Through put of 180-200 photometric tests / hour, 200-270 ISE test/ hour.
- Bar code system for detection of sample ID and reagent.
- 40 positions for samples and 40 reagents position with onboard cooling for reagent.
- Sample volume 2-35 l (0.1 l increments) and reagent volume of 20-400 l.
- Separate pipette for reagent and sample.
- Pre-dilution and automatic re-assay with diluted sample / reduced/ increased sample volume should be there.
- Continuous sample loading provision.
- Serum plasma, urine, CSF and supernants can be processed in the machine.
- Sample pipette with liquid level sensor and crash protection, rinsed from inside and outside.
- Reagent inventory and calculation of remaining reagent volume and test should be available.
- Reaction temperature 37 o C ± 0.3.
- Light source- Halogen tungsten lamp.
- Calibration principle should be linear, factor, 2 point, point to point, spline, log-logit and exponential.
- Assay test - End point, Kinetic, Biochromatic, turbid metric, sample blanking and reagent blanking and ISE (Via optional integrated ISE unit).
- Reusable Pyrex cuvette with minimum volume of 180 l, maximum volume of 500 l with 8 stage cuvette washing system.
- Inbuilt automatic QC and automatic calibration. Daily, monthly batch QC with data archiving.
- Complete PC along with easy to operate software should be provided with the analyzer with the storage of > 20,000 patients report with search facility.

111- TECHNICAL SPECIFICATION FOR VERTICAL GEL ELECTROPHORESIS WITH POWER PACK

- Electrophoresis system with 20x20 cm gel size with capacity of 1-4 gels simultaneously.
- Should have integrated spacers with glass plates for case of casting.
- Should be a modular system to support blotting and electro elution also in the same system.
- Should come all standard accessories like 10 well, 1.00 mm comb, 5 sets of glass plates -both spacer plates, and short plates.
- Should come with sample loading guide.
- Five year warranty / CMC & Five year AMC.
- Power Pack Specification:
- Output range (programmable)
- Type of output Timer
- Pause/resume function Display
- 10-300 V, fully adjustable in 1 V steps 4-400 mA, fully adjustable in 1 mA steps75 W (maximum)
- Constant voltage or constant current with automatic crossover 1 min-99 hr 59 min, fully adjustable Yes
- 3-digit LED

112- TECHNICAL SPECIFICATION FOR VORTEX MIXER

- Continuous or touch modes
- Microprocessor controls
- LED display for speed and time
- Speed range: 120V: 500 to 3000 rpm
- Orbit: 4.9mm Controls: 3-way power switch, LED display for time/speed, up/down keys for set-point control
- Overall dimensions (L x W x H): 4.8 x 6.8 x 4.8" (12.2 x 17.3 x 12.2cm)
- Electrical (50/60 Hz): 120 volts, 1.2 amps, 15 watts
- Weight: 11.7 lbs (5.3 kg)
- Five year warranty / CMC & Five year AMC

113- TECHNICAL SPECIFICATION FOR INCUBATORS

- Standard double wall fabrication. Inner chamber made out of richly anodized aluminum or highly polished stainless steel sheet and outer made out of thick mild steel sheet finished in white stoving enamel/powder coated paint with mat finished colour combination. Double wall door with double glass window for observation in the chamber. Temperature range 5° C above ambient to 80° C ± 1° C controlled by a thermostat. The equipment is workable on 220 V Ac 50 Hz single phase.
- Air circulating fan.
- Timer 0-24 hours
- Digital On-Off Timer
- Imported thermostat "EGO" / "JUMO" German
- Digital tenip. Indicator — cum — controller
- Chamber size inmmilnches No. of Capacity

- H D W Shelves Approx.)
- ,c) 400 x 400.x-400 (16" x 16"x 16")2 ltrs. 65
- d) 450 x 450 x 450 (18" x 18"x 18")2 ltrs. 95

114- TECHNICAL SPECIFICATION FOR ANALYTICAL BALANCE(DIGITAL)

- LCD Display, weighing range: 0-500 gm, accuracy .01g, Battery Operated, Tray Glass Shield and Power Adapter

115- TECHNICAL SPECIFICATION FOR SPECTROPHOTOMETER

- Micro-controller based Double Beam
- Graphic LCD
- 190-1100 nm Range
- 1 nm Bandwidth
- Compliance with Pharmacopoeia
- GMP & GLP Compliance
- Holographic Concave Grating
- A utomatic source optimization, Base line calibration & Cell optimization
- %T, Abs, Conc. (K factor, Multi standard), Multi component measuring modes
- Single Wavelength, Multi Wavelength, Scan & Time Scan operating modes
- Printer interface for 80 Column D.M. Printer
- PC interface (Optional)
- Single Position 50/100 mm Cuvette Holder (Optional)
- Five year warranty / CMC & Five year AMC

116- TECHNICAL SPECIFICATION OF SPIRIT LAMP

A spirit lamp uses ethanol ie.ethyl alcohol as a fuel. It is mostly used in laboratories. Spirit lamp is also called an alcohol burner.

Salient Features:

- Stainless steel - Never Rusts
- Hand polished for durability

Spirit Lamp Common Uses:

Spirit lamp is commonly used in laboratories to heat up substances. The lamp temperature is comparatively lower than the gas burner. Its flame is also small. It can be used for precise heat treatment.

Spirit lamps are commonly used in schools, colleges and in the labs. It can also be used for flame sterilization of the lab tools.

Technical Specifications:

Material: Stainless Steel

Reusable or Disposable: Reusable

Sterile or Non-Sterile: Non-Sterile

Latex-Free: Yes

Ultrasonic Cleaned: Yes
Mirror-Polished: Yes
Lubricate: No
Usage: Left Hand or Right Hand
Tests Performed: Performance Test, Shape Test
Packing: Individually Packed
QC Passed: Yes

117- TECHNICAL SPECIFICATION OF POLYGRAPH

1.1 No of Channels : 16
1.2 Ethernet/High Speed USB Data Acquisition and analysis Software.
1.3 Apparatus for recording and calculating HRV and blood pressure Variability, temperature
1.4 Transducers and softwares for recording and analyzing plethysmography, GSR, Skin temperature,Continuous real-time beat-to-beat blood pressure, Non Invasive Cardiac Out Put, respiration, phonocardiogram and pulse tonometer for carotid pulse, baroreflex sensitivity and total peripheral resistance recording.
1.5 21 inch TFT monitor
1.6 160 GB storage facility and 1GB RAM for the computer
1.7 Colour laser printer
1.8 Wireless (transmitter / recorder) device with transmit range up to 100m, memory capacity 480 hours, 250 Hz sampling rate, radio band frequency

2 Accessories, Spares and Consumables

2.1 Necessary cables and batteries
2.2 Computer (latest configurations) with laser printer to be attached to the equipment

3 Standards, Safety and Training

3.1 Should be CE / BIS approved product
3.2 Calibration/Acceptance test certificate from the factory required.
3.3 Manufacturer/Supplier should have ISO certification for quality standards.
3.4 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.

4 Documentation

4.1 User/Service Manual in English
4.2 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.
5 Multi-channel universal bio-amplifier for ECG, EMG, EEG, EOG (at least 8 channels) along with cardio axis analysis.
6 Bidders are encouraged to arrange for demonstration of their equipment if not able to comply with all specification requirement.

118- TECHNICAL SPECIFICATION OF SHERRINGTON STARLING KYMOGRAPH (ELECTRICALLY DRIVEN)

- Microprocessor controlled 7-speed digital kymograph.
- Drum height 170 mm and diameter 150 mm.
- Digital display

119- TECHNICAL SPECIFICATION OF THERMO AESTHESIOMETER

- Skin-stimulator contact: Circular aluminium plate Contact plate diameter 55 mm Maximum temperature range 5°C to 55°C Stimulus:
- Temperature increases or decreases from reference until response button is pressed Contact plate reference temperature Selectable in range 25°C/s to 40°C/s Error in temperature setting < 0.5°C at 30°C < 1.0°C at 15°C and 50°C < 1.5°C at 10°C Rate of
- temperature decrement Selectable in range 0.2°C/s to 2.5°C/s Rate of temperature increment Selectable in range 0.2°C/s to 2.5°C/s
- Accuracy of rate of change of temperature < 10% error in temperature change over 15 s at 1°C/s from 30°C to 45°C < 13.3% error in temperature change over 15 s at 1°C/s from 30°C to 15°C Lower temperature limit Selectable in range 5°C to 10°C Upper temperature limit Selectable in range 50°C to 55°C Data sampling rate 10 readings per second. Skin and room temperatures:
- Measured by k-type thermocouple Temperature measurement error < 0.5 °C in range 15 – 45 °C Dimensions: Applicator Height 160 mm, diameter 100 mm (base), diameter 55 mm (top), weight 0.8 kg Control box Height 100 mm, length 320 mm, width 470 mm, weight 6.4 kg Power Requirements: 220 to 250 VAC 100VA Options 110 to 120VAC. Should be able to test deep tendon reflexes
- A rubber component should be attached to a flat metallic handle.
- It should have T-Shape, double point solid rubber with reflex point and brush

120- TECHNICAL SPECIFICATION OF DIGITAL PHYSIOGRAPH

Features

• Stand alone unit having coloured TFT display for displaying online and offline recording data.
• Digital Physiograph with time and Event channel.
• Compact, light weight and easy to operate by a beginner.
• System has 6 couplers fitted in a single unit making it easy to carry.
• System has 8 transducers (Force, Pressure, Volume, Respiration, Temperature, Pulse, Respiration
Belt and Isotonic)
• Facility to store recording data and review the same on TFT.
• Interface to the computer-Through USB
• System is supplied with software to review and print the recorded data from PC.

STUDENT PHYSIOGRAPH Comprises Of

Couplers

To record different parameters the standard range of couplers are as follows
a) Biopotential Coupler: Meditech Bio-Potential coupler is designed to record almost all kinds of AC
Phenomena like ECG, EEG, EMG, ERG or any other A.C. Phenomenon.
b) EKG Coupler: The EKG coupler provides a convenient means of recording the input of five
electrodes in various combinations. For Recording Clinical EKG It is Supplied With 5 Pin Junction
Box, Limb & Chest Electrodes & Jelly

c) Strain Gage Coupler: Coupler for recording from all Meditech Strain Gage Transducers. & Use to
record muscle activity force , effect of Drug on heart activity etc
d) Pulse- Respiration Couplers: For recording Pulse or respiration using Photo-electric transducers.
e) Temperature Coupler: for recording internal or surface temperature through orchid temperature
transducer
f) Isotonic Coupler: for recording with Isotonic Fine movement transducer.
Temperature Coupler: for recording internal or surface temperature through Meditech temperature
transducer.
• Isotonic Coupler: for recording with Isotonic Fine movement transducer.

Transducers

A transducer is a device which converts one form of physical energy to electrical energy or vice
versa. To record parameter which are not available in electrical form e.g. Pulse, Respiration, Temperature , Phono Cardiogram etc., one need to use appropriate transducer.

Specifications

Models: PHYSIO-1 PHYSIO-2 PHYSIO-3
No. of Channels - 1 2 3
Display - TFT Display
Display Size - 15.5 cm _ 9.5 cm × Channel Width 80 mm
A/D Conversion - 16 bit A/D
Sensitivity - 50,100,200,500 uv/cm and 1,2,5,10,20,50,100 mv/cm
Sweep Speed - 0.05,0.1,0.2,0.5,1,2,5,10,20,50 & 100 div/sec
Data Sampling Frequency - >256 Hz
Notch Filter - 50 to 60 Hz
Input Impendence- >1 Mega Ohm
CMRR - >80 – 85 db
Power Supply Requirements -220/230V AC 50Hz 110/120V AC 50-60Hz*
Certification - CE

Standard Accessories

ECG Electrodes - 1 Set of 4 Nos.
EEG Electrodes - 10 Nos.
Bio-Potential Junction Box - 1 No.
EG Disc Electrodes - 1 Set of 10 Nos.
Ground Electrode - 1 No.
EEG Paste - 1 Jar
ECG Jelly - 1 Bottle
Operating Manual - 1 No.

121- TECHNICAL SPECIFICATIONS FOR SINGLE CHANNEL PIPETTES OF VARIABLE VOLUME

Specifications for Item No 1- Variable Volume Single channel pipette, 0.1 – 2.5 µL (microliter)

1. Pipette should be able to pipet out **variable volume** of **0.1 – 2.5 µL (microliter)** and not any single/ fixed volume in this range

2. It should have a **single-channel** for pipetting
3. **Manual volume control** should be present
4. **Secondary calibration option for pipetting a measured volume of aqueous or viscous liquid**
5. Four-digit counter should be present that indicates the selected volume
6. It should have a magnified shape at the volume dispensing display for better visibility
7. The plunger of the pipette should require low operating force to aspirate and dispense liquid, reducing user fatigue and thumb muscle activity
8. Low tip ejection force of **≤ 4 newtons**
9. Spring-loaded tip cone for ease of connecting and ejecting pipette tips
10. **Fully autoclavable** for decontamination and sterilization

Specifications for Item No 2- Variable Volume Single channel pipette, 10 – 100 µL (microliter)

1. Pipette should be able to pipet out **variable volume** of **10 – 100 µL (microliter)** and not any single/ fixed volume in this range
2. It should have a **single-channel** for pipetting
3. **Manual volume** control should be present
4. **Secondary calibration option for pipetting a measured volume of aqueous or viscous liquid**
5. Four-digit counter should be present that indicates the selected volume
6. It should have a magnified shape at the volume dispensing display for better visibility
7. The plunger of the pipette should require low operating force to aspirate and dispense liquid, reducing user fatigue and thumb muscle activity
8. Low tip ejection force of **≤ 4 newtons**
9. Spring-loaded tip cone for ease of connecting and ejecting pipette tips
10. **Fully autoclavable** for decontamination and sterilization

Specifications for Item No 3- Variable Volume Single channel pipette, 100 – 1000 µL (microliter)

1. Pipette should be able to pipet out **variable volume** of **100 – 1000 µL (microliter)** and not any single/ fixed volume in this range
2. It should have a **single-channel** for pipetting
3. **Manual volume** control should be present
4. **Secondary calibration option for pipetting a measured volume of aqueous or viscous liquid**
5. Four-digit counter should be present that indicates the selected volume
6. It should have a magnified shape at the volume dispensing display for better visibility
7. The plunger of the pipette should require low operating force to aspirate and dispense liquid, reducing user fatigue and thumb muscle activity
8. Low tip ejection force of **≤4 newtons**
9. Spring-loaded tip cone for ease of connecting and ejecting pipette tips

10. **Fully autoclavable** for decontamination and sterilization

Specifications for Item No 4- Variable Volume Single channel pipette, 0.5– 10 µL (microliter)

1. Pipette should be able to pipet out **variable volume** of **0.5– 10 µL (microliter)** and not any single/ fixed volume in this range
2. It should have a **single-channel** for pipetting
3. **Manual volume** control should be present
4. **Secondary calibration option for pipetting a measured volume of aqueous or viscous liquid**
5. Four-digit counter should be present that indicates the selected volume
6. It should have a magnified shape at the volume dispensing display for better visibility
7. The plunger of the pipette should require low operating force to aspirate and dispense liquid, reducing user fatigue and thumb muscle activity
8. Low tip ejection force of **≤4 newtons**
9. Spring-loaded tip cone for ease of connecting and ejecting pipette tips
10. **Fully autoclavable** for decontamination and sterilization

122- **CUSA SPECIFICATION**

1. Operated with Indian Standard Mains Supply Power -220-240 Volts AC.
2. Frequency – in range of 20-80 KHz.
3. Capable of continuous use for long period without overheating.
4. Inbuilt suction system with vacuum up to 0.9 bar
5. Irrigation rale of up to 50ml/ min. (range 0 to 150 ml)
6. Light weight hand piece with fixed tips/ detachable tip with detachable cable for quick and easy and intraoperative exchange of different hand pieces/ detachable tips sterilized by autoclave or ethylene oxide.
7. Hand piece/ tips must be of different lengths.
8. Magneto restrictive or plezoelectric technology based system
9. Frequency in range of 20-80 KHz
10. Container for hand pieces for storage & autoclaving.
11. Neurosurgery dissection hand piece for use through Neuroendoscopy system
12. All optical accessories must be quoted mentioning quantities, minimum it must last for one year.
13. The system along with all subsystems will be based on integrated robust mobile cart including the suction canister

Specification of hand pieces

1. Short angled macro hand piece with reusable tip, 25 KHz with total length 250 to 300mm, working length: 45 to 50mm, tip diameter 1 to 5 mm.
2. Short angled macro hand piece 35 KHz with reusable tip with total length 250 to 300mm working length: 45 to 50mm, tip diameter 1 to 5mm.

3. Endoscopic hand piece must have working frequency of at least 35 KHz; and is to be used through Neuroendoscopy system with a working channel diameter of 2.0 to 3.0mm.

Separate boxes for hand pieces and tools

4. Bone knife/ Bone Dissector Handpiece 35KHz for Dissection process with disposable Cutting Tips made of titanium Qty.1 no.
5. Dissecting tools/ drill bits knife short length for precise and plannable cutting bones. L 8.5mmxW 0.8mm x H 3.0mm
6. Dissecting tools/ Drill Bits knife long length for deeper lying inventions on the lumber spine. L 8.5mm x W 0.8mm x H 3.0mm
7. Dissecting Tools. Drill Bits Rasp short length for precise and ablation. L 1.45mm x W 2.0mm x H 3.0mm
8. Dissecting Tools/ Drill Bits Rasp Long Length for deeper lying inventianson the lumber spine. L 1.45mm x W 2.0 mm xH 3.0mm
9. If disposable tips are being offered then 15 tips each of all sizes.

Essential Criteria:

1. Equipment quoted should have USFDA and CE (European) approval. Certificate to this effect have to be enclosed with the Technical Bid.
2. The technical bid should clearly mention whether USFDA and CE (European) approval is for all parts of equipment or for somepart.
3. In case the USFDA and CE (European) approval is for some of the tendered equipment parts than, the technical bid should clearly mention for which part of equipment is the USFDA and CE (European) approval present and for which it is not. Failing to comply might lead to rejection.
4. A certificate from the Principal Company has to be attached clearly mentioning where their manufacturing factories are located, giving city & country of manufacture.
5. Physical demonstration of all the instruments is mandatory at hospital premises at OEM cost.
6. CMC offered for the quoted equipment should not be more than 5% of the quoted model with not more than 5% escalation per year after completion of CMC period.
7. CMC offered for the quoted equipment must be on OEM letter head for further years. (CMC offered on distributors/ Vendor letterhead will not be considered).

123- TECHNICAL SPECIFICATION OF STEREOTACTIC FRAME SYSTEM

1. HEAD RING ASSEMBLY

A Compact design provided with artifact free, adjustable Fiber posts and accommodates any type of human skull up to maximum size 200mm in diameter. This is kept fixed on the skull through the operation. The head ring is provided space for oxygen mask.

2. LOCALIZER FRAME

Designed to suit any make of body (CT and MRI Compatible) with Artifact Free Fucidal Structure stems.

3. ARC SYSTEM
(TACSA) with A-P Sliding Units- RH & LH, LAT-Sliding Delta- RH & LH. Vertical Guide-RH&LH, Bearing Bracket- RH & LH

4. MANUAL METHOD
All scans must be orthogonal (Parallel or Perpendicular) to the localizer. After the patient is scanned, calculate the positions of the targets (i.e. A-P, LATERAL & VERTICAL) using the scanner and simple geometry.
All manual calculations are based on two steps:

- Find the origin of the localizer's space
- Measure the distance to the target from that Inter section of lines.

5. "UNISKULL" SOFTWARE METHOD
Uniskull can be installed on any personal computer with MS DOS/ Windows Operating System. Computes the target position in the brain in terms of ANTERIOR-POSTERIOR, LATERAL & VERTICAL. However, accurate analogy depends on the SKILL derived by the CT scan/ MRI Scan operator in picking the data from selectable slice.

6. PHANTOM BASE ASSEMBLY
Simulates the nucleus of the target position in the brain and as well as the approach point on the skull. Provides the surgeon with safe check before conducting the surgery.

DIMENSION	RANGE (mm)
A-P	(-110 to + 110)
LAT	(-110 to + 110)
VE	(-56 to +90)

7. ARC ORIENTOR ASSEMBLY
The Assembly with 5 degree of freedom virtually allows the surgeon to reach the target from any chosen/ suitable point to the skull surface i.e. the 'Approach Point'.

DEGREES OF FREEDOM	RANGE (mm) / DEGREES
A-P	
LAT	
VER	
ALPHA	
BETA	

8. STANDARD SET OF ACCESSORIES:

1. Guide Bush- 03 nos.
2. Standard Guide Tube- 4 no.
3. Extra long Guide Tube -4 no.
4. Drill Biopsy with Grip (3.2 Ø x 250mm Long)- 2 no.
5. Depth Stopper for Drill – 2 no.
6. Guide Sleeve for Cannulea (Bf – 1.5- Micro) -2 no.
7. Guide Sleeve for Cannulea (Bf-2.1-Std)-2 no.
8. Cannulea (Bf-1.5 Micro)-2 no.

9. Cannulea (Bf-2.1 Std)-2 no.
10. Stylet Pointed Tip (Bf-1.5- Micro)- 1 no.
11. Stylet Pointed Tip (Bf-2.1-Std) – 1 no.
12. Stylet Round Tip (Bf-1.5-Micro)-2 no.
13. Stylet Round Tip (Bf-2.1-Std.)-2 no.
14. Depth Stopper for Cannulea (Bf 1.5-Micro) -2 no.
15. Depth Stopper for Cannulea (Bf 2.1-Std) -2 no.
16. Biopsy Forcep with Standard Volume Cup (Bf-1.5-Micro)-2 no.
17. Biopsy Forcep with Standard Volume Cup (Bf-2.1-Std.)-2 no.
18. Side Cutting Cannulea (Bf- 1.5 Micro) -1 no.
19. Side Cutting Cannulea (Bf-2.1-Std)- 1 no.
20. Heaumatoma Evacuator – 1 no.
21. Depth Stopper for Heaumatoma Evacuator -2 no.
22. Bottle -1 no.
23. Angular Tube for Heaumatoma Evacuator -2 no.
24. Suction Tube for Heaumatoma Evacuator -2 no.
25. Guide Sleeve for Heaumatoma -2 no.
26. Tightening Tool or fixation screw -2 no
27. M 10 Tap – 1 no.
28. Allen Key For Intubation (5mm)- 2 no.
29. Allen Key for Fiber Post (4mm) – 2 no.
30. Kissing Probe for phantom check – 1 no.
31. Seale – 6 inches -2 no. 12 Inches – 2 no.
32. Head Fixation Screw (M10 x45mm Long)- 12 no.
33. Fiber Post -6 no.
34. Magnifying Glass-1 no.
35. Software: Uniskul- Standard -1 no.
36. Data sheets for manual co-ordinates measurement on CT/MRI Monitor- Axial- 10 no. each
37. Data sheets for manual co-ordinates measurement on CT/MRI Monitor- Coronal, Sagittal – 2 no. each
38. Data sheets:- Cartesian Co-Ordinate System Standard for (CT+MRI) – Axial, Coronal Sagittal -2 no.
39. Data sheets:- Polar co-ordinates System – Standard for (CT+MRI)- Axial, Coronal Sagittal- 2 no.
40. Packing Boxes with names and stickers -3 no.

123- TECHNICAL SPECIFICATION OF PERCUTANEOUS SPINE ENDOSCOPE

1. Percutaneous Spine Endoscope – Trans/ Extraforminal -2 no.
Telescope

- Spine Endoscope, Working length 180-210mm, Dia 6.3mm- 7.0mm, working channel Dia 4.1mm-4.5mm, view 25-30 degrees

2. Percutaneous Spine Endoscope –Interlaminar-1 no.
Telescope

- Spine Endoscope, Working Length 130-135mm, Dia 6.3mm – 7.0mm, working channel Dia 4.1mm – 4.5mm, view 25-30 degrees

3. Percutaneous Spine Endoscope - Intralaminar (Stenotic) 1 no.
Telescope

- Spine Endoscope, Working Length 120mm – 125mm Dia 9 mm- 10mm, working channel Dia 5.6 mm – 7.5mm, view 10-20 degrees

Specification of Radio Frequency Generator
Radio Frequency Unit

- It should be 4-5 MHz radio frequency unit, power monopolar max. 120 W /4 MHz, bipolar max. 120

Watt/ 1.7 MHz, incl. foot switch and power cable.

Electrodes -10 no. each

- It should have Disposal Bipolar hollow sphere electrode distal head part Working Length 40cm, straight
- It should have Disposal Bipolar hollow sphere electrode distal head part Working Length 38cm, straight
- It should have Disposal Bipolar hollow sphere electrode distal head part Working Length 31cm, straight
- It should have Disposal Bipolar hollow sphere electrode distal head part Working Length 18cm, straight

Spine Needle: 05 Packet Each

- Spine Needle (Sterile/ Single Use) 16 Gauge Beveled Tip
- Spine Needle (Sterile/ Single Use) 18 Gauge Beveled Tip

Note- All instruments should have USFDA/ EUROPEAN CE

124- **TECHNICAL SPECIFICATION OF HAND INSTRUMENTS FOR PERCUTANEOUS ENDOSCOPE (ROUNGERS, GRASPERS TREPHINES ETC.)**

A. INSTRUMENTS

- Spinal cannula set should be 10 pieces, sterile, WL 150 mm, Ø1.25mm
- Dilator should have dia 6.9 mm
- Working sleeve with bevel should be dia 8.0 mm, and WL 185mm
- Irrigation adopter should have dia 8.0 mm
- Extension sleeve should have 8.0mm
- Nucleus grasping forceps should have 3.0 mm, WL 360mm
- Nucleus grasping forceps should have 4.0mm. WL 360mm
- Tube shaft punch should have 4.0mm, WL 360mm

A. HAND INSTRUMENTSS

- Dilator should have dia 6.9mm

- Working sleeve with bevel should have 8.0 mm, WL 120 mm with irrigation adapter, dia 8.0 mm

FORCEPS/ PUNCHES, DIA 2.5MM

- Micro – punch, WL 290mm
- Micro- punch, curved upward, WL 290mm

FORCEPS / PUNCHES, DIA 3.0MM

- Micro- rongeur, WL 290mm
- Micro-punch, WL 290mm
- Tube shaft punch, WL 290mm
- Micro – rongeur, WL 360MM
- Nucleus grasping forceps, WL 360mm
- Spreader, WL 360mm
- Scissors, WL 360mm

FORCEPS/ PUNCHES, DIA 4.0MM

- Micro- rongeur, WL 290mm
- Micro – punch, WL 290mm
- Nucleus grasping forceps, WL 360mm
- Micro- rongeur, articulating, WL 360mm
- Micro- rongeur, curved, WL 360 mm (fits in 4mm working channel)
- Micro- punch, Ø 2.5mm, curved, WL 360 mm (fits in 4mm working channel)

FORCEPS / PUNCHES, DIA 5.2 MM FOR USE THROUGH THE WORKING SLEEVE

- Intradiscal grasping forceps, articulating, WL 210mm
- Intradiscal punch, articulating, WL 210mm
- Intradiscal rongeur, conical jaw, articulating, WL 210mm

HAND-HELD/ ACCESSORY INSTRUMENTS, SHARP- EDGED

- Spoon, dia 2.5mm, WL 290 mm
- Curette, dia 2.5 mm, WL 290mm
- Rasp, dia 2.5mm, WL 350mm
- Annulotome, dia 2.5mm, WL 350mm

HAND-HELD/ ACCESSORY INSTRUMENTS, ATRAUMATIC

- Elevator, Ø 2.5mm, WL 290mm
- Hook probe, Ø 2.5mm, WL 290mm
- Probe, Ø 2.5mm, WL 290mm
- Dissector, Ø2.5 mm, WL 350mm
- Dissector, Ø3.0 mm, WL 350mm
- Probe with flexible tip, Ø 2.5mm, WL 290mm
- Spare inner probe element, WL 290mm, pack of 3

ACCESSORIES

- Instrument grasping forceps
- "X-Tractor" withdrawal instruments, complete set
- Mallet

ENDOSCOPIC KERRISON : 02 NOS. EACH

- Endoscopic Kerrison, ceramic coated, 40 degree dia 3.5mm, working length 360mm
- Endoscopic Kerrison, ceramic coated, 40 degree dia 4.0mm, working length 360mm
- Endoscopic Kerrison, ceramic coated, 90 degree dia 3.5mm, working length 360mm
- Endoscopic Kerrison, ceramic coated, 90 degree dia 4.0mm, working length 360mm
- Endoscopic Kerrison, ceramic coated, 5-5.5mm, Length 240mm
- A-45 & 90 degree, 15.2mm bite
- B-45 & 90 degree, 2.5-3mm bite

DILATOR 2- CHANNEL: 02 NO. EACH

- Dilator 2- Channel Dia 5.3mm, working length 225mm
- Dilator 2- Channel Dia 6.3mm, working length 225mm
- Dilator 2- Channel Dia 7.0mm, working length 180mm
- Dilator 2- Channel Dia 9-11mm, working length 180mm

WORKING TUBE : 03 NO. EACH

- Working tube, oblique window, Inner Dia 6.5mm Outer Dia 7.5mm, Length 178mm
- Working tube, oblique window, Inner Dia 7.2mm Outer Dia 8.0mm, Length 178mm

WORKING TUBE: 03 NO. EACH

- Working Tube, wave tip Inner Dia 7.2mm, Outer Dia 8.0 mm, length 178mm
- Working Tube, wave tip Inner Dia 7.2mm, Outer Dia 8.0 mm, length 125mm
- Working Tube, wave tip Inner Dia 9-10.5mm, Outer Dia 11-13mm, length 90-98mm

Note- All instruments should have USFDA/ EUROPIAN CE

125- **TECHNICAL SPECIFICATION OF DVT PUMP SPECIFICATIONS**

Should be able to deliver intermittent circumferential pneumatic compression mimicking the walking action.

1. Device should be light weight 3 kg to 5 kg.
2. Device should come with reusable extension tubing and hospital bed hanger (preferable)
3. Device should have a quick release connectors to allow for easy removal of the garments.
4. Device should have an Inflation Cycle as per norms.
5. Device should generate a pressure of 40mmHg (approx.)
6. Device should capable for Unilateral and Bilateral Treatment for Foot, Calf or Calf Thigh.
7. Treatment can be Paused and started anytime.
8. Device should have a 6 Hours or more Battery Life.
9. Device should have a Detachable Power Cord for Ease of Transport.
10. Electrical Specification 100-240 VAC, 50/60Hz.
11. Device should have a Lithium Battery, 10.8 V, 4400mAh (rechargeable)
12. Device should be US-FDA and / or European CE Approved.

126- **SPECIFICATIONS FOR MULTIPLE ARRAY SYSTEM PERFORMANCE**

- Multiplexing capability – Should able to analyze minimum 50 analytes per well and should able to analyze up to 4800 results in one hour.
- Should be able to perform Qualitative and Quantitative analysis of Proteins, Nucleic acids (genotyping, presence absence experiment) and RNA (gene expression, detection) in a variety of sample matrices apart from routine serum and plasma based samples.
- Should have option to design our own custom assay for specific application in lan for DNA, RNA and protein detection and analysis.
- Sample uptake volume should minimal as less as 25 microliter per well per sample.
- Should be simple and user installable in less than 2 hours.
- Should be ordered with latest version of desktop PC (intel core i7 with 9 th Generation with installed antivirus)

PROBE AND MAINTENANCE

- It should be able to have features like probe piercing
- Should be able to perform auto probe height adjustment and should able to save the plate height settings for future for different plates like U bottom/ filter plate / Mylar plate /V bottom plate/ flat bottom plate.
- Daily start up time should be equal to or less than 15 min.
- Steamlined start up and shut down protocol with minimal maintenance requirements: the shutdown protocol should be attached with the kit protocol for the automated shut down option.
- The usage of the sheath fluid should be minimal
- Should be able to perform daily maintenance protocol with less fluidics involvement.

OPTICS

- Should be having features of fluorescent Imager CCD Imager based
- Detection should be possible reporter channel excitation -511nm
- Classification channel excitation -62nm

ASSAY SPECIFICATION

- Should be able to perform wide range of arrays like proteins / Nucleic Acids and customization and premixed options should be made available as per the demand.
- Should be able to run pre optimized assay kits as well as reagents for user developed assays (there should not be any limitation for other vendors – Open system)

SOFTWARE

- Dedicated software for complete acquisition, analysis, calculation and export of data in publication quality format.
- The software should come as loaded along with the system and should be open for most of the genotypic and phenotypic assays should be able to support other assays from different vendor with minimal changes in protocol settings.
- Should have Intuitive graphical user interface for simplified workflow
- Should support optimized sample flow for higher multiplex requirements.
- Should able to perform automated start-up, shutdown and routine maintenance operations.
- Should able to offer Enhanced data analysis and report generation capabilities.
- The software should able to configure to automatically launch third part data analysis programs for advanced statistical data analysis and should have csv file format as raw data file for easy sharing and usage.

The instruments and software should be able to support below features and applications-

- Should be able to run/ provide low to mid Gene Expression Assays with maximum plex size of 80.
- Should be able to do DNA Copy no. variation assays; these assays should be made available are customized and ready to use format from the supplier.
- Should be able to run the assays that utilize xMAP beads for target capture and branched DNA (bDNA) technology for signal Amplification.
- The supplier should be able to provide the consumables and or kits that can be used for quantitation of mRNA, Inc.RNA, DNA and Telomeres.
- The Instrument and the kits should be sensitive enough to discriminate single copy gene resolution up to 0.5 to 6.
- The assay should be having limit of detection of 10,000 copies per assay per well and limit of quantitation up to 20,000 copies per well.
- The supplier/ vendor should be able to support and provide various kits in areas of Stem Cell, Inflammation and Immunology, Epigenetics, Cardiology, cance signaling, neuroscience, metabolism and Endocrinology, Autophagy and Apoptosis, Toxicity and Drug Metabolism.
- The Instrument should be able to support the kits which can process hundreds or even thousands of samples per 24 hrs.

- The supplier should be able to provide and **support custom designed panels** , manufactured and validated for both genes as well as protein – based assays.
- The kits to be supplied for should be able to **work directly on blood** without the need for globin depletion and **RNA purification.**
- Should be able to provide both **off the shelf panel and custom panels** for both proteins and gene expression assays.
- At least 3 different color microsphere beads included (minimum 106 beads of each color)
- A branded compatible online UPS (10 kva)
- Vendor should provide Comprehensive Five year warranty including spares with pre-tender demonstration.
- Biannually training and Hands-on workshop.
- Should provide one plate 65 plex human cytokine kit for screening of sample.
- One additional conjugation kit and one calibration and validation kits.
- Comprehensive Meta-analysis (CMA) software with license registration.
- Turnitin Instructor Version or iThenticate software.
- Within 24 hours service after lodging the complaint against any fault.
- Time to time technical and instrument and software expert support.

Essential Criteria (Should be included with all the items to be tendered as part of specifications):

1. Demonstration mandatory at hospital premises at OEM cost, if required by the tenderer.
2. CMC offered for the quoted equipment should not be more than 5% of the quoted model per year.
3. CMC offered for the quoted equipment must be on OEM letterhead for further years. (CMC offered on distributors/ Vendor letterhead will not be considered).
4. Installation process should be performed by OEM trained service engineer/ service representative on OEM's letter head/ service report, with a mandatory provision of providing preventive service visits of OEM trained service engineer/ service representative quarterly per year till completion of warranty period (i.e. 20 visits for first five years) and further quarterly visit (04 visits/ year) till the completion of CMC period.
5. The installation process must be completed by the OEM/ Service provider within 30 days of supply.
6. The accessories/ consumables utilized during the period of installation process should be taken care FOC by OEM/ Service provider.
7. The equipment complies with the requirement of the Medical Device Directive of class I equipment and Electromagnetic compatibility; all supporting documents must be provided.
8. **Equipment should have brand name / model number embossed/ etched on the equipment.**
9. In case of technical snag/ failure/ breakdown, the response time for Inspection should be within 24 Hour and repair within 5 days, otherwise provide a service machine until the period of recovery of breakdown of the unit. Failing which will attract penal action as per the decision of the University (Uptime guarantee of 95%).

10. The page of technical bid should be numbered and checklist should be duly filled as per the annexures and all annexures should be in accordance with the format, otherwise it may be the reason for disqualification.
11. 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 as per below mentioned format for the compliance statement.**

S. No.	Technical Specification	Compliance Yes / No	Page No. in the proposal submitted where documentary evidence is enclosed as per tender Specs with highlighting, Numbering & flagging
1			
2			

12. Should be quoted with 5-year comprehensive warranty (including all spares, batteries, circuit and other accessories) and five year of Comprehensive maintenance contract (CMC) thereafter.
13. Warranty and CMC should include all spares/accessories including preventive maintenance kits, batteries etc.
14. Rate of consumable, it any, should be quoted separately and they will also be fixed for five years. These should not include any spares/accessories.
15. Only the manufacturer or its Indian subsidiary can apply. In case there is no Indian subsidiary, only authorized dealers with original authorization letter mentioning authorization for sales as well as after sales services.

127- SPECIFICATION FOR AUTOMATED WESTERN BLOTTING IMAGING SYSTEM

1. Chemiluminescent Documentation System should be fully automated with CCD technology.
2. The system should be suitable chemiluminescent Western Blots – all popular HRP and AP substrates (e.g. SuperSigna and Western Breeze Substrates), Protein gels –(Colorimetric staining of gels) (e.g. Coomassie, silver sypro etc.) and membranes (e.g. Ponceau S. MemCod stain), Nucleic acid gels (etBr. SYBER dye etc.) and colony plates.
3. **Camera** : True 16-bit cooled **4 megapixel** or more high efficiency low noise CCD sensor with -30 ^{0}C below ambient temperature.
4. System interface: Touchscreen at least 12 inch display, fully automated operation.
5. Motorized and fully automatic fixed lens with f-stop of 0.95 or better.
6. The system should have Auto focus for each level of zoom & Auto – exposure capability. It should automatically take the best focus according to the sample.
7. **Dynamic Range** : system should have equal or more than 4.0 orders of magnitude.
8. **Illumination** : System should utilize a transilluminator based on green LED, which effectively excites popular DNA dyes such as ethidium bromide and SYBR.

9. **Exposure time:** 1 millisecond to 60 minutes or more- system should possess built-in roll out LED transilluminator with sample view stage size of 22cmx18cm or more.
10. System should eliminate uneven light illumination.
11. Filter wheel and filters: Minimum 2 position motorized filter wheel.
12. System should have images in TIFF, JPG, PNG.
13. System should allow series capture for creating series of images over different time period.
14. System should offer various binning option modes ranging from 1x1 to 4x4 for customized sensitivity / resolution.
15. System should have built in algorithms that can identify multiple analysis frames and then assigns and quantifies lanes and bands for each analysis frame independently to allow multiple gels or membranes to be imaged and analyzed simultaneously with minimal user input and manipulation.
16. Automatic generation of customization report containing channel images, tables reporting band intensity, size, density, background etc. with automatic and manual detection of lanes and quantification of bands or regions. System should have option to analyze up to 4 mini gels simultaneously.
17. The system should have molecular weight marker (MWM) overlay feature to allow users to perform molecular weight determination using a colorimetric molecular weight marker in the membrane channel and combining it with the corresponding chemiluminescent image.
18. The system should include various blot formats like midi, mini and vertically cut strips.
19. The system should be based on sequential lateral flow (SLF) technology.
20. The system should be capable enough to perform hands free blocking, antibody incubation & washing steps during immunodetection.
21. The system should be capable of producing reproducible results and should utilize less primary antibody than manual methods.
22. Image analysis software should not have any requirement for license registration allowing multiple users to use the software with full functionality.
23. Software should produce customizable reports with data organized as desired including Lane & Band identification with molecular weight estimation, relation quantitation, absolute quantitation and normalization using loading controls.
24. Biannually training and Hands-on workshop.
25. Comprehensive five year warranty including spares.
26. Within 24 hours service after lodging the complaint against any fault.

Essential Criteria (Should be included with all the items to be tendered as part of specifications):

1. Demonstration mandatory at hospital premises at OEM cost, if required by the tenderer.
2. CMC offered for the quoted equipment should not be more than 5% of the quoted model per year.
3. CMC offered for the quoted equipment must be on OEM letterhead for further years. (CMC offered on distributors/ Vendor letterhead will not be considered).

4. Installation process should be performed by OEM trained service engineer/ service representative on OEM's letter head/ service report, with a mandatory provision of providing preventive service visits of OEM trained service engineer/ service representative quarterly per year till completion of warranty period (i.e. 20 visits for first five years) and further quarterly visit (04 visits/ year) till the completion of CMC period.
5. The installation process must be completed by the OEM/ Service provider within 30 days of supply.
6. The accessories/ consumables utilized during the period of installation process should be taken care FOC by OEM/ Service provider.
7. The equipment complies with the requirement of the Medical Device Directive of class I equipment and Electromagnetic compatibility; all supporting documents must be provided.
8. **Equipment should have brand name / model number embossed/ etched on the equipment.**
9. In case of technical snag/ failure/ breakdown, the response time for Inspection should be within 24 Hour and repair within 5 days, otherwise provide a service machine until the period of recovery of breakdown of the unit. Failing which will attract penal action as per the decision of the University (Uptime guarantee of 95%).
10. The page of technical bid should be numbered and checklist should be duly filled as per the annexures and all annexures should be in accordance with the format, otherwise it may be the reason for disqualification.
11. 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 as per below mentioned format for the compliance statement.**

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12. Should be quoted with 5-year comprehensive warranty (including all spares, batteries, circuit and other accessories) and five year of Comprehensive maintenance contract (CMC) thereafter.
13. Warranty and CMC should include all spares/accessories including preventive maintenance kits, batteries etc.
14. Rate of consumable, it any, should be quoted separately and they will also be fixed for five years. These should not include any spares/accessories.
15. Only the manufacturer or its Indian subsidiary can apply. In case there is no Indian subsidiary, only authorized dealers with original authorization letter mentioning authorization for sales as well as after sales services.

128- **SPECIFICATION FOR LIQUID NITROGEN TANK**

1. Liquid Nitrogen tank should have capacity of 160 liters, evaporation rate 0.63 Liters/ day and static holding time 254 days.
2. Should have storage capacity of up to 6000 vials of 2ml each
3. All racks and cryo boxes (10x10) included within the system
4. Wide mouth opening for easy access to racks and cryoboxes
5. Strong, lightweight aluminum construction
6. High thermal efficiency
7. Ultra low evaporation losses
8. Compatible with all major cryobox brands
9. Heavy duty lockable enclosure offers excellent security
10. Liquid or vapor phase options available
11. Temperate date logging device available
12. Should facilitate with Cryoguard Liquid nitrogen low level Alarm, Mains and Battery
13. Cryoguard with integral data logger & temperature display
14. OD 1 mini-series with insulating lids.
15. With roller base.
16. With five year vacuum warranty.

Essential Criteria (Should be included with all the items to be tendered as part of specifications):

1. Demonstration mandatory at hospital premises at OEM cost, if required by the tenderer.
2. CMC offered for the quoted equipment should not be more than 5% of the quoted model per year.
3. CMC offered for the quoted equipment must be on OEM letterhead for further years. (CMC offered on distributors/ Vendor letterhead will not be considered).
4. Installation process should be performed by OEM trained service engineer/ service representative on OEM's letter head/ service report, with a mandatory provision of providing preventive service visits of OEM trained service engineer/ service representative quarterly per year till completion of warranty period (i.e. 20 visits for first five years) and further quarterly visit (04 visits/ year) till the completion of CMC period.
5. The installation process must be completed by the OEM/ Service provider within 30 days of supply.
6. The accessories/ consumables utilized during the period of installation process should be taken care FOC by OEM/ Service provider.
7. The equipment complies with the requirement of the Medical Device Directive of class I equipment and Electromagnetic compatibility; all supporting documents must be provided.
8. **Equipment should have brand name / model number embossed/ etched on the equipment.**
9. In case of technical snag/ failure/ breakdown, the response time for Inspection should be within 24 Hour and repair within 5 days, otherwise provide a service machine until the period of recovery of breakdown of the unit. Failing which will attract penal action as per the decision of the University (Uptime guarantee of 95%).
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13. Warranty and CMC should include all spares/accessories including preventive maintenance kits, batteries etc.
14. Rate of consumable, it any, should be quoted separately and they will also be fixed for five years. These should not include any spares/accessories.
15. Only the manufacturer or its Indian subsidiary can apply. In case there is no Indian subsidiary, only authorized dealers with original authorization letter mentioning authorization for sales as well as after sales services.

129- SPECIFICATION FOR BENCH TOP FLOW CYTOMETER

1. Bench top flow cytometer should have 3 solid state laser (blue, red, and violet) equipped with latest technology and should be up-gradable with yellow laser.
2. It should be capable of 12 parameter analysis (at least 8 and ideally 10 colour fluorescent plus forward and side scatter).
3. The system be CE/UL/US-FDA approved for clinical/ research use.
4. The system should have a sample acquisition rate of at least 25,000 to 30,000 per second.
5. The company should mention laser power output and minimum laser power received at the flow cell at the time of sample acquisition for all laser in the offer.
6. The system should have threshold setting (discriminators) option on all parameter and it is preferable that it should be able to set multiple threshold simultaneously for a single sample run.
7. Must have compensation capability between all fluorescence channels manually and through auto compensation.
8. The system should support unrestricted fluorescent compensation from 0 to 100% between all fluorescent channels during or post acquisition.
9. It is desirable that the system may be capable of supporting gain independent spill over value calculation for different fluorochromes so that any successive voltage can recalculate the spill over values without performing compensation again.
10. The system software should have automated controlled fluidics start up and shut down procedures.

11. The company should provide standard software for complete plot and graphical analysis of flow files with facilities such as back getting and post analysis compensation.
12. The system software should be capable of establishing baseline setting of system performance and be able to adjust for instrument variability thereby automating instrument setup.
13. The instrument should be capable of performing daily QC and of maintaining monthly quality assurance data for monitoring performance of the instrument
14. The equipment should have analogue/ digital signal processing with dynamic range of at least 20 bit data acquisition or more order to get the clear resolution.
15. The machine should be up-gradable with automated loader with ability to process 96 & 394 well plates and minimum 24 tubes or more.
16. The data management system should have compatible PC workstation with at least processor, 160GB hard disk drive, DVD/CD writer (combo drive) 22" monitor and colour laser jet printer.
17. Online UPS with at least 30 minutes backup should quoted with the system and should be supplied with the equipment.
18. The company should provide multiple time to time free training to the users as per their requirement during setting up of flow lab and later for up gradation.
19. Participating company should have direct presence in India with relevant application and service specialist for anytime support.
20. The company should have proven capability demonstrated in the past in after-sale-service and application support in the field of flow cytometry instrumentation in India.
21. 5 years warranty followed by 5 years CMC to be included.
22. The system should have PMT detector.
23. The machine should be supply with the necessary consumables.

Essential Criteria (Should be included with all the items to be tendered as part of specifications):

1. Demonstration mandatory at hospital premises at OEM cost, if required by the tenderer.
2. CMC offered for the quoted equipment should not be more than 5% of the quoted model per year.
3. CMC offered for the quoted equipment must be on OEM letterhead for further years. (CMC offered on distributors/ Vendor letterhead will not be considered).
4. Installation process should be performed by OEM trained service engineer/ service representative on OEM's letter head/ service report, with a mandatory provision of providing preventive service visits of OEM trained service engineer/ service representative quarterly per year till completion of warranty period (i.e. 20 visits for first five years) and further quarterly visit (04 visits/ year) till the completion of CMC period.
5. The installation process must be completed by the OEM/ Service provider within 30 days of supply.
6. The accessories/ consumables utilized during the period of installation process should be taken care FOC by OEM/ Service provider.

7. The equipment complies with the requirement of the Medical Device Directive of class I equipment and Electromagnetic compatibility; all supporting documents must be provided.
8. **Equipment should have brand name / model number embossed/ etched on the equipment.**
9. In case of technical snag/ failure/ breakdown, the response time for Inspection should be within 24 Hour and repair within 5 days, otherwise provide a service machine until the period of recovery of breakdown of the unit. Failing which will attract penal action as per the decision of the University (Uptime guarantee of 95%).
10. The page of technical bid should be numbered and checklist should be duly filled as per the annexures and all annexures should be in accordance with the format, otherwise it may be the reason for disqualification.
11. 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 as per below mentioned format for the compliance statement.**

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13. Warranty and CMC should include all spares/accessories including preventive maintenance kits, batteries etc.
14. Rate of consumable, it any, should be quoted separately and they will also be fixed for five years. These should not include any spares/accessories.
15. Only the manufacturer or its Indian subsidiary can apply. In case there is no Indian subsidiary, only authorized dealers with original authorization letter mentioning authorization for sales as well as after sales services.

130- TENDER SPECIFICATIONS FOR DIRECT DIGITAL FLAT PANEL RADIOGRAPHY SYSTEM WITH TWO FLAT PANEL DETECTORS

A fully digital radiography system capable of detector exposure and image acquisition in vertical, horizontal and oblique positions to perform all skeletal body and chest radiography.

Any two components out of three (X-Ray tube, X-ray Generator and Flat panel detectors) should be from the same manufacturer. Complete system operation with control of generator, X-ray tube and imaging system from a single integrated user interface should be possible.

Quoted model should be AERB type approved.

A. Microprocessor controlled high frequency generator: Generator should be of latest technology with High-frequency generator with constant output
Output 65 KW or more.
kV range should be atleast 45 kV- 150kV
It should have digital display or kV and mAs and ms in the console and the tube housing
Should have range of **0.5 to 500** mAs or more
Should have range of 0.1 to 2 second of exposure time or more
It should have tube overload protection.
Anatomical programming radiography should be possible. User should be able to alter the pre-set parameters

B. Ceiling Mounted X-Ray Tube with control grip & collimator

System should have a ceiling mounted X ray tube support, capable of motorized movement all direction including Z axis
X-Ray tube should be rotating anode high speed of 8000 rpm or more,
SID (Source to Image Distance) in vertical positions 150 cm or more, in horizontal position 180 cm or more, should be possible
Rotation of tube should be possible in multiple directions, please specify range of rotation
Must have dual focus (large focal spot of 1.3 mm or less, and small focal spot of 0.6mm or less).
Tube should be with anode heat storage capacity of 300 kHU or more
Tube should have provision for digital information display and system control buttons for easy functioning.
Filtration (Inherent or including added filtration), not less than 0.8mm Al equivalent
The X-ray tube should have square / rectangular multi leaf collimator with halogen lamp/bright light source. Collimator should work with manual and motorized function, controllable by organ programming. Light field indicator with automatic turn off function
Tube mount design: Semicircular/circular/ergonomic handle to grasp easily
Necessary cables with durable protective covering
Anti collision control system

C. Table top :
Motor driven, free floating table top with bucky and digital flat panel detector, Adjustable Table height
Four way floating horizontal table top made up of carbon fiber or equivalent material with attenuation equivalent of 0.75mm Aluminium at 100 kV or less
Length of Table Top should be 200 cm or more
Table top locking facility
Longitudinal table movement of ± 34 cm or more
Transverse table movement of ± 12 cm or more
Longitudinal patient coverage without moving the patient of 180 cm or more
Maximum patient weight - 200 kgs or more
Foot switches for – adjusting height, locking / unlocking
High quality removable grid

D. Vertical Stand with digital flat panel detector

Motorized and manual, counter balanced height adjustable vertical bucky stand for the digital flat panel detector
Maximum height to detector panel (center) from the floor should be 150 cm or more
Removable grid for vertical bucky applications
Tilt should be possible

E. Fixed Digital Flat Panel Detectors for table and vertical stand (Total number 2)

Flat Panel Detector size of at least 40 x 40 cm /43cm x35cm or more.
Detector Panel should be made of amorphous Silicon / CsI / Gadox with TFT array
Minimum pixel should be 150 micron or less
Image resolution 2.5 Lp/mm or more
Mention the estimated life of the detector

F. Acquisition Workstation :

Operating console should have a facility for patient identity entry, viewing and processing images, documentation, filming etc.Facility of retrospective editing of patient data.
Anatomical programming radiography should be possible for adult and pediatric patient.
Should have a high resolution TFT / LCD Monitor of minimum 19 inch size or more, fully flat with minimum 1024 x 1024 or more display matrix; touch screen based monitor will be preferred
Image processing functions like annonation, measurement, rotate, mirroring, zoom, move, windowing filter should be possible; edge enhancement, noise reduction, and contrast enhancement facility should be available.

Should be connected to Dry chemistry camera for documentation. Multi format printing should be possible with user selectable options.

System should have latest processor with 8GB RAM or more, and 500GB or more storage capacity
Hard disc storage : storage of 4000 or more images
It should have an DVD writer for recording and loading images on DVR-R for image storage and patient copy (with DICOM viewer).

System should have automatic exposure control (AEC) with at least 3 fields.
Dose reduction software should be available.
Dose reporting in DICOM format

G. Review Workstation :

High resolution TFT / LCD medical grade monitor of minimum 21-inch size or more.
System should have latest processor with 8GB or more RAM and 2TB or more storage capacity

Post-acquisition image processing, viewing, reprocessing, hard copy documentation and onwards transmission should be possible.

Image processing functions like annonation, measurement, rotate, mirroring, zoom, move, windowing filter should be possible; edge enhancement, noise reduction, and contrast enhancement facility should be available.

Should be connected to Dry chemistry camera for documentation. Multi format printing should be possible with user selectable options.

Ability to record and retrieve data from DVD; DVD should have viewing software able to run on any ordinary PC
Hard disk storage capacity should be of 10000 or more images.

H. DICOM standards
The system should be capable to connect to existing PACS through RIS/HIS at no extra cost
DICOM 3.0 or higher version with package including; DICOM WLM, DICOM MPPS, DICOM Print, DICOM Image Export incl. Storage Commit, DICOM media on DVD-R, DICOM Query/ Retrieve.

I. Optional softwares

J. *Accessories Should be defined by the User*
Dry Chemistry Camera should have minimum 500 DPI or more and should print at least 3 sizes of films on line out of 8x10, 10x12, 10x14, 11x14, and 14x17 inches. 14 x 17 inch film size is mandatory
Servo voltage stabilizer for main system
Online UPS alongwith batteries of appropriate rating to give 30min. back up for operating console (excluding radiography equipment), review workstation and dry chemistry camera.
Light weight lead aprons-2 Nos. with stand (1)
Gonad shield (2), Thyroid shield (2)
Lead Glass 100 cm x 100 cm
Necessary furniture (computer table, storage facility, minimum 2 revolving chairs, other required furniture for workstation, and console).
Compression belt for IVP
LED X-ray Film viewer with adjustable brightness (1); capable of holding 2 films of 14"x17" size
Provision for storage of removable grids (i.e. box / into vertical stand)

K. Standards, Safety & other requirements:
1. Must be a European-CE and US- FDA approved product; Electrical safety conforms to standards for electrical safety.
2. NOC and AERB approval for the installation of equipment should be provided by the vender.
3. As per AERB / ICRP guidelines for radiation leakage and safety of X-ray equipments
4. System should perform satisfactorily between ambient temperature range (without OEM's):+10 to +30 degree C and Humidity: 30-75% noncondensing.
5. Networking of radiography system with acquisition and reporting work stations, printer.
6. Prerequisites should be clearly spelt out in terms of DR room requirements.
7. System should be fitted with Indian plugs and operate with existing electricity supply in department.

L. Installation (TURNKEY): Will depend upon the site.

1. The installation and commissioning of the new machine shall be free of any direct or indirect costs. The room plan will have to be verified with the parent department beforehand.

2. Flooring, wall furnishing, radiation shielding, limited civil and electrical work will be included. Provision of changing room should be made.

3. Electric alteration / fixation pertaining to the machine will be responsibility of firm.

M. Instructions to Vendors:

The cost of entire turnkey will be considered for L1 purpose

Standard uptime guarantee and warranty terms as per institute/ministry norms will be complied with.

Only manufactures or Indian counterparts are requested to offer against this tender.

Supplier must ensure availability of expertise service and maintenance at installation site. Supplier must ensure availability of spare parts and repair for next 10 years. Vender must have a service center at installation site.

All information in the tender document must be supported in the product data sheet. Please attach the original manufacture's product catalogue and datasheets. Photocopied, computer generated catalogue and datasheet will not be accepted.

Compliance statement sheet must quote page number/s as it appears in the product data sheet enclosed by the vendor.

The Bidder is required to quote year-wise CMC charges for next five years after completion of warranty for the complete system including X-ray Tube, detector, UPS etc.

Supplier must ensure 5 years guarantee / warranty followed by 5 years CMC on all parts of the digital radiography system including x-ray tube and electronic items and all other parts for which order will be placed. The warranty shall be effective from the date of handover.

Give a list of reputed government Institutions where similar equipment is recently installed in India. Supplier must attach individual performance report of its quoted model from 2 reputed government institutions mentioned in the list.

System should have facility to be upgraded and supplier must ensure free software update during the period of warranty and CMC.

User manual and service manual in English (booklet or CD/DVD)

Essential Criteria (Should be included with all the items to be tendered as part of specifications):

1. Demonstration mandatory at hospital premises at OEM cost, if required by the tenderer.
2. CMC offered for the quoted equipment should not be more than 5% of the quoted model per year.
3. CMC offered for the quoted equipment must be on OEM letterhead for further years. (CMC offered on distributors/ Vendor letterhead will not be considered).

4. Installation process should be performed by OEM trained service engineer/ service representative on OEM's letter head/ service report, with a mandatory provision of providing preventive service visits of OEM trained service engineer/ service representative quarterly per year till completion of warranty period (i.e. 20 visits for first five years) and further quarterly visit (04 visits/ year) till the completion of CMC period.
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14. Rate of consumable, it any, should be quoted separately and they will also be fixed for five years. These should not include any spares/accessories.
15. Only the manufacturer or its Indian subsidiary can apply. In case there is no Indian subsidiary, only authorized dealers with original authorization letter mentioning authorization for sales as well as after sales services.

131- SPECIFICATION OF 128 SLICE CT

1. General

1. The system quoted should be state of-art, multi-detector helical CT scanner.

2. The scanner should be capable of comprehensive whole body imaging including pediatric, cardiac, abdomen, neuro and vascular imaging applications.
3. It should be European CE and US FDA approved.
4. The quoted model should be AERB type approved

2. Gantry

1. The minimum scan time for a Gantry rotation should be less than or equal to 0.35 s.
2. The Gantry should have 3D Positioning lights.
3. The system should be capable of acquiring 128 Slices per Rotation and reconstructing 128 slices or more per rotation
4. The Scan field of view (FOV) in acquisition mode should at least 50 cm or more with intermediate Steps for scanning different anatomies.
5. Gantry Aperture should be at least 70 cm diameter.

3. X ray Generator and Tube

1. The X ray Generator should be compact and inbuilt in the Gantry.
2. The System X ray power should be 70 kW or more.
3. The mA range available should be between **10 mA to 600 mA** or more
4. The X ray Tube should Focal spot size of less than 0.95 mm.
5. The heat storage capacity should be 7 MHU or more.
6. The X ray tube should have a cooling rate cannot less than 750 KHU per MIN.
7. The X ray tube Cooler Unit should be in-built in the Gantry.

4. Detectors

1. 1 The Detector Offered should be Solid State.
2. The System should have 128 independent physical Rows of detector or more with capability of acquiring 128 slices and reconstructing 128 or more per rotation.

   { Alternatively 128 slices can be obtained using 64 detectors also; Committee can take a call on this}

3. The detector shall be large area detector with Z axis coverage of 38 mm or more.
4. The detector should not require frequent calibration.

5. Patient Couch

1. The patient table offered should have a minimum load bearing capacity of at least 200 KG.
2. The Minimum table-top height should not be more than 65 cm from the floor level for case patient loading.
3. The Minimum Scannable range should be at least 160 cm.
4. The vertical range should be at least 35 cm (max height minus min height)
5. Remote UP/DOWN, FWD/BWD of the Patient Couch should be standard.

6. Topogram

1. The scannogram should be displayed real time.
2. Views should be feasible in frontal and lateral orientations.

3. Should be possible to interrupt acquisition manually if necessary.

7. Axial/Helical Scanning

1. The system offered should have Spiral Capability of at least 60 seconds or more.
2. The range of Spiral scanning in Axial Direction should be more than 100 cm.
3. Pitch should be freely selectable in auto and manual mode with a range of at least 0.5-1.5.
4. The Reconstruction Time in Spiral scan should not be more than 100 ms.
5. The system should have the Smart Prep or equivalent facility & ability to track Contrast medium to trigger scan.
6. ECG-gated CT acquisition obtaining CT images of the heart in defined phased of the cardiac cycle.
7. The system should have automatic dose modulation as per patients body weight

8. Computer

1. The Computer offered should be the Latest Multi-tasking Processors and a menu driven platform with at least 4 /16 GB RAM.
2. Medical grade high resolution LCD color monitor of at least 19 inches size.
3. The reconstruction matrix should be at least 512x512.
4. The display matrix should be at least 1024x1024.
5. Real time reconstruction speed: 15 images per second or more at 512 x 512 matrix..
6. It should have facility to store at least 250,000 Images.
7. DICOM facility to send, store, print, receive, Query/Retrieve, MWM, MPPS etc should be standard.
8. PC Based connectivity should be standard for easy transfer of Images & Report. The image transfer from main console to workstation should be automatic and immediate.

9. Operator Console

1.There should be a console with one matched independent workstation comprising of 19" medical grade monitors of at least 1 MP resolution and a display matrix of 1024x1280 or more.

1. Filming
2. MPR: Automatic display of MPR images after scan should be offered.
3. Minimum and maximum intensity projection.
4. 3 D volume rendering. CT Angiography, Bone Removal, Flythrough, Table removal
5. 3D SSD (Shaded Surface Display)

10. Workstation

1. Archiving on CD/DVD.
2. MPR: Automatic display of MPR images aftger scan should be offered.
3. Bolus triggered Brain Perfusion CT study (at least 3-level) with automatic CBF, CBV, MTT, TTP maps, ROI placing, comparing ROI, saving maps.
4. Minimum and maximum intensity projection.
5. 3 D volume rendering.
6. 3D SSD (Shaded Surface Display)
7. Advanced vessel analysis
8. Auto bone removal.
9. Time point comparison

10. Coronary tree analysis: automated 3D processing of coronary arteries, calcium scoring slent analysis. L.V analysis
11. Neuro DSA with Automated Bone Removal.
12. Fusion CT Fusion of morphological data of CT & MRI.
13. Dental CT
14. Pediatric applications (low dose)

11. Resolution

1. High Resolution scan package should be offered as standard with minimum slice thickness of 0.65 mm or less and isotropic resolution of 0.4 cm or less.
2. The high contrast resolution should be more than 15 lp/cm (@2%MTF).
3. Shoulder, Pelvis Streak Artefact suppression Software should be standard.
4. Noise Suppression protocols to maintain LCD at low dose should be standard.
5. Special software (like mA modulation in routine & cardiac mode) to ensure dose efficacy should be standard.
6. Specify the CT Dose Index.
7. Raw data-based Iterative Reconstruction Technology for Dose-reduction should be standard.
8. Iterative Metal Artifact reduction software for metal implants, coils, pacemakers etc
9. Low dose Paediatric CT mode should be available. Pediatric and infant base low kV protocols (70 kV) shall be available based on the infant weight/BMI
10. Patient radiation dose should be displayed on the monitor.

12. Accessories

1. Dry chemistry camera of DPI 500 or more of any reputed make.
2. Lead Glass of 200x100 cm.
3. UPS with half an hour back up to run the entire CT, Computers, Dry chemistry camera, Work Stations etc.
4. Dual Head Pressure Injector of reputed make
5. Multi Para monitor with pulse oximeter of a reputed make for monitoring vitals.
6. Patient radiation dose should be displayed on the monitor.
7. ULTRA LIGHT WEIGHT zero-Lead aprons - 4 Nos.
8. Lead apron stand — 1 No.

Essential Criteria (Should be included with all the items to be tendered as part of specifications):

1. Demonstration mandatory at hospital premises at OEM cost, if required by the tenderer.
2. CMC offered for the quoted equipment should not be more than 5% of the quoted model per year.
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14. Rate of consumable, it any, should be quoted separately and they will also be fixed for five years. These should not include any spares/accessories.
15. Only the manufacturer or its Indian subsidiary can apply. In case there is no Indian subsidiary, only authorized dealers with original authorization letter mentioning authorization for sales as well as after sales services.

132- SPECIFICATION FOR CRITICAL FLICKER FUSION APPARATUS

1. Frequency: 1.0-100.0 Hz in 0.1 Hz increments with an error of 0.5%
2. Slide Holder: 2"x2" (5.08x5.08cm) 35mm holder for optional model 12100 neutral density filters with 0.1% to 50% light transmission.
3. Auto Mode Ramp rates: options of 0.5, 1, 2, and 4Hz per second
4. Absolute Maximum Input: 14V
5. External Initiate: SPST normally open hand- held switch with RCA input
6. External response: Dual SPST normally open hand- held switch with 3.5mm stereo plug.

7. Viewing chamber Mask: Hypo- allergenic black silicone mask may be cleaned with an alcohol wipe.
8. Control size: 8.625" Wx6.5" Lx3.25"H (21.9x16.5x8.3cm) weight: 1.8lb (0.82kg)
9. Viewing Chamber size: 7"Wx19"Lx16"H(17.8x48.3x40.6cm) weight: 7.4lb(3.36kg)

Essential Criteria (Should be included with all the items to be tendered as part of specifications):

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3. CMC offered for the quoted equipment must be on OEM letterhead for further years. (CMC offered on distributors/ Vendor letterhead will not be considered).
4. Installation process should be performed by OEM trained service engineer/ service representative on OEM's letter head/ service report, with a mandatory provision of providing preventive service visits of OEM trained service engineer/ service representative quarterly per year till completion of warranty period (i.e. 20 visits for first five years) and further quarterly visit (04 visits/ year) till the completion of CMC period.
5. The installation process must be completed by the OEM/ Service provider within 30 days of supply.
6. The accessories/ consumables utilized during the period of installation process should be taken care FOC by OEM/ Service provider.
7. The equipment complies with the requirement of the Medical Device Directive of class I equipment and Electromagnetic compatibility; all supporting documents must be provided.
8. **Equipment should have brand name / model number embossed/ etched on the equipment.**
9. In case of technical snag/ failure/ breakdown, the response time for Inspection should be within 24 Hour and repair within 5 days, otherwise provide a service machine until the period of recovery of breakdown of the unit. Failing which will attract penal action as per the decision of the University (Uptime guarantee of 95%).
10. The page of technical bid should be numbered and checklist should be duly filled as per the annexures and all annexures should be in accordance with the format, otherwise it may be the reason for disqualification.
11. 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 as per below mentioned format for the compliance statement.**

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13. Warranty and CMC should include all spares/accessories including preventive maintenance kits, batteries etc.
14. Rate of consumable, it any, should be quoted separately and they will also be fixed for five years. These should not include any spares/accessories.
15. Only the manufacturer or its Indian subsidiary can apply. In case there is no Indian subsidiary, only authorized dealers with original authorization letter mentioning authorization for sales as well as after sales services.

133- **SPECIFICATION FOR PUPILLOMETER**

1. **Measurement Characteristic:**

Input : Human Pupil size varying from 1mm to 9mm
Output: The Instrument provides data on pupil size:
Average Pupil aperture and standard deviation
Tolerance= 0.1mm

2. **Mode of Operation:**

On demand battery operation

3. **Power Supply:**

4.2V1800 mAmp /hour Li: ion cell (Battery)

4. **Operating Environment:**

Temperature Range : 18^0 C (65^0 F) to 30^0 C(86^0 F)
Relative Humidity: 20% to 70% RH. Non – condensing at all times.

5. **Dimensions:**

With eyecup: 8.3 (211mm)x1.3"(33mm)x4.5"(114mm)
Without eyecup: 7:5" (191mm)x1.3"(33mm)x3.5"(89mm)

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service engineer/ service representative quarterly per year till completion of warranty period (i.e. 20 visits for first five years) and further quarterly visit (04 visits/ year) till the completion of CMC period.

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134- TECHNICAL SPECIFICATION FOR INSULIN PUMP (GENERALIZED)

1. Frequency of delivery dosage (Divided and dosed in U increments of -) 0.05U
2. Temporary Basal (basal can be set at U/N as percent basal) +/0.05U/hr+/-1%

3. Temporary Basal (temporarily change current basal rate for duration of ..) -30
4. Basal range -0.05 to 35.0 units/hr in 0.05 increments.
5. Display current basal rate – displayed on status screen
6. Maximum Bolus -10 U/H 0-25 **or more** (per single bolus) Easy Bolus 0.1-2.0 U
7. Normal Bolus Option
8. Dual Wave Bolus Option – Yes
9. Square Wave bolus delivery duration – 30 min to 8 **hours or more**
10. Correction Bolus Option – enter manually or more paradigm Link.
11. Easy bolus Default step size – 0.1 to 2.0 units per step
12. Easy Bolus adjustable step size – 0.1 to 2.0 units per step
13. Bolus History records shown **for at least 24 hrs .**
14. Prime History records shown (manual & fixed)
15. Carb Warning limits- Less than 5 or greater then 50 grams/ U less than 0.3 or greater than 3.0 u/exch
16. (Insulin) Sensitivity Default setting -50mg/dL or 2.8 mmol/L
17. (Insulin) Sensitivity Limited – 10-400mg/Dl or 0.5 -22.2 mmol/L
18. Active Insulin Measurement – 2.8hours (1hr increment)
19. Target Ranges -60-250mg/dL (3.3-13.9 mmol/L) **or more**
20. Warning Limits (Alerts)- less than 90 or greater than 140mg / dL – less than 5.0 or greater than 7.8mmol/L
21. Reservoir Capacity – 160/300 Units
22. Reservoir Connection – P-cap connection
23. Maximum Insulin Display – 999.95 units day
24. Battery Life(week) – 3 weeks **or more**

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14. Rate of consumable, it any, should be quoted separately and they will also be fixed for five years. These should not include any spares/accessories.
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135- **SPECIFICATION OF ADVANCE ULTRASONIC & RF ENERGY FOR SIMULTANEOUS CUTTING & COAGULATION FOR OPEN AND MIS SURGERIES**

1. System should have a universal connector to connect Ultrasonic energy and advanced RF energy Instruments & System should have automatic instrument recognition.
2. System should be CE and FDA approved, system should have a touch screen display for fast set up, operation, on screen diagnostics and other information.
3. Generator should have the ability for software updates via USB memory stick for any upcoming technology upgradation.
4. System should be a single generator with foot and hand activation that provides Ultrasonic energy and Advanced RF energy technology for soft tissue dissection and vessel sealing.

5. System should conform to the following international standards EN (IEC) 60601-1, EN (IEC) 60601-1-2, EN (IEC) 60601-2-2, EN (IEC) 60601-1-8.
6. System should provide Class 1 protection against electric shock; system should not have lateral thermal spread more than 1 mm.
7. System should come equipped with system diagnostics and troubleshooting guide to pin point any problems in the systems, should have service center in India.
8. System should work on h igh frequency more than 55 khz which enables it to seal 7 mm vessel with pure ultrasonic mode with temperature around 100 degree Celcius.
9. System should be able to power ultrasonic energy instruments with frequency more than 55 KHZ.
10. 55 khz or higher frequency for Ultrasonic energy should enable instruments for back scoring, otomy creation 7 cavitation effect on tissue.
11. System should have option to change power level of ultrasonic energy to customize energy delivery as per procedure.
12. The hand piece for the system should come with an inbuilt transducer & system should be able to power energy instruments.
13. System should be equipped with advanced RF energy technology that provides temperature controlled energy delivery which should maintain tissue temperature approximately at 100 degree Celsius, lateral spread less than 1mm for better surgical outcome.
14. System should have pure ultrasonic energy mode & hand instruments that provide tissue/ vessel seal strength up to & including 7mm with pure ultrasonic energy,
15. System should have advanced RF energy with temperature controlled mechanism hand instruments that provide tissue/ vessel seal strength up to & including 7mm to with stand bursting pressure of 7 times the systolic pressure, compatible with hand probe with 5mm shaft diameter with 110 degree articulation.
16. System should be compatible with ultrasonic hook for laparoscopic procedures
17. System should be compatible with ultrasonic hook & blade for open procedures.

SYSTEM SHOULD CONSIST OF FOLLOWINGS:-

1. Generator with 5 years of warranty
2. Foot switch & cable
3. Hand piece (transducer) for open & laparoscopy – 2 units
4. Hand switch adapter for ultrasonic hook-1 pc

PROBES FOR MINIMALLY INVASIVE SURGERY:

1. 5mm Lap Hand Activated Curved Coagulation Shears capable of sealing blood vessels upto 7 mm in diameter with pure ultrasonic energy with shaft length 35cm or more shaft length approx capable of back coring, Spot coagulation and otomy creation, should be having a 15mm or longer curved active blade with sealing – 1pc
2. Laparoscopic 32cm or longer ultrasonic energy dissecting hook for laparoscopic Surgery 1 pc.
3. 5mm open Hand activated curved coagulating shear with Maryland jaw & inbuilt transducer capable of sealing blood vessels up to 7mm in diameter with 18-20 mm blade length with pure ultrasonic energy with shaft length 35cm or more- 1 unit
4. Pure RF energy hand probe with 5mm shaft diameter of shaft rotation with straight tip in the shaft length 35cm or more and seals and transect vessels up to 7mm, sealing strength 7 times systolic pressure with 100 degree or more articulation with 360 degree of shaft rotation lap devices should be having temperature controlled mechanism within the jaw controlling temperature below 100 degree -1pc

PROBES FOR OPEN SURGERY:

1. Approx. 17cm shaft, curved, tapered tip for precise dissection, seals 5mm vessels, as well as lymphatic with 15mm or more active blade & 240 degree or more hand activation, triggers support multiple hand positions- 1 pc.
2. Approx. 9cm shaft, curved, tapered tip for precise dissection, seals 5mm vessels, as well as lymphatic with 15mm or more active blade & 240-degree or more hand activation, triggers support multiple hand positions-1 pc
3. 5mm open Hand activated curved coagulating shear with Maryland jaw & inbuilt transducer capable of sealing blood vessels up to 7 mm in diameter with blade length 18-20mm with pure ultrasonic energy with shaft length 18cm or more- 1 unit
4. Open surgery ultrasonic hook with telescopic 4-10cm long shaft – 1pc
5. Open surgery ultrasonic blade with telescopic 4-10cm long shaft -1 pc

6. Open surgery RF energy hand probe with 360 ^{0} degree rotating knob, 38-40mm curved jaw which seals and transect vessels up to & including 7mm in diameter with shaft length 18cm-25cm-1pc.

136- TECHNICAL SPECIFICATION OF AIR MATTRESS FOR BEDSORE PREVENTION

1. Pneumatically controlled alternating pressure pad system for prevention of pressure sores.
2. On an alternating basis, number of uniform sacks in the mattress inflate and deflate.
3. Alternating pressure pad device aids in the movement of body fluids.
4. Gradual pressure changes with no vibration or noise.
5. Power supply: 220V, 50 Hz, 5 amps
6. Dimension of mattress: 1 metre X 2.5metre approx
7. Practical on site demonstration is essential.

4 BINOCULAR AND 1 TRINOCULAR HEADS

1. It should be compensating type eye piece.
2. Binocular eye piece conforming to the requirement (Latest)
3. It should have set of two Eye piece for binocular 10X magnification
4. It should have achromatic type objective
5. It should have 100x objective magnification
6. It should have LED type illumination.
7. Stage should be rectangular with size approximately 130mmx150mm.
8. It should be Coaxial Focusing and Micrometer arrangement
9. It should be 0.25 Numerical Apperture of objective.

TRINOCULAR RESEARCH MICROSCOPE WITH USB EYE PIECE CAMERA

1. It should have non hinged, built in light with ligh intensity regulator
2. It should be compensating type eye piece.
3. It should have set of two Eye piece for binocular 5x magnification
4. It should have achromatic type objective.
5. It should have 100x objective magnification
6. It should be 1.25 Numerical Apperture of objective
7. It should have LED type illumination
8. Stage should be rectangular with size approximately 120mmx135mm.
9. It should be Course and fine movement of stages.

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