ಕರ್ನಾಟಕ ಸರ್ಕಾರ
ವೈದ್ಯಕೀಯ ಶಿಕ್ಷಣ ನಿರ್ದೇಶನಾಲಯ
DIRECTORATE OF MEDICAL EDUCATION
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No. ME/TENDER/41/2021-22. **Dt. 01.01.2022**

"ನೋಟಿಸ್"

ಕೋವಿಡ್–19 ಸಂಬಂಧ ಕಲ್ಯಾಣ ಕರ್ನಾಟಕ ಅಭಿವೃದ್ದಿ ಪ್ರದೇಶಾಭಿವೃದ್ದಿ ಮಂಡಳಿಯ ಅನುದಾನದ ಅಡಿಯಲ್ಲಿ ಕಲ್ಯಾಣ ಕರ್ನಾಟಕ ಜಿಲ್ಲೆಗಳಿಗೆ ಅಗತ್ಯವಿರುವ ವೈದ್ಯಕೀಯ ಉಪಕರಣಗಳನ್ನು ಕೆಟಿಪಿಪಿ ಕಾಯ್ದೆಯ 4(ಎ) ಅಡಿಯಲ್ಲಿ ಖರೀದಿಸಲು ತೀರ್ಮಾನಿಸಲಾಗಿದೆ.

ವೈದ್ಯಕೀಯ ಉಪಕರಣಗಳ ವಿವರಗಳನ್ನು ಈ ನೋಟಿಸ್‌ನೊಂದಿಗೆ ಲಗತ್ತಿಸಿದ್ದು, ಸದರಿ ಉಪಕರಣಗಳಿಗೆ ಕೆಳಕಂಡ ಷರತ್ತು ಮತ್ತು ನಿಬಂಧನೆಗಳನ್ನು ಪೂರೈಸಿ ಅರ್ಹರಾದಲ್ಲಿ ಆದೇಶ ಪಡೆದ ನಂತರ ಕೂಡಲೇ ಸರಬರಾಜು ಮಾಡಲು ಸಾಧ್ಯವಾಗುವಂತಹ ಸರಬರಾಜುದಾರರು ದಿನಾಂಕ:– 03/01/2022 ರ 05.00 ಅಪಾರಾಹ್ನ ಒಳಗಾಗಿ ಅಗತ್ಯ ದಾಖಲೆಗಳೊಂದಿಗೆ ಈ ಕೆಳಕಂಡಂತೆ ಸಲ್ಲಿಸಲು ತಿಳಿಸಿದೆ.

Supplier shall fulfill the below mentioned Terms & Conditions and also should submit the required documents/proof without fail:

Sl No	Description	Remarks
1	Hard Copy Technical Documents	1. Shall be submitted on or before 03.01.2022 3.00 PM 2. Hard Copy Technical Documents shall be submitted to Personal Section, Directorate of Medical Education, Anandrao Circle Bangalore
2	Financial Bid	1. Shall be submitted through email to dmekarnataka@yahoo.com on or before 03.01.2022 3.00 PM only
3	Technical Documents to be submitted compulsorily, failing which bid will not considered.	1.Manufacturer License in case of manufacturer 2. Manufacturer Authorization in case of authorized distributor 3. Stock Availability Declaration 4. Service Center in Karnataka 5. Technical brochure 6. Technical Compliance Sheet 7. Warranty for 3 years undertaking letter from the manufacturer for the unit price quoted 8. List of items quoted. 9. Supply details of similar equipment in last three years 10. Atleast 5 purchase order copies received in last three years from other Govt or reputed pvt hospitals for the same equipment. 11. Warranty of all equipment shall be three years and CMC for 7 years shall be quoted seperately.

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List of required Equipments to be purchased under KKRDB

S NO.	Name of Medical Equipments
1	LMO 6 KL
2	LMO 20 KL
3	Oxygen Generation Plant (500 LPM)
4	32 Slice CT Scan Machine
5	128 Slice CT Scan Machine
6	Ventilators – Neonatal
7	Pulse Oximeter
8	Auto Bio chemical analyser
9	ABG Machine
10	BIPAP/CIPAP (With Oxygen Port)
11	X-Ray Machine (300MA)
12	CR SYSTEM
13	X-Ray Machine (500MA)
14	6 Channel ECG Machine
15	Bi Phasic Defibrillator
16	Anesthesia Work Station
17	Mobile X-ray machine 100 Ma
18	Oxygen Cylinders D Type
19	HBA1C Machine

20	HBA1C Machine Testing Kits
21	Radiant warmer
22	Phototherapy Double Surface With trolley
23	Biluroninometer
24	Revolving stools
25	CPAP
26	Semi Auto Analyzer.
27	Dialysis Units.
28	USG Machine.
29	Nasal CPAP Unit for Neonatal.
30	ICU Cot Pediatrics.
31	Intubating Flexible Laryngoscope
32	Digital X Ray Machine
33	3 channel ECG machine
34	16 slice CT scan machine
35	12 Channel ECG Machine
36	Portable Ultrasound Color Doppler Scanning Machine with Two Probes for Black Fungus-Nerve Blocking
37	Video Larrngoscope
38	Infrared Vien Viwer (Flex) for Neonatal & Pediatrics Patients
39	1000 LPH RO Plant for Dialysis Machine

40	Baby Incubator
41	Protable USG Machine wih Convex probe & Pediatric 2D Echo Probe with color Doppler & Pediatric echo softwarefor infant & Paediatrics
42	MRI
43	Bubble CPAP

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1. LMO 6 KL

• Supply of liquid medical oxygen in 06 kl 17 bar MAW P cryogenic storage tank.Medical oxygen conforming to IP-2018 (99.5% purity) .

• Space taken for installation should be as per regulations of Indian explosive controller and having easy access for LMO tank. • Should have compact unit including vessel, vaporizer, & incorporated with level gauge (analog) for low content and pressure.

•Should not cause any damage to gas pipeline, anaesthesia machine and ventilators.Should have level indicator and preferably low liquid level gauge (analog) with safety system in case of emergency/un-natural calamities.

• Storage tank Capacity o Vacuum insulated evaporator vessel should have a capacity of 06kl (KiloLitres). o The AV coil should have adequate capacity to handle the gas flow requirements of the hospital. o Thestoragetankandthevaporizercoilsshouldbedesignedasperthestandards, o Thecryogenicvesselwillbeof Doublewalled,vertical&cylindricalshapewithvaporizer and the pressure control system. o It should be provided with the essential components to fill the liquid, to build up pressure, to relieve pressure, to withdraw product and to evacuate the vessel. o All protective, safety and level gauge (analog) provisions mandatory to Liquid Medical Oxygen System o Thefence,foundation,lighting,signage,approachgate,approachroadetcaretobe designed and installed by the vendor

• Barricade o Barricade to be fabricated; this barricade will be painted with alternate yellow and black strips of colour. All welding tobe done as per standards.

• Earthing Pit o The earthling Pit is to be constructed. o TheGIpipeusedforearthlingistobedrilledtype,ofsize40mmin diameter and 3meter sin length. o Charcoaltobefilledfor150mmandsalttobefilledfor150mm. o The550Sq.chequeredplatetobeprovidedtocovertheearthlingplate. o GIflatofsize50mmwidthand6mmthickoflength20meterstobeconnectedfrom earthling pit to equipment.

• Emergency Gate o The emergency gate to be fabricated. o Suitable sizes of MS flats and MS rods to be selected. o Galvaniseddiamondmesh11ofgauge50x50tobeused. o Providemechanicalstopperstothegatesuchthatgatecannotbeopenedinward

• Hardstand o Hard stand to be constructed. o Thehardstandsizetoof8mX4m. o Thehardstandcomprisedof150mmsoling,150mmPCC1:4:8.,150mmthickconcret e.

• Fencing o Fencing to be fabricated. o Fencingcomprisesof2''diameterpipeoflength2meters. o Thebottom500mmpipeportionstobeplacedinpcc. o Thesehavetobepaced2000mmtypicalposition. o Themeshtobeusedistobeof50X50GI,9mmgauge. o Allpolepipestobepaintedwithblackpaint.Meshtobepaintedwithwhitepaint. o SpacetakenforinstallationshouldbeasperregulationofIndianexplosivecontroller andhavingeasy access for LMO tank

•Main Gate o Gate to be fabricated.o Gate will be of 2meters height and 6meters inwidth. o Provide mechanical stoppers to the gate such that gate cannot be opened inward.

• PC CaroundTank o This has to be to constructed asper the Requirement 2. PowerSupply

• Industry Standard Power Supply tobe provided by the Tenderer

• All Civil and Electrical works onsite is the responsibility of theTenderer and not the Purchaser.

3. Accessories

• Fire extinguisher o Twono'sfireextinguishersofDCPtype,of capacity 10kg each are required

• Fire and water buckets with stand o Two nos. of fire buckets and two nos. of water buckets fixed on metallic stand which.These buckets to be painted in red and stand to be painted in black. • Water tap o Water tap along with 10meters plastictube is required. o Pipe line work to be done as per the requirement from oxygen plant to existing Pipeline.

• Safety o The vendor should ensure that all international safety norms and standards applicable as implemented and certified by the CCE. Two safety valves for innervessel fitted on pipeline with flow divert valve. - Rupture disc for inner vessel. –Safety valve for inlet pipeline.- Safety valve forpipeline ofpressurizing evaporator.- One rupture disc/ safety device onouter vessel. 129 4. Certification

• USFDA and/orCE Approved and Certified • ISO and BISCertified

• All statutory requirements of the Chief Controller of Explosives of India and SMP Vrules and need to be followed; besides all regulations and guidelines put forward bytheGovt.OfIndiafromtimetotimeshouldbefollowed.AndLicensesfromPESO. 5. Warranty

• Maintenance: All routine preventive maintenance and break-down maintenance of the liquid oxygen system should be done by the vendor. Experienced personnel should be readily available

• Warranty three(3)years and CMC for Five(5)years 6. General

• Erection &commissioning of complete storage system should be done.

• Transportationofcompletestoragesystemfromsuppliersworksoursiteandbackafterc on tract expiry shall be in bidder's scope and no extra charges will be paid.

•Satisfactory Training to be provided at site.

2. LMO 20 KL Specifications

• Supply of liquid medical oxygen in 20 kl 17 bar MAW Pcryogenic storage tank.MedicaloxygenconformingtoIP-2018(99.5%purity) .

• Space taken for installation should be asper regulations of Indian explosive controller and having easy access for LMO tank. • Should have compact unit including vessel, vaporizer, & incorporated with level gauge (analog) for low content and pressure.

•Should not cause any damage to gas pipeline, anaesthesia machine and ventilators. Should have level indicator and preferably lowliquid levelgauge(analog) with safety system in case of emergency/un-natural calamities.

• Storage tank Capacity o Vacuum insulated evaporator vessel should have acapacityof06kl(KiloLitres). o The AV coil should have adequate capacity to handle the gas flow requirementsof thehospital. o Thestoragetankandthevaporizercoilsshouldbedesignedasperthestandards, o Thecryogenicvesselwillbeof Doublewalled,vertical&cylindricalshapewithvaporiz er andthepressure control system. o It should be provided with the essential components to fill the liquid, to build uppressure,torelievepressure,towithdrawproductandtoevacuatethevessel. o Allprotective,safetyandlevelgauge(analog)provisionsmandatorytoLiquidMedic alOxygenSystem o Thefence,foundation,lighting,signage,approachgate,approachroadetcaretobe designedandinstalledby thevendor

• Barricade o Barricadetobefabricated;thisbarricadewillbepaintedwithalternateyellowand black strips ofcolour.Allwelding tobe done as perISstandards.

•EarthingPit o TheearthlingPitistobeconstructed.o TheGIpipeusedforearthlingistobedrilledtype,ofsize40mmindiameterand3meter sinlength. o Charcoaltobefilledfor150mmandsalttobefilledfor150mm. o The550Sq.chequeredplatetobeprovidedtocovertheearthlingplate. o GIflatofsize50mmwidthand6mmthickoflength20meterstobeconnectedfromear thlingpit toequipment.

•EmergencyGate o Theemergencygatetobefabricated.o SuitablesizesofMSflatsandMSrodstobeselected. o Galvaniseddiamondmesh11ofgauge50x50tobeused. o Providemechanicalstopperstothegatesuchthatgatecannotbeopenedinward

•Hardstand o Hardstandtobeconstructed.o Thehardstandsizetoof8mX4m. o Thehardstandcomprisedof150mmsoling,150mmPCC1:4:8.,150mmthickconcret e.

•Fencing o Fencingtobefabricated.o Fencingcomprisesof2’’diameterpipeoflength2meters. o Thebottom500mmpipeportionstobeplacedinpcc. o Thesehavetobepaced2000mmtypicalposition. o Themeshtobeusedistobeof50X50GI,9mmgauge. o Allpolepipestobepaintedwithblackpaint.Meshtobepaintedwithwhitepaint. o SpacetakenforinstallationshouldbeasperregulationofIndianexplosivecontroller andhavingeasy access for LMO tank

•MainGate o Gatetobefabricated.o Gatewillbeof2metersheightand6metersinwidth. o Providemechanicalstopperstothegatesuchthatgatecannotbeopenedinward.

•PCCaroundTank o ThishastobetoconstructedaspertheRequirement 2. PowerSupply

• IndustryStandardPowerSupplytobeprovidedbytheTenderer

•AllCivilandElectricalworksonsiteistheresponsibilityoftheTendererandnotthePurcha ser. 3. Accessories

• Fireextinguisher o Twono'sfireextinguishersofDCPtype,ofcapacity10kgeacharerequired

• Fireandwaterbucketswithstand o Two nos. of fire buckets and two nos. of water buckets fixed on metallic standwhich.These bucketsto be paintedin redand stand tobe paintedin black. •Watertap o Watertapalongwith10metersplastictubeisrequired.o Pipe line work to be done as per the requirement from oxygen plant to existingPipeline.

• Safety o The vendor should ensure that all international safety norms and standardsapplicable as implemented and certified by the CCE. Two safety valves for innervessel fitted on pipeline with flow divert valve. - Rupture disc for inner vessel. –Safety valve for inlet pipeline.- Safety valve for pipe line of pressurizing evaporator.- On erupture disc/ safety device on outer vessel. 129 4. Certification

• USFDA and/or CE Approved and Certified • ISOandBISCertified

• All statutory requirements of the Chief Controller of Explosives of India and SMPVrules and need to be followed; besides all regulations and guidelines put forward bytheGovt.OfIndiafromtimetotimeshouldbefollowed.AndLicensesfromPESO. 5. Warranty

• Maintenance: All routine preventive maintenance and break-down maintenance ofthe liquid oxygen system should be done by the vendor. Experienced personnel should be readily available

• Warranty three(3)years and CMC for Five(5)years 6. General

• Erection &commissioning of complete storage system should be done.

•Transportationofcompletestoragesystemfromsuppliersworksoursiteandbackafterc ontractexpiryshallbein bidder'sscopeandnoextrachargeswillbepaid.

•Satisfactory Trainingtobeprovidedatsite.

3. Oxygen Generation Plant (500 LPM)

PSA oxygen modules are able to produce oxygen compliant with the United States Pharmacopeia (USP) or European Pharmacopeia (Eur Ph) monograph for Oxygen 93%. Both standards were created explicitly to permit the use of PSA produced oxygen for hospitals.

The Oxygen Generator System includes the following items:

1. Oil Lubricated Screw Compressor.
2. Refrigerant Dryer
3. Air Receiver
4. Oxygen Generator
5. Oxygen Receiver
6. Integrated Touch screen LCD Controller Oxygen Generator system
7. Line Filtration System

Oxygen Generator shall incorporate pressure swing absorption (PSA) technology and shall be supplied as a plug & play device, including service indications and relevant alarms. The Oxygen Generator vessel shall contain chemically produced zeolite to adsorb specific types of molecules, such as nitrogen and water vapour - providing infinite lifetime if operating conditions and inlet air quality are kept within specification. The compressed air inlet quality shall be in accordance with ISO 8573-1 Class 1-4-1. The outlet oxygen purity shall be 93%+/-3% with a quality in accordance international standards and regulations, which include ISO10083. The system shall operate at a maximum ambient temperature of 45°C. The generator will require a single-phase low voltage 110-240V 50-60Hz supply.

An inlet pressure regulator shall be included to reduce the inlet pressure to a maximum working pressure of 450 kPa (4.5 bar) gauge.

Oxygen Generator Control System

The oxygen generator control system shall provide an intelligent human-machine interface including a real-time clock for recording operational parameters in the event log. The controller shall give a continuous read-out of the inlet dewpoint, outlet pressure, oxygen purity and flow rate. The control system shall include BMS connections (voltage free contacts) to indicate normal operation, a general fault condition, low purity alarm and shutdown. These alarms shall also be shown on the generator screen. The control system shall provide analog output signals for inlet dewpoint, oxygen purity & flow rate.

Oil Injected Rotary Screw Compressor, External Refrigerant Dryer & Filtration System

Compatible Oil-injected rotary screw compressor suitable for both continuous and frequent start/stop operation at a nominal outlet pressure of 850 kPa (8.5 bar) gauge. Compressors shall be supplied with a block and fin style after cooler, with a dedicated fan to maximise cooling and efficiency. A multistage oil separator capable of achieving 2ppm oil carry-over shall be fitted to minimise contamination and maintenance. IE3 (IEC 60034) rated TEFC, IP55 class F electric motors shall be used and incorporate maintenance-free greased-for-life bearings. Motors with lower efficiency ratings are not acceptable.

Compatible refrigerant dryer and shall include a simple plug & play concept. Pressure shall be self-regulating. The dryer shall be able to reach 3°C PDP at 45°C with nominal flow.

The refrigerant dryer and shall include a simple plug & play concept. Pressure shall be self-regulating. The dryer shall be able to reach 3°C PDP at 45°C with nominal flow. The refrigerant dryer shall be includes following components:

<u>Refrigerant Circuit</u>

Refrigerant separator

Refrigerant compressor
Maximum pressure switch and fan control switch
Condenser fan
Condenser
Capillary filter
Capillary tube
Hot gas bypass

Air Circuit

Air inlet
Air to refrigerant heat exchanger
Air/heat exchanger
Water separator
Automatic drain
Air outlet

Filtration System
High efficiency filters shall be used to remove oil aerosols and dust particles integrated in single housing only.
- Coalescing filters for general purpose protection, removing liquid water and oil aerosol to 0.1 mg/m3 (0.1 ppm) and particles down to 1 micron.
- High efficiency coalescing filters, removing liquid water and oil aerosol to 0.01 mg/m3 (0.01 ppm) and particles down to 0.01 micron

Active carbon Tower filteration for removal of oil vapour and hydrocarbon odors with a maximum remaining oil content of 0.003 mg/m3 (0.003 ppm). An activated carbon tower/filter shall be included to absorb oil vapours, providing clean air to ISO 8573-1 Class 1. An additional oxygen-approved filter shall be included at the outlet of the oxygen buffer vessel to protect against zeolite dust particles.

Air Receiver
The air receiver shall made of M.S. material as per code of construction IS-2825, supplied with relevant test certificates. Each air receiver shall be fitted with aelectronic wate drain, gauges and safety valve. The receiver assembly shall be fitted with a pressure safety valve, set at 10% receiver overpressure. The receiver shall further include a pressure gauge.

Oxygen Buffer Receiver
The oxygen vessel shall be of SS304 and shall be adequately sized to ensure oxygen pressure during nominal operation. The vessel shall be protected by a safety pressure relief valve and include a pressure gauge.

System Capacity:

1. **Oxygen Generator System:** upto 500Litres Per Minute Output at 93% concentration, 20°C ambient, 20°C inlet air, 6.5 bar (94.3 psig) inlet pressure.
2. **There should be Oil lubricated screw Compressor for PSA system and each compressor should be minimum 55 KW motor capacity.**
3. **Compatible Refrigerant Dryer capacity as per OEM recommendation**
4. **Filters capacity as per OEM recommendation**
5. **Air Receiver & O2 Receiver size as per OEM recommendation.**
6. **Complete Oxygen Generator Plant from single manufacturer is preferred especially Compressor, Refrigerant dryer, Filtration & PSA equipment.**

Special Terms & Conditions:

1. Bidder has to submit product catalogues, technical compliance sheet & product certificates during technical bid submission otherwise bids will be straight way reject.

2. ISO 13485 Certificate from OEM.

3. ISO 13485 certificate for Indigenous products.

4. Principal manufacturer should have presence in India since last 5 years from date of publishing this NIT.

5. Principal manufacturer should have warehouse Facilty in Karnataka state to stock the spares and consumables of the proposed equipment's.

6. Principal manufacturer should have after sales service office in Karnataka.

7. Proof of registered office address in India and Karnataka must be submitted along with technical bid.

8. All major components like Air Compressor, Dryers, Line Filters & PSA system from single manufacturer is preferred to have a better quality & system synchronization.

Oxygen Generator Equipment must be EUROPEAN CE CERTIFIED or Class IIa certified product.

4. **32 Slice CT Scan Machine**

Technical Specification For Whole Body Scanner

Item	Feature	Detailed Specification
	General	
1	Certification requirement	The offered model should be CE and US FDA approved (authentic and legible certificate for the same to be annexed). And must quote the latest Model only
2	**Gantry**	
	Bore size	70cm
	Gantry tilt	≥±30° with 0.5 increment
	Slip ring type	Low voltage
	Slipringtransferrate	≥1.30 Gbps
	Gantry cooling method	Air
	Gantry side control panels	≥2
	The distance from tube focal spot to ISO center	≤57cm
	The distance from tube focal spot to detector	≤96cm
	Position laser light in 3 dimensions	YES, X,Y,Z
	Preset function of positioning at the gantry side	≥2
	ProvideaProvide a display integrated in the gantry	Displaypatient information, scan time, exposure status, table lock status, and other useful information
	Provideabreathing navigation	Thisfunctionisableto guide patients to control their breaths during scans; Allow users record their own customized breathing navigation; Should support the visualizationofcountdown during

		scans
	CT Control Box	Allows control of patient table movement, scan radiation exposure, and intercom in the operation room
3	**Detector**	
	Detectormaterial	Solid-state GOS
	Detector rows	≥32 rows
	Detector Z-plane coverage	≥22 mm
	Minimum slice thickness	≤0.55mm
	Number of elements per row	≥864
	Detector elements in total	≥34560
	Maximum sampling rate per rotation	≥4800 views
4	**X-ray tube & HV generator**	
	Tube anode storage	≥3.5MHU
	Maximum cooling rate	395kHU/min
	Range of tube current	10 - 350mA
	Maximum tube current	≥350mA
	Minimum tube current	≤10mA
	Maximum tube voltage	≥140KV
	Minimum tube voltage	≤70KV
	NumberofkV settings	≥ 5 70kV, 80KV，100KV，120KV，140KV
	Number of focal spot	≥2
	Maximum Focal spot size (IEC 60336)	≤1.2mm×1.4mm
	Minimum Focal spot size (IEC 60336)	≤0.7mm×0.8mm
	Maximum power of HV	≥42kW

	Generator	
5	**Patient table**	
	Length of the table	≥258cm
	The minimum vertical height of the patient table	≤60cm
	The maximum vertical height of the patient table	≥95cm
	Horizontal motion range	≥193cm
	Table Width	≥450mm
	Scannable range	≥160cm
	Maximum horizontal speed	≥200mm/s
	Minimum horizontal speed	≤2mm/s
	Maximum vertical speed	≥20mm/s
	Maximum table load	≥205kg
	Position accuracy	≤±0.25mm
	Foot pedal	YES
	Clinical Application Assembly	Include IV stand, tray rack and paper roll holder
6	**Scan parameter**	
	Max rotation speed/360°	≤0.75 sec/360°
	Rotation speed setting	≥5
	Maximum slices generated per rotation	64 or more
	Minimum slice thickness	≤0.55mm
	Scan field of view	≥50cm
	Reconstruction field of view	4cm-50cm
	Scannable range	≥160cm
	Number of scout image	≥2
	Maximum continuous exposure time	≥100s
7	**Image quality**	

	Spatial resolution in X-Y plan	≥19 LP/CM@0%MTF
	Spatial resolution in Z axis	≥19 LP/CM@0%MTF
	Low Contrast Detectability2mm@0.3%	≤31mGy
	Low Contrast Detectability 3mm@0.3%	≤18mGy
	Low Contrast Detectability 4mm@0.3%	≤10mGy
	Isotropic-resolution	Equivalent to 0.26mm
	3D cone beam reconstruction technology	Provide
	CT Number Display Range	-1024HU ~ +8191HU
	Image reconstruction matrix setting	512×512
	Image reconstruction matrix setting	768 x 768
	Image reconstruction matrix setting	1024 x 1024
	Max reconstruction speed	≥20 IPS
8	**Console & Reconstruction System**	
	CPU Processor	Intel Xeon E5 or above
	CPU	≥10 core
	RAM capacity	≥32 GB
	Storage capacity of hard Disk	≥3.5TB
	Storage capacity of images (matrix ≥512*512)	≥1000,000
	Monitor size	≥24 inch
	Monitor resolution	≥1920×1200
	DICOM 3.0 which	Support connectivity to DICOM 3.0 compliant PACS, workstations, and printers, etc. and supports read/ write, transfer, and print of the DICOM format data.
	MPR/MIP/ 3D SSD/CTA/3D	The MPR/MIP/ 3D SSD/CTA/3D can perform on console as the standard configuration

	Keyboard	Provide
	Mouse	Provide
	Console cabinet	Stores and protects the PC
	Console table	Provide
9	**Clinical software on console**	
	Prediction system	Predict the subsequent operation and the system is prepared in prior
	Bolus Tracking Scan	Allows real-time monitoring of luminal contrast agent concentration and automatic trigger of scans when threshold is reached
	Automatic exposure control	Based on body type and exam part information, automatically perform the mA modulation and estimates the X-ray attenuation level for different planes of exam part, then generates the corresponding optimal dose distribution plan.
	PACS/HIS/RIS Connection Management	Supports the transfer of patient information and DICOM images among PACS, HIS and RIS
	Patient Registration & Administration	Provide the patient administration & patient registration system
	Scan planning	Scan planning can be performed
	Image Acquisition and Reconstruction Systems	Image acquisition, image archiving and image reconstruction can be performed simultaneously.
	Filming and Archiving	Support the filming and archiving
	2D & 3D Image Review	Provide
	2D & 3D Image Edit	Provide
	Multi-planar Reconstruction (MPR)	Provide
	Maximum Intensity Projection (MIP)	Provide

	Minimum Intensity Projection (MinIP)	Provide
	Curved Planar Reconstruction (CPR)	Provide
	Volume Rendering (VR)	Provide
	Volume Rendering Template (VRT)	Provide
	Shaded Surface Display (SSD)	Provide
	Image Subtraction	Provide
	Regional Growth	Provide
	Automatic bone removal of body	Provide
	Virtual Endoscopy	Provide
	Iterative denoising reconstruction	Provide
	Metal artifact correction	An algorithm to reduce the metal artifacts and improve image quality
	Automatic Head and Neck Bone Removal	Bone tissues of head and neck can be automatically removed by one click in the 3D viewer for reconstructed images
	Brain Stationary Perfusion Scan	Supports stationary cerebral perfusion scans
	Body Stationary Perfusion Scan	Supports stationary body perfusion scans
	MPPS	Supports information exchange during whole examination process. Inform information closely related to operation management to corresponding workflow manager, generally PACS and RIS.
10	**OEM Supplied Medical Image Workstation**	
	CPU	Intel Xeon E5 or above
	CPU	≥4 core
	RAM capacity	≥24 GB
	Storage capacity of hard Disk	≥1.5TB

	Supports the storage of images, information andassociated image viewing software on DVD/CD media	Provide
	Monitor size	≥24 inch
	Monitor resolution	≥1920×1200
	Support at least DICOM 3.0	Provide
	Workstationdesk	Provide
	Workstation Host Computer Cabinet	Stores and protects the workstation
11	**OEM Workstation Clinical software on workstations**	
	Automatic Head and Neck Bone Removal	Bone tissues of head and neck can be automatically removed by one click in the 3D viewer for reconstructed images.
	Vessel Analysis	Automatic bone removal; Vessel tracking and center line editing; Stenosis and plaque analysis
	Lung Nodule Analysis	Tools for editing contour of the nodules; Automatic measurement of nodule diameter, volume, CT value etc; Asses nodule comparisons between baseline and follow-up studies from the same patient;
	Lung Density Analysis	Pulmonary Lobe Extraction; Pulmonary Density & Volume Measurement; Pulmonary Emphysema Ratio Quantification; Bronchial Wall Surface/Diameter Measurement; Quantitative Data Analysis and Export;
	Dental Analysis	Supports volume rendering,

		panoramic view, sagittal view, labeling of dental floss and nerve pathway. Supports flat and sectional displays of whole-mouth images.
	Colon Analysis	The Virtual Colonoscopy application enables visualization of colon scans, and inner view the colon using acquired CT images Automatic colon segmentation; Electronic colon cleansing; Virtual endoscopy
	Brain Perfusion Analysis	Provide Stroke specification calculated by de-convolution model; Automatic/manual tissue segmentation and artery definition; Automatic calculation of time-density curve (TDC); Comparison and analysis of symmetrical ROIs; Automatic calculation and pseudo color display of cerebral perfusion parameters including CBV, CBF, TTP, MTT and PS; Measurement and statistical analysis of ROI area, max./min. values, average values etc.; Ischemic penumbra analysis for the display of ischemic and dead tissues; Motion correction and image fusion.
	Tumor Tracking (CT Oncology)	The Oncology Tracking application should provide a fusion display, analysis, and diagnostic tool for targeting tumors with CT images. The user can review CT data of patient follow-ups at various stages and analyze trends in tumor lesion at

		various stages on registered images. This allows the user to better understand the development of the patient's condition and receive feedback for medicine or treatment interventions
12	**Accessories :**	
	Provide the phantom	Pleasespecifytheuse
	Provide the Patient Table Accessories	Belt, Head and Arm Support, Knee Cushion, Clinical Application Assembly, Paper Towel Roll
	Manual	Providetheoperatormanualset
13	**Local Third Party Items :**	
A	UPS	Full Ups Above 80 KVA for the CT with 30 mins Back Up
B	Pressure Injector	Single Head Injector – 1no
C	Lead Glass	1 No Lead Glass size 1mts x 2 mts.
D	DRY LASER Printer	Two Online Trays Dry Laser Printer of 500 DPI should be provided.
E	Turnkey :	
	Preparation of CT scan Room, Console Room, Technical Room, one wash room etc to be done by the Bidder in the area of approx 800 sft .	Should be done by the Bidder .
	Tile based false ceiling and floor tilling and wall tiling till false ceiling in rooms .	Should be done by the Bidder .
	Necessary modification civil work , electrical , plumbing , furnishing , air conditioning in given area	Should be done by the Bidder .

	Site should be AERB compliant	Should be done by the Bidder .
	Any other necessary work for system functioning like earthing , proper LED lighting power points etc.	Should be done by the Bidder .
	Note :	ALL new software application that to be launched on the quoted model to be given free of cost for next 5 years.
	Warranty :	Bidder should give warranty (5) Five years for complete system including all accessories & Third party items supplied along with the CT scanner . Bidder should also quote for 5 years CMC prices for the complete system including all accessories & Third party items supplied
	Model:	**Bidder quoting for the Latest Model & Technology (Post RSNA 2018) model will be preferred.**

5. **128 Slice CT Scan Machine**

MEDICAL DEVICE SPECIFICATION (Including Information on the following where relevant/appropriate, but not limited to)		
		128 Slice CT Scanner
GENERAL		
1	**USE**	
1.1	Clinical purpose	Computed Tomography scanners are used for a wide variety of diagnostic procedures, including spine and head injuries, lesions, and abdominal and pelvic malignancies; to examine the cerebral ventricles, the chest wall, and the large blood vessels; and to assess musculoskeletal degeneration.
1.2	Used by clinical department/ward	Radiology Department
TECHNICAL		
2	**TECHNICAL CHARACTERISTICS**	
2.1	Technical characteristics (specific to this type of device)	1. Gantry a) Should incorporate low Voltage Slip Rings b) Minimum scan time for a 360º rotation should be less than or equal to 0.35 sec. (350 mili sec.) c) Should have minimum tilt of 30 degrees on either side and remote tilt should be available as standard d) Gantry should be provided with user control panels on either side for positioning of the patient e) The sub millimeter slice @0.63 mm or less in 64 row 128 acquisitions should be available. The system should be in position to perform 128 slices / rotation for general, cardiac and vascular applications f) Should have 3D positioning laser lights g) The scan FOV in acquisition mode be at least 200 mm to 500 mm with intermediate steps for scanning different anatomies h) Gantry aperture should be at least 70 cm. in diameter i) Integrated Display Panel - Gantry front showing current scan parameters such as kV, mA, ECG trace etc. for easy set up for ECG gated studies. 2. X-Ray Generator a) Should be compact and in-built in the gantry b) Should be high frequency having at least 100 kW output or more c) The mA range available should be between 20 to 800 or more, with increment steps of not more than 10 mA. d) Tube Voltage: 80-140 kV 3. X-Ray Tube

		a) The X-ray tube should be dual focus with heat storage capacity of 8 MHU or more, with effective storage of at least 25 MHU. b) Peak heat dissipation rate of anode should be at least 1600 KHU/min c) X-ray tube cooler unit should be inside the gantry d) Focal spots, and type of X-ray tube should be specified as per IEC Recommendations. e) Filter and beam limiting devices should be quoted as standard.

2.1	Technical characteristics (specific to this type of device)	4. Detectors a) These should be of solid state type b) 128 Slice acquisition per rotation should be possible with the detectors, in 0.63 mm mode. c) The system should have at least 64 ‘physical rows’ of the detectors.Number of elements in each row should be specified d) The Z-axis coverage of at least 40 mm / rotation should be possible for standard and cardiac scans e) Fan-angle of X-rays and the geometry should be specified f) Detectors should not require frequent calibration 5. Patient Table a) Should have minimum weight bearing capacity of 200 kilograms b) The minimum table top height should not be more than 35 cms from floor level for easy transport of trauma patients c) Table top width to be at least 42 cms d) The range of metal free scannable range should be at least 160 cm. e) The vertical range (max. Ht. – min. Ht.) 55 cm f) Remote controlled UP / DOWN and FWD / BWD movement. g) Pitch to be freely selectable in automatic / manual mode : 0.15 – 1.5 h) Reproducing accuracy of the Table : 1mm

2.1	Technical characteristics (specific to this type of device)	6. Spiral CT capabilities: a) Minimum slice thickness should be 0.63 mm or less and maximum 10 mm or more. b) Pitch factor (volume pitch): Variable between 0.5 to 1.5 or more and should be user selectable. c) Spiral length: 150cm or more. d) Single continuous 'spiral-on time' should be minimum 100 seconds or more. e) Bolus triggered spiral acquisition should be possible. f) True isotropic volume acquisition and sub-millimeter resolution of at-least 0.4 mm for all body applications. 7. Topogram:- a) Length and width: specify range. b) Scan times: specify range c) Should be possible to interrupt acquisition manually once the desired anatomy is obtained. 8. Data acquisition system: a) System should have minimum 64 rows of detector capable of generating 128 slices through latest flying focal spot technology or equivalent. b) Mention minimum acquired slice thickness in Axial & Helical mode after reconstruction. c) Acquisition of cardiac images with ECG gating (prospective & retrospective) should be possible d) Step and shoot technique during cardiac scanning for dose reduction, or a similar alternative technology should be available. 9. Image Evaluation Tools: a) Parallel evaluation of multiple ROI in circle, irregular and polygonal forms. b) Statistical evaluation for area/volume, S.D., Mean, Min/Max and histogram. c) Distance and angle measurement, freely selectable positioning of co-ordinate system, grid and image annotation.
2.1	Technical characteristics (specific to this type of device)	10. Latest Iterative Reconstruction Technique: a) ASIR-V/ iDose4 Premium / SAFIRE or latest available with the manufacturer to be quoted as standard. b) Model-based Iterative reconstruction technology VEO/ IMR/ ADMIRE or equivalent for all imaging protocols including hardware and software. c) Low dose protocols for pediatric and infant scanning.

2.1	Technical characteristics (specific to this type of device)	11. Image Reconstruction: a) Real time reconstruction speed: 20 images per second or more at 512 x 512 matrix. b) Display matrix: 1024 x 1024 or more. c) Reconstructed slice thickness range should be less than one mm (<1) to 10mm. d) Patient's radiation Dose must be displayed on monitior and Imaging Films. 12. Image Quality: a) The high contrast resolution be more than 20 lp/mm in all routine scans, including spiral and axial mode b) The low contrast resolution should not be more than 3 mm at 0.5%
2.2	User's interface	Patient Communication System: An integrated intercom and automated patient instruction system (API) should be provided.
2.3	Software and/or Workstation	Workstations: A client server architecture based solution (Intellispace Portal 6/ Dexus-AW server 2/ Syngo Via 30A or equivalent.) with minimum concurrent 24,000 slices rendering capacity, with storage of minimum 1TB having following client hardware specifications-Workstation: Z820 or equivalent CPU, dual quad core processor, 16 GB RAM, 1TB hard drive, DVD Writing with clinical grade monitor of minimum 2 MP.A reputed Anti-Virus Solution for Server should be in place. The Server should be with minimum three user (Three Hardware's) facility Fully DICOM 3.0 Compliant and PACS Interface ready. The workstation should have following processing tools/software's Available as standard: • Multi planar reconstruction(MPR) , • Minimum and Maximum intensity projection • 3D Volume rendering , • 3D SSD (Shaded Surface Display). • Advance Vessel Analysis with plaque visualization,• Auto Bone Removal. • Volume measurement, • Lung Nodule analysis. • Liver lesion analysis. • Colonography. • Perfusion CT. • Image Fusion of CT, MR & PET Data • Neuro DSA. • Coronary tree analysis: automated 3D processing of coronary arteries, calcium scoring, stent analysis, LV analysis • Multi-modality automatic tumour tracking & Automatic measurements in RECIST, WHO, Volume & Choi criteria calculation. • Virtual endoscopy.
3	**PHYSICAL CHARACTERISTICS**	
3.1	Dimensions (metric)	NA
3.2	Weight (lbs, kg)	NA
3.3	Configuration	NA
3.4	Noise (in dBA)	NA

3.5	Heat dissipation	Suitable Heat Sink/Cooling Mechanism to be provided.
3.6	Mobility, portability	Stationary Installation
4	**ENERGY SOURCE (electricity, UPS, solar, gas, water, CO2 ....)**	
4.1	Power Requirements	NA
4.2	Battery operated	No
4.3	Tolerance (to variations, shutdowns)	NA
4.4	Protection	Suitable Servo Stablizer to be provided
4.5	Power consumption	NA
5	**ACCESSORIES, SPARE PARTS, CONSUMABLES**	
5.1	Accessories (mandatory, standard, optional);	a)Dry Chemistry Laser Imager (dpi 500 or more) of a reputed make : Integrated with main console and workstation b) Color Laser Printer (High Resolution) for color coaded images C) UPS with half hour 'back-up' to run entire CT system, Workstations and Laser Imager (should be 160 kVA or more, d) Dual – Head Pressure injector of reputed make (100 syringes) e) 160 KVA Silent DG Set with AMF panel f) Two LED based view boxes with adjustable illumination to view 3 films of 14" x 17" in each view box. g) Thyroid Collars -2 No. h) Gonadal Shields- 2 each for male and female(Total 4) i) Lead Apron Hanger with 2 light weight Lead Aprons

BIDDING / PROCUREMENT TERMS / DONATION REQUIREMENTS		
6	**ENVIRONMENTAL AND DEPARTMENTAL CONSIDERATONS**	
6.1	Atmosphere / Ambiance (air conditioning, humidity, dust ...)	Operating condition: Dehumidifiers to be provided to maintain humidity between 30 to 70 % Air conditioning of the whole complex to maintain temperature range between 15 to 25 Celsius.
6.2	User's care, Cleaning, Disinfection & Sterility issues	1)Disinfection: Parts of the Device that are designed to come into contact with the patient or the operator should either be capable of easy disinfection or be protected by a single use/disposable cover. 2)Sterilization not required.
7	**STANDARDS AND SAFETY**	

7.1	Certificates (pre-market, sanitary, ..); Performance and safety standards (specific to the device type);Local and/or international	1.Should be FDA/ European CE 2.Manufacturer and Supplier should have ISO 13485 certification for quality standards. 3.Electrical safety conforms to the standards for electrical safety IEC 60601-1-General requirements. 4.Shall meet internationally recognised standard for Electromagnetic Compatibility(EMI/EMC) for electromedical equipment: 61326-1. 5. Equipment should be AERB type approved
7.2	Local and/or international	Manufacturer should have ISO 13485 certificate for quality standard.
8	TRAINING AND INSTALLATION	
8.1	Pre-installation requirements: nature, values, quality, tolerance	Turnkey Project only space to be provided, bidder shall provide all the fixtures and furniture along with interiors as per AERB norms.
8.2	Requirements for sign-off	Certificate of calibration and inspection of parts from the manufacturer
8.3	Training of staff (medical, paramedical, technicians)	1)Training of users on operation and basic maintenance on site for a minimum period of 4 weeks. 2)Advanced maintenance tasks required shall be documented
9	WARRANTY AND MAINTENANCE	
9.1	Warranty	3 years
9.2	Maintenance tasks	CMC 5 years 2 PM Visits Annually. All Breakdown calls to be attended within 24 hrs of registartion.
9.3	Service contract clauses, including prices	The spare price list of all spares and accessories (including minor) required for maintenance and repairs in future after guarantee / warranty period should be attached;
10	DOCUMENTATION	
10.1	Operating manuals, service manuals, other manuals	Should provide 2 sets(hardcopy and soft-copy) of:- 1)User, technical and maintenance manuals to be supplied in english/hindi language along with machine diagrams; 2)List of equipment and procedures required for local calibration and routine maintenance; 3)Service and operation manuals (original and copy) to be provided; 4)Advanced maintenance tasks documentation; 5)Certificate of calibration and inspection
10.2	Other accompanying documents	List of essential spares and accessories, with their part numbers and cost;
11	NOTES	

11.1	Service Support Contact details (Hierarchy Wise; including a toll free/landline number)	Contact details of manufacturer, supplier and local service agent to be provided; Any Contract (AMC/CMC/add-hoc) to be declared by the manufacturer;
11.2	Recommendations or warnings	Any warning signs would be adequately displayed

7. Specifications for Advanced Neonatal Ventilator

- Advanced microprocessor based continuous flow , pressure limited, time cycled ventilator for very low body weight infants (premature, newborns) and/ or paediatrics based on ideal body weight input setting on start-up

- Should have high flow oxygen therapy, non-invasive, invasive and Upgradable to high frequency ventilation for use on premature, neonatal and paediatrics patients.

- Should have mains/battery operation with battery operation of 30 minutes. Upgradagble to Additional **battery backup upto 2 hours - integrated**

- Should be a modular design with upgradeable hardware and software functions

- Ventilator should have integrated device self check with user prompt via screen messages
  - for determination and display of system compliance
  - inspiratory and expiratory resistance
  - leakage of patient hose system
  - checking of valves, gas supply system, flow sensors, expiratory valve

- Should have inbuilt 15-inch TFT colour touchscreen with user configurable display and 360 degree view rotation (if required you can also add - detachable 15 inch touchscrreen display with 1 metre cable for external mounting - eg in infectious / isolation / Covid room as below:
  - Upto Three filled curves for easy viewing from a distance with 1 or 2 loops / graphic trends at same time
  - Pressure, Flow, Volume curves as standard and Capnography as optional curve If upgraded (for pediatric patients only)
  - Smart Pulmonary View (optional) – for quick intuitive understanding of patient condition based on graphical display of lung condition
  - Upto three user configurable screen layouts as per customer requirement in combinations of user preferred numerics and graphics
- The ventilator should be supplied with heated servo-controlled NON PROPREITARY humidifier (like MR850) with suitable hoses for high flow oxygen, invasive, non-invasive and high frequency ventilation.
- Flow sensor :
  - The flow sensor should be of heated wire type for higher accuracy.
  - It should calibrate quickly within 5 seconds and data should be measured at proximal end, near the Y piece.
  - It should be easily replaceable without disassembling the machine or disassembling the expiratory valve
  - At least 5 No.s flow sensor should be supplied for the lifetime of the equipment.
- The ventilator should have following standard ventilation modes as below:
  - Pressure Controlled – Control, Assist, SIMV
  - CPAP
  - Pressure Support Ventilation

- Volume Guarantee for providing accurate Tidal Volume within set pressure.

Possible to combine as below:

- Control Modes: PC-AC+VG, PC-SIMV+VG
- During HFOV (HFOV + VG)
- Spontaneous breathing (CPAP + VS)

- Apnea Backup Ventilation with Automatic Return
- Sigh controls as follows :

- Pressure Sigh with Variable Intermittent PEEP from 0 – 25 cmH2O
- Time Interval adjustable from 20 sec to 3 hours
- Adjustable no. Of sigh cycles from 1 – 20
- PC-MMV mode – with or without VG

- Optional Modes of Ventilation / Upgrades should be provided for following modes of ventilation:

- PC-APRV mode with Auto Release
- HFOV with or without VG – in same machine without disconnecting
- Proportional Pressure Support
- Capnography (for pediatric patients)
- Automatic Tube Compensation (ATC)

- Special procedures to be available such as :

- Suction Mode – % O2 delivered during in line suction to compensate for drop of FiO2 with pre programmed user adjustable FiO2 %
- Manual Inspiratory Hold
- Inbuilt Nebulisation – inspiration synchronised , volume compensated; to be supplied as standard scope of supply with adjustable time intervals of 5,10,15,30 minutes

- There should be automatic :

- Leakage compensation
- Device and hose compliance
- Device and hose resistance
- Compensation of flow and volume measurements related to ET Tube leakage

- Should have settings for :

Tidal Volume (in Volume Guarantee) 2 – 20 ml (Neonates) and 20 – 300 ml (Pediatrics)
Peak Inspiratory Pressure 1 - 80 cmH2O
PEEP 0 – 35 cmH2O
Inspiratory Time 0.1 – 3 sec
Rate 0 - 150 bpm
Inspiratory flow 2 – 30 lpm
Slope control/ Rise Time 0 - 2 sec.
FiO2 (integrated blender without bleed flow) 21 - 100%
Flow Trigger 0.2 – 5 lpm
O2 flow (O2 therapy) 2 - 50 lpm with FiO2 from 21 – 100%
Automatic altitude compensation with automatic calibration 700 – 1060 hPa/ mbar/ CmH2O/

- Should have selection of measurement conditions for NTPD or BTPS. The real time data should be monitored at Y-piece for:
  - Pressure - Peak, Plateau, Mean, CPAP/PEEP, P min (Minimum airway pressure)
  - Volume – Total Minute Volume, Spont. MV, Inspired Tidal Volume, Expired Tidal Volume, Spontaneous Tidal Volume,
  - Leakage - Leakage MV, Leakage as %
  - Frequency/ Rate - Set (Inspiratory), Spontaneous , total
  - FiO2
  - ETCO2 (optional - for pediatrics)
  - External Compressor should be quoted optional **from the same manufacturer**
  - Lung Mechanics - Resistance, Compliance , C20/C, Time constant Tc, RVR, NIF, RSBI , P.O1
  - Integrated short term and long term graphical trend of all monitored data with duration from 2,4,8,12,24 hours upto **15 days**
  - Integrated alarm log of upto 1000 events on First in First Out basis; data export through USB port should be possible

- Should have automatic alarm settings for all alarms with clear text messages/ corrective action for:
  - Disconnection
  - Tube blocked
  - Ventilation hose kinked
  - High/low Pressure
  - High/low Minute Volume
  - High Rate
  - High Tidal Volume
  - Apnoea / apnoea alarm time
  - High/low O2 % (automatic settings)
  - Oxygen line failure
  - Compressed air failure
  - Total electronic failure (with error code)

- Scope of supply should include
  - Basic Unit (220 - 240 V)
  - Modular corrosion free Trolley - should be imported, of same make as the quoted brand and no local substitute will be accepted/ should be offered.
  - Servo controlled humidifier with reusable chamber -1no
  - Heated Flow sensor - 5 no.s
  - Permanent O2 cell; if consumable same should be supplied for lifetime of machine
  - Reusable heated Hose set for use with neonatal patients - 1no.
  - Nebuliser – pneumatic , inspiration synchronised and volume compensated
  - Oxygen connecting Hose – 3 meters - 1no
  - Air connecting Hose – 3 meters - 1no
  - Hinged arm Support for patient circuit – should be imported , of same make as the quoted brand and no local substitute will be accepted/ should be offered
  - Integrated RS232C Interface
  - Neonatal test lung with variable compliance and resistance -1no

- Instruction Manual

Quality Standards and Support requirements –
The offered unit should have CE or FDA certificate
EN ISO 9001, EN ISO 13485
The unit should comply with relevant IEC Certification
Indian subsidiary/ dealer should have nationwide network, support offices and must be also ISO 9001 certified.

8. Pulse Oximeter

1. Should be Nellcor/Massimo compatible probes
2. Should have convenient built-in Power unit
3. Should have perfusion rates from 0.05~20%
4. Should have dual screen mode
5. Should have electro surgical unit noise protected
6. Should have 15 days trend memory /10seconds
7. Should have broader uses from neonates to the elderly
8. Should be user friendly interface
9. Should have audible and visible alarm
10. Saturation(SpO2) range should be
    Range 0 to 100
    Resolution 1%
    Accuracy
11. Should have following Adult, Pediatric Accuracy

- 70 to 100% ±2 Digits
- 50 to 69% ±3 Digits
- 0 to 49% unspecified

12. Should have following Neonate
    70 to 100% ±3 Digits
    50 to 69% ±4 Digits
    0 to 49% unspecified
13. Should have following average performance
    For adult pediatric 2, 4,6,12 and neonate 8, 12
14. System should have color TFT LCD display with screen size of 4.3inch x2.4inch with min 240x64 pixels
15. Pulse rate range 30 TO 250BPM
16. System should have battery backup up to 3 hrs.
17. Should have storage temperature of – 20 to 70°C
18. Should have operating temperature 5 to 40°C
19. Should have operating Humidity 30 to 85% non condensing
20. Should have power input of 100- 240Vac, 50/60 Hz
21. It should have facility to save the memory continuously for 15days for 10 sec saving period
22. Should have operating pressure of 80 to 106kPa
23. Should have operating attitude of -1000 to 12000ft
24. It should have minimum dimensions of 85(H)x42(W)x245(D)mm
25. It should have minimum 3 hours battery backup
26. Pediatric Spo2 probe should be supplied with the equipments
27. Should have RS232 serial output for Central Monitoring.
28. Should be FDA Certified Product.

9. Auto Bio chemical analyser

α. -40mlforR1;5mlFORR2

β. ReactionVolume -suggestedbetween200–250ul

χ. ReactionTime -0to999Seconds

δ. Calibration - Facility to run Only Reagent blank(withoutstandard)incalibrationm ode

ε. ReactionModule -90PlasticReactionCuvettes(Quartzglass curvettesavailableasoption)

ϕ. ReactionTemperature -37±0.1°C(dryairincubation)

γ. Reagent&SampleProbe -1Reagent/SampleProbewithLiquid LevelSensor

η. MixingProbe -HighSpeedTefloncoatedmixing probeforefficientmixingofreaction mixturewithliquidlevelsensor

ι. Washing - 8 Channel washing manifold, washingwithwarmwater(WaterheaterPro vided)

φ. WaterConsumption -MinIMUM10Litersfor200Tests

κ. Optics

i.LightSource -LongLifeHalogenlamp

ii.WavelengthRange -300–800mm;Eight(8)InstalledFilters

iii.OpticalBandwidth -±4nm

iv.MeasurementRange -0.0–0.3ABS;ContinuousMonitoringof BlankCuvetterABStoincreaseAccuracy

λ. QC

i.RunBetween3–6LevelsofQCS

μ. SoftwareDataStorage

i.RandomProcessingofQCSDataPossible

ii.Windows200/XPPlatformorhigher

iii.UserFriendlywithDiff.LanguageVersions

iv.5-10DifferentReportFormatsAvailable

ν. ReportingBarcodeReader

i.BarCodeReaderforSampleandReagents(Handheld)

ο. Dimensions

i.130cmsx100cmsx85cms

π. Weight

i.90Kgs

θ. Other

i.MachineShouldbeofOpenReagentSystem

10. PowerSupply

a. 110–220volts(+/-10V);50–60Hz;2000VA

11. Accessories

a. MachineshouldbesuppliedalongwITH1.5TOncapacitydualprotectionAirConditi oner
b. 3KVAUPSwith8hoursBatteryY180mfTubularBatteryShouldbeSuppliedAlongw ithMachine
c. 10SetsofReagentshouldbesuppliedalongwithMachine.

12. Certification

a. MachineShouldbeCE&FDAApproved
b. ShouldhaveISO/CE/FADCertificate

13. Warranty&maintenance

a. Three(3)ManufacturerWarrantyandadditionalFive(5)yearsCMCfromtheforth yearonwardstotheeighthyear.

9. Automatic Biochemistry Analyzer

- Description:
  - Discrete,
  - patientprioritized,
  - totallyopen,
- AutomatedClinicalChemistryAnalyzer
- Upto400testsperhour
- PhotometricThroughput -EndPoints
- TypesofReactions -ratereactions,fixedtime,differential, sample blanking, mono and Bi-chromaticmeasurements.
- Sample -40
- SamplePosition -60;canacceptprimarytubesaswell assamplecups;STAT
- SampleVolume -Samplecanbeintroducedatanytime andatanyposition
- Reagent -1.0–100ulinincrementsOF1ul
- ReagentPositions -40
- ReagentBottles -40mlforR1;5mlFORR2(20)
- ReactionVolume -suggestedbetween200–250ul
- ReactionTime -0to999Seconds
- Calibration - Facility to run Only Reagent blank(withoutstandard)incalibrationmode
- ReactionModule -90 PlasticReaction Cuvettes(Quartz glass curvettesavailableasoption)
- ReactionTemperature -37±0.1°C(dryairincubation)
- Reagent&SampleProbe -1Reagent/SampleProbewithLiquid LevelSensor
- MixingProbe -HighSpeedTefloncoatedmixing probeforefficientmixingofreaction mixturewithliquidlevelsensor
- Washing - 8 Channel washing manifold, washingwithwarmwater(WaterheaterProvided)
- WaterConsumption -MINIMUM10Litersfor200Tests
- Optics

Probes: 3(3 reagents;1 sample and 1 reaction and mixing)

- LightSource -LongLifeHalogenlamp
- WavelengthRange -300–800mm;Eight(8)InstalledFilters

15. ABG Machine

• The analyzer should be able to measure blood gas (ph, pO2, pCO2) and electrolytes (Na+,K+,CA++,Cllactate) , creatinine

• Consumablesshouldhaveminimum30daysonboard life for 3 months or 60/90days smallerpacksconsumablesandshouldbeopenforanynumberoftestsduringth e life of the calibrator.

• The cartridge should have In-built aspiration probe and peristaltic pump • Instrument should have facility for user to watch "The movement of sample from aspiration to disposal in waste".

• It should have a Touch Screen display.

• Analyzer should not use any gas bottle/tanks/cylinder for calibration

• Analyzer should not use maintain able electrodes / micro maintenance free flow-through electrodes / conventional individual sensors / Foil packreagentsforcalibrationandmeasurementofparameters

• Analyzershoulddetectairinsample

• Rate for Cartages/Reagents should be quoted for warranty period 2. PowerSupply

Maximum weight of instrument to be less than 2kg

• Shouldbeoperationalonpowerandoninbuiltbatteryasperindustrystandardand/oras required by the Purchaser 3. Accessories

• Analyzer Should have on board printer

• Analyzer should have data backup facility option with USB Ports

• Analyzer should have on screen display of LevyJ enning splot

4. Certifications

• The Instruments should have European CE and USFDA certification.

• Original product certification from the company to been closed.

5. Warranty and Maintenance

•Three(3)Manufacturer Warranty and additional Five(5)years CMC from the forth year on wards to the eighth year

Sample required not more than 125 ml

10. BIPAP/CIPAP (With Oxygen Port)

1). Should be able to manage Ventilation to Adult and Pediatric Patients (patients 10kgs & above)

2). Should be Electronically controlled Heavy Duty Turbine technology.

3). Should have Non-Invasive ventilation which could be used inside/outside ICU or Ward

4). Should have separate Home and Clinical Modes to be suitable for Home/ Hospital Usage

5). Should have inbuilt Low Flow Supplement Oxygen Port to supply Oxygen from 0- 30 LPM

7). Should be able to display Numeric Monitored Data with Pressure Bar graph

8). Compact and lightweight design, not more than 1.8Kgs, easy to carry

9). Should have option of Integrated Heated Humidification which does not increase the footprint of the machine with adjustable humidity levels & with unique rod design

10). High Resolution Large easy to read screen with User Intuitive Interface

11). Full-automatic system check procedure

12). Should have reliable proven Trigger Technology with Auto triggering

13). Should have following Non Invasive Modes

PSV (Pressure Support Ventilation)

CPAP (Continuous positive airway pressure ventilation)

S Mode

ST Mode

14). Respiratory rate: 0-40 breath/min

15). Inspiratory Time: 0.3- 3 s

17). IPAP: 4-25 cmH2O

18). EPAP: 2-20 cmH2O

19). Inspiratory Trigger: Auto / 1 to 9 L/min

20). Expiratory Trigger: Auto / 1-9 L/min

21). Rise Time: Auto / 1- 9 mSec

22). Ramp Time: 0- 60 min

23). Should be able to provide Numeric Monitoring of following Parameters

Pressure: Peak Pressure, PEEP

Volume: Minute Volume, Tidal Volume, % Target Volume

Leakage, Total Rate, I:E Ratio, Spont Rate, % Spont Rate, Insp. Time, Rise Time

24). Adjustable Audio and Visual Alarms for following;

Airway Pressure: High/ Low

Respiratory Rate: High/ Low

Minute Volume: High/ Low

EPAP: High/Low

Pulse Rate: High/ Low

Power Supply Low/Fail & External DC Low/ Fail

Internal Failure Alarm, disconnection, Apnea, Rebreathing, Alarm Sound Level

Ambient Pressure Compensation Lost Alarm, High Pressure Limitation Alarm, Flow Sensor Failure Alarm

High Air Temperature Alarm, SPO2 Artifact & SPO2 Disconnection

25). External AC power supply: 100~- 240V, 50/60Hz

26). External DC power supply: 12/ 24V

27). Noise Level should be less than 30 dB(A)

29). ISO 13485

30). Should be CE Certification/ US FDA Approved

31). Volume LxBxH- Should not be more than [170x200x200] cms

11. X-Ray Machine (300MA)

Name		**300 mA Hf X-ray machine**
generAl		
1. uSe		
1.1	**Clinical purpose**	Radiographyofthebonesandfracturesandotherarthropathies.X-RayChest forthesupportivediagnosisofthePulmonaryTuberculosisX-RayPelvis(KUB) forrenaldisordersandstones. Sinusitis,FracturesoftheSkullCardiacdiseasesandcardiacenlargement Silicosisandotherrespiratoryconditions,likePleualeffusion,hydrothorax, PneumothoraxPeritonitisbyX-Rayabdomen.
1.2	**usedbyclinicaldepartment/ ward**	
teCHniCAl		
2. teCHniCAl CHArACteriStiCS		
2.1	**technical characteristics (specifictothistypeofdevice)**	High Frequency X-Ray machine suitable for general Radiography. **X-ray generator** HighFrequencyX-RaygeneratorhavingFrequencyof40KHzmore suitableforRadiographyshouldbeprovided. Poweroutputofgeneratorshouldbe25KWormore. RadiographyKVrangeshouldbe40to110KVormore. mArange(Rad.):300mAormore•Exposuretime(Rad.):1msto2sec. with maximum numbers of steps. **Control:** Averycompact,SoftTouchControlPanelhavingfollowingfunctions& indicationsshouldbeprovided.Thepanelcanbesuppliedinfloororwall mountwithSpillProofdesignFollowingfeaturesshouldbeavailableon the controlpanel. MachineON/OFFswitch•DigitalDisplayofKV&mAs.•KV&mAsincrease and decrease switches. Tubefocalspotselectionswitch.•Readyandx-rayonswitchith indicators. Bucky Selectionswitch. SelfdiagnosticProgrammewithIndicatorsforEarthfaulterror,KVerror, filamenterror&Tube'sThermalOverload. **X-ray tube** OneNoDualfocusRotatingAnodeBEL/Toshiba/ImportedX-raytube thermallyprotectedhavingfocalspot: 1mmorlesssmallFocus,2mmorlesslargeFocus.
		Anodeheatstoragecapacityoftubeshouldbemorethan140KHU. One no manual collimator with aluminum filter & for adjustment of exposurearea. Column Stand: It should have floor to ceiling stand with vertical counter balanced travel. Itshouldhave360deg.Rotation. Itshouldbeprovidedoneverticalbuckystandwithmachine. Table. Fivepositionmanualtilttablehavingbukygridrationof8:1with85 lines perinchesshouldbeprovided. The bucky tray should accept cassette of 8"x10", 10"x12" and 14"x17" size.
2.2	**user's interface**	Manual

2.3	**Software and/or standard of communication (where ever required)**	
3. pHySiCAl CHArACteriStiCS		
3.1	**dimensions (metric)**	NA
3.2	**Weight (lbs, kg)**	NA
3.3	**Configuration**	NA
3.4	**noise (in dBA)**	Noise-free system
3.5	**Heat dissipation**	HeatDissipation:ShouldmaintainnominalTempandtheheatshouldbe disbursedthroughancoolingmechanism
3.6	**mobility, portability**	Certified Room Installation
4.energySourCe(electricity,upS,solar,gas,water,Co2 .....)		
4.1	**power requirements**	Power unit: Input voltage- 400V-440V AC, 50Hz ;3 -phase
4.2	**Battery operated**	No
4.3	**tolerance (to variations, shutdowns)**	NA
4.4	**protection**	Stabliser of appropriate capacity to be installled.
4.5	**power consumption**	25 to 30 KW.
5. ACCeSSorieS, SpAre pArtS, ConSumABleS		
5.1	**Accessories (mandatory, standard, optional); Spare parts (main ones); Consumables/ reagents (open, closed system)**	Machine should be supplied with following transducers: 2No.BARCApprovedwholebodyleadappornswithallattachements. OnePairof8meterH.V.Cable.
Bidding/proCurement termS/donAtion reQuirementS		
6. enVironmentAl And depArtmentAl ConSiderAtonS		
6.1	**Atmosphere/Ambiance (air conditioning, humidity, dust ...)**	Operatingcondition:Capableofoperatingcontinuouslyinambient temperatureof5to50degCandrelativehumidityof15to80%inideal circumstances. Storagecondition:Capableofbeingstoredcontinuouslyinambient temperatureof0to50degCandrelativehumidityof15to90%.
6.2	**user's care, Cleaning, disinfection & Sterility issues**	Disinfection:PartsoftheDevicethataredesignedtocomeintocontact with the patient or the operator should either be capable of easy disinfectionorbeprotectedbyasingleuse/disposablecover. Sterilization notrequired.
7. StAndArdS And SAfety		
7.1	**Certificates (pre-market, sanitary, ..); performance and safetystandards(specificto thedevicetype);localand/or international**	ShouldbeFDA/EuropeanCE/BISapprovedproduct. ManufacturerandSuppliershouldhaveISO13485certificationfor qualitystandards. ElectricalsafetyconformstothestandardsforelectricalsafetyIEC60601-Generalrequirements(orequivalentBISStandard)

		ShallmeetinternationallyrecognisedforElectromagneticCompatibility (EMI/EMC)forelectromedicalequipment:61326-1. CertifiedtobecompliantwithIEC61010-1,IEC61010-2-40forsafety. AERB typeapproved
7.2	**local and/or international**	Manufacturer/suppliershouldhaveISO13485certificateforquality standard.
8. trAining And inStAllAtion		
8.1	**pre-installation requirements: nature, values, quality, tolerance**	Availabilityofthreephaseuniformpowersupply. Safetyandoperationcheckbeforehandover. Tobeinstalledinaseparateroom. Facilityfordarkroomshouldbeavaillable.
8.2	**requirements for sign-off**	Certificateofcalibrationandinspectionofpartsfromthemanufacturer.
8.3	**trainingofstaff(medical, paramedical,technicians)**	Trainingofusersonoperationandbasicmaintenance; Advancedmaintenancetasksrequiredshallbedocumented;
9. WArrAnty And mAintenAnCe		
9.1	**Warranty**	3 years
9.2	**maintenance tasks**	CMC 5 years 2 PM Visits Annually. All Breakdown calls to be attended within 24 hrs of registartion.
9.3	**Service contract clauses, including prices**	Thespareprice listofallsparesandaccessories(includingminor)required formaintenanceandrepairsinfutureafterguarantee/warrantyperiod should beattached;
10. doCumentAtion		
10.1	**operating manuals, service manuals, other manuals**	Should provide 2 sets(hardcopy and soft-copy) of: User,technicalandmaintenancemanualstobesuppliedinenglish/hindi languagealongwithmachinediagrams; Listofequipmentandproceduresrequiredforlocalcalibration and routinemaintenance; Serviceandoperationmanuals(originalandcopy)tobeprovided; Advancedmaintenancetasksdocumentation; Certificateofcalibrationandinspection. Satisfactorycertificateforanyexistinginstallationfromgovernmenthospital.
10.2	**other accompanying documents**	Listofessentialsparesandaccessories,withtheirpartnumbersandcost;
11. noteS		
11.1	**ServiceSupportContactdetails (Hierarchy Wise; including a toll free/landlinenumber)**	Contactdetailsofmanufacturer,supplierandlocalserviceagenttobe provided; AnyContract(AMC/CMC/add-hoc)tobedeclaredbythemanufacturer;
11.2	**recommendations or warnings**	Any warning signs would be adequately displayed.

12.		
Name		CR System
generAl		
1. uSe		
1.1	**Clinical purpose**	UsedforDigitizationofthealreadyexistingAnalogX-raySystemsgiving advantageofimageprocessingandincreasedspeed Ideal for Medium workload facilities and Secondary care facilities.
1.2	**usedbyclinicaldepartment/ ward**	Radiology Department
teCHniCAl		
2. teCHniCAl CHArACteriStiCS		
2.1	**technical characteristics (specifictothistypeofdevice)**	1. Digitizer(CR)systemshouldhavecapacitytoprocessmorethan70or morecassette/filmsperhourof14X17”size. 2. Standardworkstation(Console)coupledwithCRimagestoragecapacity –atleast2000imagesspecifythenumbers.Itshouldhavearesolution of5pixels/mm(Minimum)forstandardresolutioncassette&upto20 pixels/mm ormore. 3. SeparateDICOMworkstationinultramodalitywithallprocessing facilitiesinacentralizedreporting. 4. OtherfeatureofCRsystem. • Image postprocessing. • Windowleveling • Annotation • AreaofinterestZoom • Magnification • Flipping &panning • Automatic exposurecorrection • Pre viewsoftware • Edge enhancementstepwise • Contrast/Brightnessadjustment • Shuttering/ROIFinder • ApplicationrelatedsoftwarelikePediatricshouldbeavailable–The systemshouldhavesoftware&hardwaretoperformfullleg/Fullspine/ LongBodyimaging/imagingstitching. • DICOMPrint • DICOMimageoutputtonetworkworkstation. • GridPatternremovalsoftware&noisecompressionprocessing. • Gray Scalereversal • Rotation • Imagepreviewtime25to60Sec.(Forlargeimage)

2.1	**technical characteristics (specifictothistypeofdevice)**	System should be fully complaint with DICOM 3. • Automaticcassetteidentificationthroughbarcodereader. 5. Lasercamerawithat-leastthreefilmsizeonline14”X17”,11”X14”/10”X 14”,10”X12”,&8”X10” 6. •Contrastspatial/Readingresolution10pixel/mmormoreconstant highresolutioninallsizes.Truesizeprintingshouldbepossiblefrom readerconsole. Automaticexposurecorrection&facilityformaneuveringreadingsensitivity manually. Gamma curves for multiple object intensity processing. Registration&cassetteidentificationshouldbepossibletobedonebefore &aftertheexposure(Pre/Postregistration)7.SpecificationforLaserCamera • MentionSpatialresolutionhigherlevelpreferableminimum500DPI/PPI. • MentionGrayScaleresolution:morethan12bitspreferable • MentionProcessingcapacity/hourfor(14”X17”)films,Itshouldbe more than 70 films /Hour 8.Acceptablefilmsize:14”X17”,11”X14”/10”X14”,10”X12”,&8”X10”. • Onlinefilmsize:atleastthreefilmsize • DICOMcompatible
2.1	**technical characteristics (specifictothistypeofdevice)**	9. CRworkstationshouldhavefollowingfeature • Multipleimageprintingwithmultipleformat • Measurementofimage,insertscale • Preloadedannotation • DICOMCDwriting&reading • Imageinverse,imageflipping,imagemagnification,zooming • Reportingformat • Imagepreview • Imagecropping • Printingmultiplepatientononefilm • CDwritingformultiplepatientononeCD • Shouldhaveaharddiskof80GBormoreforstoringimage.
2.2	**user’s interface**	manual
2.3	**Software and/or standard of communication(where ever required)**	In built
	3. pHySiCAl CHArACteriStiCS	
3.1	**dimensions (metric)**	NA
3.2	**Weight (lbs, kg)**	NA
3.3	**Configuration**	NA
3.4	**noise (in dBA)**	Noise-free system
3.5	**Heat dissipation**	HeatDissipation:ShouldmaintainnominalTempandtheheatshouldbe disbursedthroughacoolingmechanism
3.6	**mobility, portability**	Stationary installation
	4.energySourCe(electricity,upS,solar,gas,water,Co2.....)	
4.1	**power requirements**	Power supply: 230V, AC, 50Hz.
4.2	**Battery operated**	no

4.3	**tolerance (to variations, shutdowns)**	NA
4.4	**protection**	NA
4.5	**power consumption**	??????
	5. ACCeSSorieS, SpAre pArtS, ConSumABleS	
5.1	**Accessories (mandatory, standard, optional); Spare parts (main ones); Consumables / reagents (open, closed system)**	Machine should be supplied with following transducers:- I. 2No.BARCApprovedwholebodyleadappornswithallattachements. II. PleaseprovidecassetteforCRwithPSPPlate(IP) 14"X17"-2No. 11"X14"/10"X14"-2No. 10"X12"-2No. III. SuitableonlinepuresinewaveUPsfor30minutebackup IV ClosedSystem??? V Compatible computer System with 2 medical grade monitors
	Bidding / proCurement termS / donAtion reQuirementS	
	6. enVironmentAl And depArtmentAl ConSiderAtonS	
6.1	**Atmosphere / Ambiance (air conditioning, humidity, dust ...)**	1) Operatingcondition:Capableofoperatingcontinuouslyinambient temperatureof5to50degCandrelativehumidityof15to80%inideal circumstances. 2) Storagecondition:Capableofbeingstoredcontinuouslyinambient temperatureof0to50degCandrelativehumidityof15to90%.
6.2	**user's care, Cleaning, disinfection & Sterility issues**	1) Disinfection:PartsoftheDevicethataredesignedtocomeintocontact with the patient or the operator should either be capable of easy disinfectionorbeprotectedbyasingleuse/disposablecover. 2) Sterilization notrequired.
	7. StAndArdS And SAfety	
7.1	**Certificates (pre-market, sanitary, ..); performanceand safetystandards(specificto thedevicetype);localand/or international**	1. ShouldbeFDA/EuropeanCE/BISapprovedproduct. 2. ManufacturerandSuppliershouldhaveISO13485certificationfor qualitystandards. 3. Electricalsafetyconformstothestandardsforelectricalsafety IEC60601- 1-Generalrequirements(orequivalentBISStandard) 5. ShallmeetinternationallyrecognisedstandardforElectromagnetic Compatibility(EMI/EMC)forelectromedicalequipment:61326-1. 6. CertifiedtobecompliantwithIEC61010-1-3,IEC61010-1-2,IEC61010-2-54,IEC61010-1-6andIEC62304
7.2	**local and/or international**	Manufacturer/suppliershouldhaveISO13485certificateforquality standard.
	8. trAining And inStAllAtion	
8.1	**pre-installation requirements: nature, values, quality, tolerance**	Three phase stable power supply
8.2	**requirements for sign-off**	Certificateofcalibrationandinspectionofpartsfromthemanufacturer
8.3	**trainingofstaff(medical, paramedical,technicians)**	1) Trainingofusersonoperationandbasicmaintenance; 2)Advancedmaintenancetasksrequiredshallbedocumented
	9. WArrAnty And mAintenAnCe	
9.1	**Warranty**	3 years
9.2	**maintenance tasks**	CMC 5 years. 2 PM Visits Annually. All Breakdown calls to be attended within 24 hrs of registartion.

9.3	**Service contract clauses, including prices**	Thespare pricelistofallsparesandaccessories(includingminor)required formaintenanceandrepairsinfutureafterguarantee/warrantyperiod should beattached;
	10. doCumentAtion	
10.1	**operating manuals, service manuals, other manuals**	Should provide 2 sets(hardcopy and soft-copy) of:- 1) User,technicalandmaintenancemanualstobesuppliedinenglish/hindi languagealongwithmachinediagrams; 2) Listofequipmentandproceduresrequiredforlocalcalibrationand routinemaintenance; 3) Serviceandoperationmanuals(originalandcopy)tobeprovided; 4) Advancedmaintenancetasksdocumentation; 5) Certificateofcalibrationandinspection
10.2	**other accompanying documents**	Listofessentialsparesandaccessories,withtheirpartnumbersandcost;
	11. noteS	
11.1	**Service Support Contact details (Hierarchy Wise; including atoll free/landlinenumber)**	Contactdetailsofmanufacturer,supplierandlocalserviceagenttobe provided; AnyContract(AMC/CMC/add-hoc)tobedeclaredbythemanufacturer;
11.2	**recommendations or warnings**	Any warning signs would be adequately displayed

13. X-Ray Machine (500MA)

nAme And Coding		
Name		500 mA X-Ray Machine(HF)
generAl		
1. uSe		
1.1	**Clinical purpose**	Radiography of the bones and fractures and other arthropathies. X-RayChestforthesupportivediagnosisofthePulmonaryTuberculosis. X-RayPelvis(KUB)forrenaldisordersandstones. Sinusitis, Fractures of the Skull. Cardiac diseases and cardiac enlargement. Silicosisandotherrespiratoryconditions,likePleualeffusion,,hydrothorax, Pneumothorax. Peritonitis by X-Ray abdomen.
1.2	**used by clinical department/ ward**	Radiology Department
teCHniCAl		
2. teCHniCAl CHArACteriStiCS		
2.1	**technical characteristics (specifictothistypeofdevice)**	High frequency X-Ray machine suitable for general radiography. **X-rAy generAtor:** - HighFrequencyX-RayGeneratorhavingfrequencyof50KHzormore should beprovided. - Poweroutputofgeneratorshouldbe50KW. - RadiographicKVRangeshouldbe40to125KV. - mARange(Rad.):500mAormore. - Exposuretime(Rad.):1msto3Sec. - mAsRange(Rad.):1to200mAs. **Control:** Averycompact,SoftTouchControlPanelhavingfollowingfunctions& indicationsshouldbeprovided.ThepanelcanbesuppliedinFloororWall mountwithSpillProofdesign. Following features should be available on the control panel. • Machine ON/OFFSwitch. • DigitalDisplayofKV&mAs. • KV&mAsincreaseanddecreaseswitches. • TubefocalspotselectionSwitch.

		• ReadyandX-RayonswitchwithIndicators • Bucky SelectionSwitch. • SelfdiagnosticProgrammewithIndicatorsforEarthfaulterror,KVerror, filament error &Tube's ThermalOverload. • Anatomical Programming Radiography (i.e. APR) should have PreprogrammedparametersofhumanAnatomyUpto216programs whichhelpstheusertoselectexposureparametersbasedonbody part, examinationviewandsizeofthepatient.
2.1	**technical characteristics (specifictothistypeofdevice)**	Adualactionhandswitchwithretractablecordshouldbeprovidedfor RadiationProtectionofOperator.Thereshouldbeprovisionforacordless Exposure switchalso. Thereshouldbeprovisionofautoshutoffof Controlifnokeyispressedfor 10Min. **X-ray tube:** - TwoNos.DualfocusRotatingAnodeX-Raytubethermallyprotected - Anodeheatstoragecapacityoftubeshouldbemorethan140KHU. - TwoPairof8meterH.V.Cable. - TwoNos.Collimatorwithautoshutofffacilityshouldbeprovided. **HV tAnK:** AverycompactH.V.Tankfilledwithhighdielectrictransformeroilshould beprovided.TheH.V.TankshouldcontainH.V.transformer,Filament Transformers,H.V.Rectifiers&H.V.Cablereceptacles. **tuBe StAnd:** - FloortoCeilingStandwithCounterBalancedTubeHead(Rotatable± 180Degree),360DegreeRotatable;mountedonFloorCeilingRailsfor convenientmovementsshouldbeprovided.
2.1	**technical characteristics (specifictothistypeofdevice)**	TABLE: -Motorizedtableshouldhavemotorizedbuckyconsistingofbuckygridof size17¼"x187/8"ratio8:1,85lines/inch.SpotFilmDevice(semiautomatic) capableofdoingallroutinespotfilming(4on1,2on1,1on1)forusewith 8"x10",10"x12",14"x14"cassettes.Gridsize15"x15",6:1ratio,103lines perinch.Compressionmovementofspotfilmdeviceismotorized.The fluoroscopicparameters(fluoroKV,fluoromAandfluorotime)shouldbe digitallydisplayedontheSFD.ControloffluoroKVshouldbeavailableon SFD. VERTICAL BUCKY STAND: • VerticalBuckyStandwithoscillatingGridofRatio8:1,85lines/inchis provided. • TheBuckymovesup&down&isequippedwithastainlesssteelcassette tray. • Thestandisfloor-mountedtype&canaccommodatecassettesupto 14"X17".TheBuckyistiltedin6stepsof15degreeAngleeachforvarious Radiographs.
2.2	**user's interface**	manual
2.3	**Software and/or standard of communication(where ever required)**	In built
	3. pHySiCAl CHArACteriStiCS	
3.1	**dimensions (metric)**	NA
3.2	**Weight (lbs, kg)**	NA

3.3	**Configuration**	NA
3.4	**noise (in dBA)**	Noise-free system
3.5	**Heat dissipation**	HeatDissipation:ShouldmaintainnominalTempandtheheatshouldbe disbursedthroughacoolingmechanism
3.6	**mobility, portability**	Stationary Installation
	4.energySourCe(electricity,upS,solar,gas,water,Co2.....)	
4.1	**power requirements**	Power supply: 230V, AC, 50Hz. 15 Amps ,three phase, Line resistance < 0.4 ohms
4.2	**Battery operated**	no
4.3	**tolerance (to variations, shutdowns)**	line regulation of ±10%.
4.4	**protection**	NA
4.5	**power consumption**	??????
	5. ACCeSSorieS, SpAre pArtS, ConSumABleS	
5.1	**Accessories (mandatory, standard, optional); Spare parts (main ones); Consumables / reagents (open, closed system)**	Machine should be supplied with following transducers:- I.2No.BARCApprovedwholebodyleadappornswithallattachements.
	Bidding / proCurement termS / donAtion reQuirementS	
	6. enVironmentAl And depArtmentAl ConSiderAtonS	
6.1	**Atmosphere / Ambiance (air conditioning, humidity, dust ...)**	1) Operatingcondition:Capableofoperatingcontinuouslyinambient temperatureof5to50degCandrelativehumidityof15to80%inideal circumstances. 2) Storagecondition:Capableofbeingstoredcontinuouslyinambient temperatureof0to50degCandrelativehumidityof15to90%.
6.2	**user's care, Cleaning, disinfection & Sterility issues**	1) Disinfection:PartsoftheDevicethataredesignedtocomeintocontact with the patient or the operator should either be capable of easy disinfectionorbeprotectedbyasingleuse/disposablecover. 2) Sterilization notrequired.
	7. StAndArdS And SAfety	
7.1	**Certificates (pre-market, sanitary, ..); performanceand safetystandards(specificto thedevicetype);localand/or international**	1. ShouldbeFDA/EuropeanCE/BISapprovedproduct. 2. ManufacturerandSuppliershouldhaveISO13485certificationfor qualitystandards. 3. ElectricalsafetyconformstothestandardsforelectricalsafetyIEC60601- 1-Generalrequirements(orequivalentBISStandard) 5. ShallmeetinternationallyrecognisedstandardforElectromagnetic Compatibility(EMI/EMC)forelectromedicalequipment:61326-1. 6. CertifiedtobecompliantwithIEC61010-1-3,IEC61010-1-2,IEC61010-2-54,IEC61010-1-6andIEC62304 7. AERB typeapproved
7.2	**local and/or international**	Manufacturer/suppliershouldhaveISO13485certificateforquality standard.
	8. trAining And inStAllAtion	
8.1	**pre-installation requirements: nature, values, quality, tolerance**	Three phase stable power supply
8.2	**requirements for sign-off**	Certificateofcalibrationandinspectionofpartsfromthemanufacturer

8.3	**trainingofstaff(medical, paramedical,technicians)**	1) Trainingofusersonoperationandbasicmaintenance; 2) Advancedmaintenancetasksrequiredshallbedocumented
	9. WArrAnty And mAintenAnCe	
9.1	**Warranty**	3 years
9.2	**maintenance tasks**	CMC 5 years 2 PM Visits Annually. All Breakdown calls to be attended within 24 hrs of registartion.
9.3	**Service contract clauses, including prices**	Thesparepricelistofallsparesandaccessories(includingminor)required formaintenanceandrepairsinfutureafterguarantee/warrantyperiod should beattached;
	10. doCumentAtion	
10.1	**operating manuals, service manuals, other manuals**	Should provide 2 sets(hardcopy and soft-copy) of:- 1) User,technicalandmaintenancemanualstobesuppliedinenglish/hindi languagealongwithmachinediagrams; 2) Listofequipmentandproceduresrequiredforlocalcalibration and routinemaintenance; 3) Serviceandoperationmanuals(originalandcopy)tobeprovided; 4) Advancedmaintenancetasksdocumentation; 5) Certificateofcalibrationandinspection
10.2	**other accompanying documents**	Listofessentialsparesandaccessories,withtheirpartnumbersandcost;
	11. noteS	
11.1	**Service Support Contact details (Hierarchy Wise; including atoll free/landlinenumber)**	Contactdetailsofmanufacturer,supplierandlocalserviceagenttobe provided; AnyContract(AMC/CMC/add-hoc)tobedeclaredbythemanufacturer;
11.2	**recommendations or warnings**	Any warning signs would be adequately displayed

14.

6 Channel ECG Machine

Six Channel ECG MAchine		
NAMEANDCODING		
GMDNNAME		MULTICHANNELELECTROCARDIOGRAPHIC
GMDNCODE(S)		CT1115
DEFINITION		A MAINS ELECTRICITY (AC-POWERED) BEDSIDE DEVICE DESIGNED TO CONTINUOUSLYDETECT, MEASURE, AND DISPLAY A PATIENT'S ELECTRO CARDIOGRAM (ECG) THROUGH LEADS AND SENSORS ATTACHED TO THE PATIENT; IT ALSO TYPICALLY DISPLAYS HEART RATE.THE DEVICE IS TYPICALLY EQUIPPED WITH AUDIBLE AND/OR VISUAL ALARMS THAT ARETRIGGEREDWHENTHEPATIENT'SPARAMETERSDROPBELOWOREX CEEDPRE-SETLIMITS.
GENERAL		
1.USE		
1.1	**CLINICALPURPOSE**	CONTINUOUSLYDETECT,MEASURE,ANDDISPLAYAPATIENT'SELECTRO CARDIOGRAM(ECG)THROUGHLEADSANDSENSORSATTACHEDTOTHEP ATIENT
1.2	**USED BY CLINICAL DEPARTMENT/WARD**	ALL
1.3	**OVERVIEWOFFUNCTIONALREQ UIREMENTS**	CONTINUOUSDISPLAYOFPATIENTECGANDHEARTRATEONSCREENA LLOWSDISPLAYOF SINGLE, 5 LEAD ECG OR SIMULTANEOUS DISPLAY OF AT LEAST 5 WAVES SELECTEDFROMUPTO12POINTSOPERATORCANSETAUDIOVISUALALA RMLEVELSFORLOWORHIGHHEARTRATEOPERATESFROMMAINSVOLTA GEORFROMINTERNALRECHARGEABLEBATTERY PATIENT CONNECTORS THAT ARE STERILISABLE AND REUSABLE ARE PREFERRED,THOUGHREUSABLECABLESTHATATTACHTODISPOSABLE CONNECTIONPATCHESAREALSOACCEPTABLEHARDCOPYPRINTOUTO FTRACESWILLBEREQUIRED
TECHNICAL		
2.TECHNICALCHARACTERISTICS		
2.1	**TECHNICAL CHARACTERISTICS(SPECIFICTO THISTYPEOFDEVICE)**	HEARTRATEMEASUREMENTRANGETOBEATLEAST30TO250BPM,WITH ACCURACYBETTERTHAN±5BPM. HEARTRATETRENDDISPLAYOFATLEASTPREVIOUS24HOURS. ARRHYTHMIADETECTIONFACILITYREQUIRED;MINIMUMGRADATIONO F1BPM. HEARTRATEMEASUREMENTRANGETOBEATLEAST30TO250BPM,WITH ACCURACYBETTERTHAN±5BPM.

2.2	**SETTINGS**	AUDIOVISUALALARMSREQUIRED:HIGHANDLOWHEARTRATE(OPERATORVARIABLESETTINGS),CARDIACARRHYTHMIA,SENSOR/WIREDISCONNECTED,LOWBATTERY.
2.3	**USER'SINTERFACE**	MANUAL
2.4	**SOFTWAREAND/ORSTANDARDOFCOMMUNICATION**	INBUILT
3.PHYSICALCHARACTERISTICS		
3.1	**DIMENSIONS(METRIC)**	NA

3.2	**WEIGHT(LBS,KG)**	LESSTHAN5KGS
3.3	**CONFIGURATION**	CASEISTOBEHARDANDSPLASHPROOF DISPLAY MUST ALLOW EASY VIEWING IN ALL AMBIENT LIGHT LEVELSSUPPLIEDINPROTECTIVECASEFORCLEANSTORAGEANDSAFETRANSPORT.
3.4	**NOISE(INDBA)**	<50DB
3.5	**HEAT DISSIPATION**	HEATDISSIPIATION:SHOULDMAITAINNOMINALTEMPANDTHEHEATSHOULDBEDISBURSEDTHROUGHAEXHAUSTCOOLINGFAN.
3.6	**MOBILITY,PORTABILITY**	SUPPLIEDINPROTECTIVECASEFORCLEANSTORAGEANDSAFETRANSPORT.
4.ENERGYSOURCE(ELECTRICITY,UPS,SOLAR,GAS, WATER,CO2 .....)		
4.1	**VOLTAGE(VALUE,ACORDC,MONOPHASEORTRIPHASE)**	220TO240V,50HZ
4.2	**BATTERYOPERATED**	BATTERYPOWERED,SILENCEABLEALARMFORPOWERFAILUREBATTERYCHARGERTO BE INTEGRAL TO MAINS POWER SUPPLY, AND TO CHARGE BATTERY DURING MAINSPOWEROPERATIONOFUNITINTERNAL,REPLACEABLE,RECHARGEABLEBATTERYALLOWSOPERATIONFORATLEASTONEHOURINTHEEVENTOFPOWERFAILURE.
4.3	**TOLERANCE (TO VARIATIONS,SHUTDOWNS)**	VOLTAGECORRECTOR/STABILIZERTOALLOWOPERATIONAT±30%OFLOCALRATEDVOLTAGE.
4.4	**PROTECTION**	ELECTRICALPROTECTIONPROVIDEDBYFUSESINBOTHLIVEANDNEUTRALSUPPLYLINES.
4.5	**POWERCONSUMPTION**	
4.6	**OTHERENERGYSUPPLIES**	MAINSCABLETOBEATLEAST3MLENGTH.
5.ACCESSORIES,SPAREPARTS,CONSUMABLES		
5.1	**ACCESSORIES (MANDATORY,STANDARD,OPTIONAL)**	12LEADECGCABLE. 5LEADECGCABLE(IFOPTIONOFFERED). 100SETSOFECGCONNECTIONELECTRODES(IFDISPOSABLETYPE).5SETSOFECGCONNECTIONELECTRODES(IFREUSABLETYPE).
5.2	**SPAREPARTS(MAINONES)**	TWOSETSOFSPAREFUSES(IFNON-RESETTABLEFUSESUSED).
5.3	**CONSUMABLES/REAGENTS (OPEN,CLOSEDSYSTEM)**	5TUBESELECTRODEGEL(IFREQUIRED).
6.ENVIRONMENTALANDDEPARTMENTALCONSIDERATONS		
6.1	**ATMOSPHERE/AMBIANCE(AIRCONDITIONING,HUMIDITY,DUST ...)**	OPERATINGCONDITION: CAPABLEOFOPERATINGCONTINUOUSLYINAMBIENTTEMPERATUREOF0TO50DEGCANDRELATIVEHUMIDITYOF15TO90%INIDEALCIRCUMSTANCES.
6.2	**USER'S CARE, CLEANING,DISINFECTION&STERILITYISSUES**	THECASEISTOBECLEANABLEWITHALCOHOLORCHLORINEWIPES
7.STANDARDSANDSAFETY		
7.1	**CERTIFICATES(PRE-MARKET,SANITARY,..);PERFORMANCEANDSAFETY STANDARDS (SPECIFIC TOTHEDEVICETYPE);LOCALAND/ORINTERNATIONAL**	SHOULD BE FDA / CE APPROVED PRODUCT; MANUFACTURER / SUPPLIER SHOULDHAVEISO 13485CERTIFICATE FORQUALITY STANDARD.ELECTRICAL SAFETY CONFORMSTO STANDARDS FOR ELECTRICAL SAFETY IEC-60601-1 SHALL MEET IEC-60601-1-2 (GENERALREQUIREMENTS FOR SAFETY - ELECTROMAGNETIC COMPATIBILITY) AND IEC 60601-2-25(ESSENTIALPERFORMANCEOFELECTROCARDIOGRAPHS)
8.TRAININGANDINSTALLATION		
8.1	**PRE-INSTALLATION REQUIREMENTS:NATURE,VALUES,QUALITY,TOLERANCE**	AVAILABILITYOF5AMP/15AMP.ELECTRICALSOCKET

8.2	**REQUIREMENTSFORSIGN-OFF**	SUPPLIERTOPERFORMINSTALLATION,SAFETYANDOPERATIONCHECKSBEFOREHANDOVERLOCALCLINICALSTAFFTOAFFIRMCOMPLETIONOFINSTALLATION
8.3	**TRAINING OF STAFF (MEDICAL,PARAMEDICAL,TECHNICIANS)**	TRAININGOFUSERSINOPERATIONANDBASICMAINTENANCESHALLBEPROVIDED ADVANCEDMAINTENANCETASKSREQUIREDSHALLBEDOCUMENTED

9.WARRANTYANDMAINTENANCE		
9.1	**WARRANTY**	3YEAR
9.2	**MAINTENANCETASKS**	MAINTAINANCEMANUALDETAILINGCOMPLETEMAINTAININGSCHEDULE.
9.3	**SERVICE CONTRACT CLAUSES,INCLUDINGPRICES**	WARRANTYOFONEYEARWITHFREESERVICING(MIN.3)DURINGWARRANTY.
9.4	**OTHERS**	THESPAREPRICELISTOFALLSPARESANDACCESSORIES(INCLUDINGMINOR)REQUIREDFOR MAINTENANCE AND REPAIRS IN FUTURE AFTER GUARANTEE / WARRANTY PERIODSHOULDBEATTACHED.
10.DOCUMENTATION		
10.1	**OPERATING MANUALS, SERVICEMANUALS,OTHERMANUALS**	USER,TECHNICALANDMAINTENANCEMANUALSTOBESUPPLIEDINENGLISHLANGUAGE.CERTIFICATEOFCALIBRATIONANDINSPECTIONTOBEPROVIDED. LIST TO BE PROVIDED OF EQUIPMENT AND PROCEDURES REQUIRED FOR LOCALCALIBRATIONANDROUTINEMAINTENANCELISTTOBEPROVIDEDOFIMPORTANTSPARESANDACCESSORIES,WITHTHEIRPARTNUMBERSANDCOST. CONTACTDETAILSOFMANUFACTURER,SUPPLIERANDLOCALSERVICEAGENTTOBEPROVIDED.
10.2	**OTHER ACCOMPANY ING DOCUMENTS**	USER/TECHNICAL/MAINTENANCEMANUALSTOBESUPPLIEDINENGLISH.
11.NOTES		
11.1	**OTHERINFORMATION**	ANYCONTRACT(AMC/MC/ADD-HOC)TOBEDECLAREDBYTHEMANUFACTURER.
11.2	**RECOMMENDATIONSORWARNINGS**	ANYRECOMMENDATIONSFORBESTUSEANDSUPPLIMENTARYWARNINGFORSAFETYSHOULDBEDECLARED.

15 .DEFIBRILLATOR

NAME ANDCODING		
GMDN NAME		DEFIBRILLATORS
GMDN CODE(S)		CT1150
GENERAL		
1. USE		
1.1	**CLINICAL PURPOSE**	DEFIBRILLATION IS A COMMON TREATMENT FOR LIFE-THREATENING CARDIAC DYSRHYTHMIAS,VENTRICULARFIBRILLATIONANDPULSELESSVENTRICULARTACHYCARDIA. DEFIBRILLATIONCONSISTSOFDELIVERINGATHERAPEUTICDOSEOFELECTRICALENERGYTO THEHEARTWITHADEVICE.
1.2	**USEDBYCLINICALDEPARTMENT / WARD**	NICU AND PICU
TECHNICAL		
2. TECHNICAL CHARACTERISTICS		
2.1	**TECHNICAL CHARACTERISTICS (SPECIFICTOTHISTYPEOFDEVICE)**	THEDEFIBRILLATORSHOULDHAVEBIPHASICTECHNOLOGYHAVINGENERGY SELECTIONOF1-200JOULES. THEMACHINESHOULDHAVEFACILITYFORECGMONITORING,DEFIBRILLATION, TRANSCUTANEOUS PACING, DEFIBRILLATION AND SYNCHRONIZED CARDIOVERSION WITHCPRFEEDBACKTOMEASURECHESTCOMPRESSIONRATEANDDEPTHINREAL TIMEANDVISUALONSCREENFEEDBACK. MACHINEMUSTBEWITHSWEEPRATE25MM/SEC,50MM/SEC. ITSHOULDBECAPABLEOFMONITORINGECGTHOUGHECGCABLES,ELECTRODES& PADDLES. MACHINESHOULDHAVE24HOURTRENDSTORAGEFACILITY. THEMACHINESHOULDHAVEDEFIBRILLATORFACILITYFORNEONATALANDPEDIATRIC PATIENTS. THEMACHINESHOULDHAVEECGWAVEFORMDISPLAYWITHPROVISIONFOR SYNCHRONIZATION. THEMACHINESHOULDBECOMPACT,PORTABLEWITHBUILTINRECHARGEABLEBATTERY&LIGHTWEIGHT. THEMACHINESHOULDHAVEINBUILTAUTO&MANUALRECORDERFORPRINTING ECGTRACE&STOREDINFORMATION. THEMACHINESHOULDHAVEUSERSELECTABLEALARMSSETTING. THEMACHINESHOULDWORKONMAINS(WITHOUTBATTERY)ANDONBATTERY AS WELL. THEMACHINESHOULDHAVEAEDFEATUREASINBUILTWITHMANUALOVERRIDEFOR MANUALOPERATIONS.
2.2	**USER'S INTERFACE**	MANUAL/AUTOMATIC

2.3	**SOFTWARE AND/OR STANDARD OF COMMUNICATION(WHERE EVER REQUIRED)**	INBUILTSOFTWARE. CONVENIENTANDQUICKUSBINTERFACE.
3. PHYSICAL CHARACTERISTICS		
3.1	**DIMENSIONS (METRIC)**	NA
3.2	**WEIGHT (LBS, KG)**	MAX 10KG
3.3	**CONFIGURATION**	SHOULD HAVE AUDIO VISUAL ALARM FOR BATTERY LOW.
3.4	**NOISE (IN DBA)**	<60DB
3.5	**HEAT DISSIPATION**	HOULDMAINTAINNOMINALTEMPOFTHECONTROLUNITANDTHEHEATSHOULD BEDISBURSEDTHROUGHANCOOLINGMECHANISM.
3.6	**MOBILITY, PORTABILITY**	PORTABLE
4.ENERGYSOURCE(ELECTRICITY,UPS,SOLAR,GAS,WATER,CO2.....)		
4.1	**POWER REQUIREMENTS**	INPUT VOLTAGE 220 VAC +_10%, 50HZ;
4.2	**BATTERY OPERATED**	BATTERYPOWERED,SILENCEABLEALARMFORPOWERFAILURE. BATTERYCHARGERTOBEINTEGRALTOMAINSPOWERSUPPLY,ANDTOCHARGEBATTERYDURINGMAINSPOWEROPERATIONOFUNIT. INTERNAL,REPLACEABLE,RECHARGEABLEBATTERYALLOWSOPERATIONFORAMINIMUMOFTWOHOURINTHEEVENTOFPOWERFAILURE.
4.3	**TOLERANCE (TO VARIATIONS, SHUTDOWNS)**	VOLTAGECORRECTOR/STABILIZERTOALLOWOPERATIONAT±15%OFLOCALRATED VOLTAGE.USEOFSMPSTOCORRECTVOLTAGE.
4.4	**PROTECTION**	ELECTRICAL PROTECTION, RESETTABLE OVER CURRENT BREAKERS ORREPLACEABLE FUSES(FITTEDINBOTHLIVEANDNEUTRALLINES). LEAKAGE
4.5	**POWER CONSUMPTION**	NA
5.ACCESSORIES,SPAREPARTS,CONSUMABLES		
5.1	**ACCESSORIES (MANDATORY, STANDARD, OPTIONAL); SPARE PARTS (MAIN ONES); CONSUMABLES / REAGENTS (OPEN, CLOSED SYSTEM)**	MACHINEMUSTBESUPPLIEDWITHECGCABLE,BATTERY,PADDLE(ADULT INTEGRATED WITHPEDIATRIC). 3NO.REUSABLECPRFEEDBACKSENSOR. 300GELSHEETORPADSFORMONITORINGANDDEFIBRILLATION.
BIDDING / PROCUREMENT TERMS / DONATIONREQUIREMENTS		
6. ENVIRONMENTALANDDEPARTMENTALCONSIDERATONS		
6.1	**ATMOSPHERE / AMBIANCE (AIR CONDITIONING, HUMIDITY, DUST ...)**	OPERATING CONDITION: CAPABLE OF OPERATING CONTINUOUSLY IN AMBIENT TEMPERATUREOF10TO40DEGCANDRELATIVEHUMIDITYOF15TO90%INIDEAL CIRCUMSTANCES. STORAGECONDITION:CAPABLEOFBEINGSTOREDCONTINUOUSLYINAMBIENTTEMPERATUREOF0TO50DEGCANDRELATIVEHUMIDITYOF15TO90%.
6.2	**USER'S CARE, CLEANING, DISINFECTION & STERILITY ISSUES**	DISINFECTION:PARTSOFTHEDEVICETHATAREDESIGNEDTOCOMEINTOCONTACT WITH THE PATIENT OR THE OPERATOR SHOULD EITHER BE CAPABLE OF EASY DISINFECTIONORBEPROTECTEDBYASINGLEUSE/DISPOSABLECOVER.
7. STANDARDSANDSAFETY		
7.1	**CERTIFICATES (PRE-MARKET, SANITARY, ..); PERFORMANCE AND SAFETY STANDARDS (SPECIFIC TO THE DEVICE TYPE); LOCAL AND/OR INTERNATIONAL**	FDA(US)/CE(EU)FROMAUTHORIZEDTHIRDPARTYANDBIS/ISO13485. RELEVANTIEC-60601-PART1&2,CERTIFICATESBYANOTIFIEDAGENCY.
8. TRAININGANDINSTALLATION		

8.1	**PRE-INSTALLATION REQUIREMENTS: NATURE, VALUES, QUALITY, TOLERANCE**	AVAILABILITYOF5AMP/15AMPSOCKET. SAFETYANDOPERATIONCHECKBEFOREHANDOVER.
REQUIREMENTS FOR SIGN-OFF		SUPPLIERTOPERFORMINSTALLATION,SAFETYANDOPERATIONCHECKSBEFOREHANDOVER. LOCALCLINICALSTAFFTOAFFIRMCOMPLETIONOFINSTALLATION.
TRAINING OF STAFF (MEDICAL, PARAMEDICAL, TECHNICIANS)		TRAININGOFUSERSONOPERATIONANDBASICMAINTENANCE. ADVANCEDMAINTENANCETASKSREQUIREDSHALLBEDOCUMENTED.
9. WARRANTYANDMAINTENANCE		
WARRANTY		3 YEARS
MAINTENANCE TASKS		MAINTENANCE MANUALDETAILING. COMPLETE MAINTENANCESCHEDULE. CMC FOR 7 YEARS, PRICE SHALL BE QUOTED
SERVICE CONTRACT CLAUSES, INCLUDING PRICES		THESPARE,ACCESSORIES&CONSUMABLESPRICELISTREQUIREDFORMAINTENANCE AND REPAIRS IN FUTURE AFTER GUARANTEE / WARRANTY PERIOD SHOULD BE ATTACHED. FREESERVICINGDURINGWARRANTYPERIOD.
10. DOCUMENTATION		
OPERATING MANUALS, SERVICE MANUALS, OTHER MANUALS		SHOULD PROVIDE 2 SETS(HARDCOPY) OF:- USER,TECHNICAL,MAINTENANCEANDSERVICEMANUALSTOBESUPPLIEDALONGWITH MACHINEDIAGRAMS. LISTOFEQUIPMENTANDPROCEDURESREQUIREDFORLOCALCALIBRATIONAND ROUTINEMAINTENANCE. CERTIFICATEOFCALIBRATIONFROMTHEMANUFACTURER.
RECOMMENDATIONS FOR MAINTENANCE		LISTOFIMPORTANTSPARESANDACCESSORIES,WITHTHEIRPARTNUMBERSANDCOST.
11. NOTES		
SERVICE SUPPORT CONTACT DETAILS (HIERARCHY WISE; INCLUDING A TOLL FREE/LANDLINE NUMBER)		CONTACTDETAILSOFMANUFACTURER,SUPPLIERANDLOCALSERVICEAGENTTOBEPROVIDED. ANYCONTRACT(AMC/CMC/ADD-HOC)TOBEDECLAREDBYTHEMANUFACTURER.
RECOMMENDATIONS OR WARNINGS		ANY WARNING SIGNS WOULD BE ADEQUATELY DISPLAYED.

16. AnesthesiaWork Station

1. General Requirement

a) Compact and modular, three gas Anaesthesia workstation with an integrated ventilator for adult to infants and integrated airway monitor for airway pressures and volume.
b) The machine should be suitable for low and minimal flow anesthesia application with compliance compensation of breathing ckt, fresh gas flow compensation/ decoupling.
c) The machine should have 3 drawers
d) The anaesthesia machine, inbuilt ventilator, vaporizer and **Patient monitor** should be manufactured by same company to maintain uniformity of part and efficient after sale service.
e) Dual Cascade type flow meter tubes for Oxygen & N2O.Range 20 ml / min to 10 Lit/min. Calibrated in multiple scales. Single tube for air 100 ml to 14 L/ min.
f) The system should have upto 2 Hrs. battery backup
g) System should confirm to European CE and EN 60601-2-13 (Requirement for safety and essential performance of anaesthesia system)

2. Gas delivery system

a) Should have pin index yokes for Oxygen & Nitrous Oxide besides separate connection for Central gas supply for Oxygen, Nitrous Oxide and Air.
b) The machine should have pressure gauges for cylinders & central supply lines mounted on front of Anaesthesia machine for better visibility. The gas connections should be non-interchangeable.
c) The system should be suitable to use at minimal flow upto 700ml fresh gas setting.
d) Automatic cutoff of N2O by Oxygen pressure failure.
e) Hypoxic guard for linear regulation of minimum oxygen concentration at 23% volume
f) To ensure patient safety minimum Oxygen flow of 200 ml at low fresh gas flow settings even below total 500 ml fresh gas flow.
g) Audible visual oxygen failure alarm.
h) Emergency Oxygen flush at 30 – 70 L/min bypassing the vaporizer.
i) In the event of complete power loss and battery failure it shall be possible to manually ventilate and deliver anaesthetic agent.

4. Vaporizer

a) Machine should have possibility to mount two quick mount type vaporizer for easy interchangeability, and safety with interlock facility.
b) Should be provided with a Temperature / pressure compensated and flow independent Vaporiser.for Isoflurane or Sevoflurane.
c) Vaporizer should have extended delivery range from 0 to 6 Vol. %
d) The vaporizer should require no calibration in its life time.

5. Breathing System

a) Should have fresh gas de-coupled semi closed circle absorber system.
b) Should have adjustable pressure relief valve from 5 to 75 mbar with auto POP off function.
c) Should have change over from Spontaneous to Bag ventilation with single step.
d) The system should have leak and compliance test (including patient hoses upto the Y piece).
e) Should have compact breathing system with approx 1.7 Ltr. Volume capacity.
f) Should have an external fresh gas outlet for connecting Magill or Bain's circuit
g) The device should have port for anaesthesia gas scavenging system.

7. Anesthesia Ventilator

a) The system should have inbuilt ventilator with electronically controlled Piston driven technology.
b) Should not require changing of bellows for adult & infants.
c) Should have minimum screen size of 6"5.
d) Modes: Manual/Spont, Volume controlled, Pressure controlled,
e) The same ventilator should be capable to be upgrade to SIMV and pressure support.
f) Tidal Volume : 20 ~ 1400 ml
g) PEEP : 0 ~ 20 mbar
h) Breathing Frequency : 4 to 60 BPM
i) I:E Ratio : 4:1 to 1:4
j) Inspiratory pause : 0 – 50% of Ti
k) Should have Desflurane compensation.
l) Should be able to ventilate with atmospheric air, in case of total gas supply failure.

8. Integrated Airway monitoringand display of following parameters:

a) Expiratory Tidal Volume
b) Expiratory Minute volume
c) PEEP, Peak & Mean and Plateau airway pressure
d) Frequency
e) Waveform display for Airway pressure.

9. Adjustable high/low alarm limits with audio and visual alarms for the following:
a) Minute volume,
b) Airway pressure
c) Insp oxygen concentration,
d) Audio power supply fail alarm,
e) Fail to cycle warning.

10. Machine should have RS 232 connectivity port

11. Scope of supply
a) 3 gas Anaesthesia machine
b) Trolley with 3 drawers
c) Pin Index yokes for O2 & N2O
d) Pipeline connections for all three gases
e) Anaesthesia ventilator
f) Adult autoclavable patient tubing's 1 number
g) Anesthetic mask size – Adult & child each one
h) Vaporizers for Isoflourane or Sevoflourane
i) Central gas supply hoses (Color coded)
j) Instruction for use

17. Portable X ray 100 ma

Specifications for 100 mA High Frequency Portable /Mobile XRayUnit

Highfrequency,microprocessorcontrolled, High Frequency Mobile XRay unit havingfollowingfeatures:

Compact,lightweight,easilytransportablemobileXRayunitsuitableforbedsidex-rays,trauma,Intensivecareunits,Operationtheatre and Radiology department.

Theunitshouldbefullycounterbalancedandcanbepositionedtosuitdifferentbedheights.Theunitshouldhavefacility ofverticalswingandhorizontalrotationofthetubeheadtoensureXRayofanyanatomyevenwithinlimitedspace.

Theunitmusthaveaneffectivebrakingsystemforparkingandtransport.

The tube stand must be fully counterbalanced with rotation in all directions.

The unit must have intelligent graphical LCD display with at least 60 user-configurable anatomy presets for ease of operation to the operator.

The exposure release switch should be detachable with a cord of sufficient length (at least 3 m)

The unit should have integrated cassette box of size 542 mm (W) x 420 mm(H)

TheGenerator:

a. Microprocessorcontrolledhighfrequency/invertertypeofhighfrequency 200 KHz or moreforconstantoutput. Generator with higher switching Frequency of will be preferred.
b. Itshouldhavepowerratingof4kWormore
c. ItshouldhaveadigitaldisplayofmAsandkV.
d. KVrange: 40 kv to 100kVormore
e. mArange: 10 mA to 100mAormore

mAS selection: 0.1 to 250 mAS or more

X-RayTubeandCollimator:

a. Stationary / Rotating anode having focalspotsize 1.8 mm or less.
b. The X-Ray tube should be Toshiba or BEL or CEI make
c. LightBeamdiaphragm / Double layer Collimatorwithautocutoffswitch. Thelightintensitymustbe at least 160luxat1mtrdistance from focal spot.
d. Collimator rotation - 90° to +90° must be possible

Theunitshouldoperateonsinglephasepowersupplyandshouldhavepluginfacilitytoanystandardwalloutletwithauto maticadaptationtolinevoltage200to240volts,15Ampplug.

The Leakage radiation level at 1 meter from the focus should be less than 50 mR. Products having minimal leakage radiation level will be preferred. (Please attach relevant test report)

The weight of complete unit should be less than 100 kg

Manufacturer / supplier should have ISO 13485 certification

The product offered must have European CE certification.

Should be an AERB approved product.

User/Technical/Maintenance manuals to be supplied in English.

18. Oxygen Cylinder D type with applicable certificates

19.

TypeofProduct	**MedicalEquipment**
NameofProduct	**HBA1CMachinewithTestKit**

- DirectHbA1cMeasurement
- StateoftheartHbA1canalyzerfromEKFDiagnostics,Germany
- TraceabletoNGSPaswellasIFCC
- MostAccurateHbA1cdeviceinPOCformat
- PatentedFluorescenceQuenchingBoronateAffinityTechnology
- Resultsinjust4minutes
- NointerferencefromHbVariants
- DualReportingIFCC/NGSP
- Bi-LevelQualitycontrolsavailable
- TruePointofCareAnalyzer-Noneedoflaboratoryware
- Patientscanbeofferedresultswithinminutesusingfingersticksample
- Inbuiltbarcodescannerforcalibration,expirycheckandalsopatientbarcoderead ing(optional)
- Nopipettes,blanking,tipsetc.required
- SIMPLE2stepprocedure
- ExternalPrinteroptionallyavailable

2. Certification

- CEMarkedsystem
- CE/US FDACertificationasapplicable
- BISandISOCertifiedasapplicable

3. Warranty

- StandardIndustryWarrantyisapplicable

20. Kits should be compatible with item no 19

21. Radiant Warmer.

NAMEANDCODING		
GMDNNAME		INFANTWARMER
GMDNCODE(S)		CT1452
GMDNCATEGORY		04ELECTROMECHANICALMEDICALDEVICES
DEFINITION		MAINS ELECTRICITY (AC-POWERED) MOBILE DEVICETHAT CONTAINS AN INFRARED (IR)HEATINGELEMENT(S)DESIGNEDTOEMITCONTROLLED,EVENLYDISTRIBUTEDOVERHEADHEATTOTHEBODYOFANEWBORN/INFANTPATIENTREQUIRINGSUPPLEMENTAL HEAT.THISDEVICEISEQUIPPEDWITHWHEELSSOTHATITCANEASILYBEMOVEDTO DIFFERENTAREASOFAROOM,WARD,ORDEPARTMENT.
GENERAL		
1.USE		
1.1	**CLINICALPURPOSE**	INFANT RADIANT WARMER IS AN ELECTRICALLY POWERED DEVICE WITH A RADIANTHEATINGSOURCEINTENDEDTOMAINTAINTHETHERMALBALANCEOFANINFANTBYDIRECTRADIANTOFENERGYINTHEINFRAREDREGIONOFTHEELECTROMAGNETICSPECTRUM.
1.2	**USED BY CLINICAL DEPARTMENT/WARD**	NEONATALICU/SNCU
1.3	**OVERVIEWOFFUNCTIONALREQUIREMENTS**	RADIANT WARMER IS A MICROPROCESSOR CONTROLLED UNIT WITH HEATER PLACED ON THEOVERHEADPANEL.THISWORKONBOTHSERVOANDMANUALMODEOPTIONSTO MAINTAINTHE BABY TEMPERATURE AT THE SET VALUE. THERE ARE TWO MODES OF OPERATIONMANUAL AND BABY CONTROL OR SKIN CONTROL (SERVO) MODE. IT HAS DIGITAL DISPLAYSREADINGOFTHESETANDBABYOBSERVEDTEMPERATURESSEPERATELY.
TECHNICAL		
2.TECHNICALCHARACTERISTICS		
2.1	**TECHNICAL CHARACTERISTICS(SPECIFICTOTHISTYPEOFDEVICE)**	ITSHOULDBEMICROCONTROLLERBASEDRADIANTWARMERWITHMANUALANDSERVOOPTIONS. ITSHOULDHAVEFACILITYTODISPLAYSKINSET,SKINOBSERVEDTEMPERATUREINDEGREECANDHEATPOWERSEPARATELY. SHOULDHAVEUSERFRIENDLYTOUCHPANELCONTROL. ITSHOULDHAVECERAMICORQUARTZINFRAREDORCALRODHEATER. ITSHOULDHAVEAUDIOVISUALALARMFACILITYFOROVERHEATINGBEYONDSETTEMPERATURERANGE. IT SHOULD HAVE ALARM FACILITY FOR PATIENT TEMPERATURE LESS THAN OR GREATERTHANTHEREQUIREDTEMPERATUREI.E.ABOVEORBELOWTHESETRANGE.MACHINESHOULDSENSETHESKINPROBEFAILUREANDCUTOFFTHEHEATER. WARMERHEADSHOULDBEROTATABLEINDIFFERENTDIRECTION,SOASTOALLOWTAKINGX-RAY. IT SHOULD HAVE ALARM FOR PROBE FAILURE,POWER FAILURE, SYSTEM FAILURE ANDHEATERFAILURE.

		OBSERVATION LIGHT OF 90 TO 100 FOOT CANDLES OR 1000 LUX (COLORTEMPERATURERANGE3700KTO5100K)SOULDBEPROVIDEDFORINSPECTION . BATTERY BACK UP FOR POWERFAILURE INDICATION DURING POWERFAIL. THEDESIREDTEMPERATURERANGEFROM25TO40DEGREECANDSETTABLETEMPERATURECANBEFROM32TO38°C. THERESOLUTIONSHOULDBE0.1DEGREECANDACCURACYSHOULDBE0.2°C. SHOULDHAVEAFACILITYTOLOCKTHEKEYBOARDTOAVOIDUNWANTEDUSERMODIFICATIONOFTHESETPARAMETERS. THEHEIGHTOFTHEWARMERSHOULDBEADJUSTABLEFORDIFFERENTTYPESOFBED. ITSHOULDHAVESEPARATEBASSINETTROLLEY,BEDSHOULDBETILTABLEANDHAVEPROVISION FOR X-RAY CASSETTE HOLDER, MATTRESS FOAM DENSITY SHOULD BEMINIMUM25KG/CM3,TRANSPARENTCOLLAPSIBLESIDEWALLSEASILYDETACHABLEFORCLEANING.MATTRESSSIZESHOULDBEMINIMUM20”X30”. SHOULDHAVEAFEATHERTOUCHOPERATIONWITHLARGEDIGITALDISPLAYANDCOMPREHENSIVEALARMS.CONTROLPANELSHOULDBELIQUIDPROOFANDALLOWEASYANDHYGIENICDISINFECTION. MANUALMODECANADJUSTHEATEROUTPUT10-100%,WITH10%INCREMENT,ANAUDITORYANDVISUALALARMSHALLBEGIVENATLEASTEVERY15MIN. INMANUALMODE,HEATERCUTOFF/SWITCHOFF,IFTHEMAXIMUMIRRADIANCEATANY POINT OF THE MATTRESS AREA EXCEEDS A TOTAL IRRADIANCE LEVEL OF 10 MW/CM2(BETWEEN10TO30MINUTES). BEDSHOULDBEABOUT80-100CMSFROMTHEFLOORAND80-90CMSFROMTHEHEATSOURCE. SHOULDHAVELOCKABLECASTORWHEELS. GREENINDICATORLIGHTSHALLBEPROVIDEDTOINDICATETHATWARMERISREADYFORNORMALUSE.

		MARKINGSONTHEBASSINETANDX-RAYCASSETTEHOLDERISMANDATORYTOENABLEPROPERPOSITIONINGOFTHEBABYWHILEDOINGTHEX-RAY. THE SIZE OF THE DROP DOWN SIDES SHOULD BE SUCH THAT IT IS 5" ABOVE THEMATTRESSSURFACEANDSHOULDBEATLEAST6MMTHICK;CLEARANDTRANSPARENT. IFTHEREISMORETHAN60%HEATEROUTPUTFOR10MINUTESITSHOULDCUTOFFWITHALARM. FOR THE PURPOSE OF CABLE MANAGEMENT THERE SHOULD BE ATLEAST TWONUMBER OF TUBING PORTS (EDGES COVERED BY SILICON RINGS) ON THE SIDEWALLS.THEHEIGHTOFTHESIDEWALLSSHOULDBEMINIMUM110MMOVERTHEMATTRESS. X-RAYCASSETTTETRAYSHOULDBEATLEAST750X350MMANDSHOULDADOPTUPTO20MMTHICKX-RAYCASSETTE. THBAYBEDSHOULDBECREVICEFREEFOREASEOFCLEANING,INFECTIONCONTROL. THEMATTRESSUSEDSHOULDBEOFBIOCOMPATIBLEMATERIAL. SKIN TEMPERATURE PROBE SHOULD BE SMALL IN SIZE NOT MORE THAN 10MMDIAMETER AND 3-4MM THICK TO FIX THE PROBE FIRMLY ON THE INFANT. BABYCONTACT MATERIAL SHOULD BE BIOCOMPATIBLE AS PER ISO 10993 STANDARDREQUIREMENT.ITSHOULDBEINSULATEDONONESIDEANDHAVEWELLCONDUCTINGNON-RUSTING,NONREACTINGMETALLICSURFACEONTHEOTHERSIDE.PROBE WIRE SHOULD BE PLIABLE, THIN AND SOFT. THE ATTACHMENT SITE OF THEPROBEWITHTHEWIRESHOULDALSOBEPLIABLEANDNONSTIFF.
2.2	**SETTINGS**	SHOULDHAVEMANUALMODEANDBABY(SERVO)MODESETTINGS. MODEOFOPERATIONSHOULDBECLEARLYDISPLAYED. INSERVOMODEBABYSETTEMPERATRUESHOULDBE32TO38°C.
2.3	**USER'SINTERFACE**	MANUALANDSERVOCONTROLLEDTEMPERATUREREGULATION.

2.4	**SOFTWARE AND/OR STANDARD OFCOMMUNICATION(WHERE EVERREQUIRED)**	LEDDISPLAYANDINBUILTSOFTWARE;INTERRUPTIONANDRESTORATIONOFTHEPOWERSUPPLYDOESNOTCHANGETHEPRESETVALUES.
2.5	**OTHERS**	DEVCIESHALLNOTOVERBALANCEWHENPLACEDINANYTRANSPORTPOSITIONOFNORMALUSEONA10°INCLINEDPLANEFROMTHEHORIZONTALPLANE. TRANSFORMERSOFDEVCIESHALLBEPROTECTEDAGAINSTOVERHEATINGINTHEEVENTOFSHORTCIRCUITOROVERLOADOFANYOUTPUTWINDING. PATIENTLEAKAGECURRENTSHOULDBELESSTHAN100µAINNORMALCONDITION TEMPERATUREONTHEBABYMATTRESSSHOULDNOTEXCEED43DEGCWHENTHEWARMERISOPERATINGUNDERSTEADYTEMPERATURECONDITION. TEMPERATUREOFHEATERGUARDSSHOULDNOTEXCEED85°CINNORMALUSE. THETEMPERATUREDIFFERENCESONTHEMATTRESSSHALLNOTEXCEED2°C.
3.PHYSICALCHARACTERISTICS		
3.1	**DIMENSIONS(METRIC)**	SPECIFICATIONSUPTO:2000MM(HEIGHT)X900MM(WIDTH)X1100MM(LENGTH).
3.2	**WEIGHT(LBS,KG)**	MAXIMUMSPEC:150KG.
3.3	**CONFIGURATION**	ATLEAST60DEGREEANGLEADJUSTMENTMUSTBEPOSSIBLEINTHEHEATSOURCEANDITSHOULDPROVIDESHIELDINGTOTHEINFANTINCASEOFBREAKAGEOFTUBES/BULBS,ALLSURFACESTOBEMADEOFCORROSIONRESISTANTMATERIAL.
3.4	**NOISE(INDBA)**	AUDITORYALARMSHALLHAVEASOUNDLEVELOFATLEAST65DBAATADISTANCEOF3 M FROM THE FRONT OF THE INFANT RADIANT WARMER, AND THE SOUND LEVEL OF THEALARMSHALLNOTEXCEED80DBAONTHEMATTRESS.
3.5	**HEAT DISSIPATION**	SHOULDMAINTAINUPTO36.5DEGTEMPANDTHEHEATDISBURSEDTHROUGHAEXHAUSTFAN,SOTHATEFFECTOFUVLIGHTISNOTDISTURBED.
3.6	**MOBILITY,PORTABILITY**	YES, ON CASTORS(2 OFTHE CASTORSSHOULD HAVEBREAKS; CASOTORSIZE CANBEATLEAST4INCH).
4.ENERGYSOURCE(ELECTRICITY,UPS,SOLAR,GAS,WATER,CO2.....)		
4.1	**POWERREQUIREMENTS**	220TO240V,50HZ
4.2	**BATTERYOPERATED**	POWER FAILUREINDICATIONDURINGPOWERFAIL.
4.3	**TOLERANCE (TO VARIATIONS,SHUTDOWNS)**	±10%OFINPUT
4.4	**PROTECTION**	OVP,EARTHLEAKAGEPROTECTION
4.5	**POWERCONSUMPTION**	MAXIMUM800WATT
4.6	**OTHERENERGYSUPPLIES**	SOLARHEATING-DESIRABLE;NOTESSENTIAL.
5.ACCESSORIES,SPAREPARTS,CONSUMABLES		
5.1	**ACCESSORIES (MANDATORY,STANDARD,OPTIONAL)**	SHOULDHAVESTANDARDIVPOLE(STURDY;NONRUSTING;MEDICALGRADESTAINLESSSTEEL;ADJUSTABLE TOA MAXHEIGHTOF 6FEETFROM THEGROUNDLEVEL), MONITORTRAY(12X10 INCHES;270 DEGSWIVEL;FIXED AT LEVEL OF WARMER DISPLAY) ANDSTORAGETRAYS.
5.2	**SPAREPARTS(MAINONES)**	SKINTEMPERATUREPROBES.
5.3	**CONSUMABLES / REAGENTS(OPEN,CLOSEDSYSTEM)**	THERMALREFELCTORTOFIXTHESKINPROBEONBABY.
6.ENVIRONMENTALANDDEPARTMENTALCONSIDERATONS		
6.1	**ATMOSPHERE/AMBIANCE(AIRCONDITIONING,HUMIDITY,DUST...)**	OPERATINGCONDITION: CAPABLEOFOPERATINGCONTINUOUSLYINAMBIENTTEMPERATUREOF0TO50DEGCANDRELATIVEHUMIDITYOF15TO90%INIDEALCIRCUMSTANCES. ANAMBIENTAIRVELOCITYISLESSTHAN0.3M/S.
6.2	**USER'S CARE, CLEANING,DISINFECTION&STERILITYISSUES**	COMPLETEUNITTOBEEASILYWASHABLEANDSTERILIZABLEUSINGBOTHALCOHOLANDCHLORINEAGENTS.

7.STANDARDSANDSAFETY		
7.1	**PERFORMANCE AND SAFETYSTANDARDS (SPECIFIC TO THEDEVICETYPE);CERTIFICATES (PRE-MARKET,SANITARY,..);LOCALAND/ORINTERNATIONAL**	SHOULDBEFDA/(CEOFCLASSIIB)APPROVEDPRODUCT.SHALLMEETIEC-60601-1-2:2007 MEDICAL ELECTRICAL EQUIPMENT -- PART 1-2: GENERAL REQUIREMENTSFOR BASIC SAFETY AND ESSENTIAL PERFORMANCE - COLLATERAL STANDARD:ELECTROMAGNETICCOMPATIBILITY-REQUIREMENTSANDTESTS(OREQUIVALENTBIS).SHALLNEETIEC60601-2-21:2009MEDICALELECTRICALEQUIPMENT-PART 2-21:PARTICULARREQUIREMENTFORTHEBASICSAFETYANDESSENTIALPERFORMANCE OF INFANT RADIANT WARMERS .SHOULD MEET IEC 60601-1:2005 STANDARDREQUIREMENTS. BABYCONTACTMATERIALSHOULDBEBIOCOMPATIBLEASPERISO10993STANDARDREQUIREMENT. MANUFACTURERSHOULDBEISO13485CERTIFIED.
8.TRAININGANDINSTALLATION		
8.1	**PRE-INSTALLATION REQUIREMENTS:NATURE, VALUES, QUALITY,TOLERANCE**	AVAILABILITYOF5AMP/15AMP.ELECTRICALSOCKET(2NOS)FOREACHWARMER.
8.2	**REQUIREMENTSFORSIGN-OFF**	CERTIFICATEOFCALIBRATIONANDINSPECTIONFROMTHEFACTORY.
8.3	**TRAINING OF STAFF (MEDICAL,PARAMEDICAL,TECHNICIANS)**	USERTRAININGMANUALREQUIRED.
8.4	**OTHERS**	LISTOFIMPORTANTSPAREPARTSANDACCESSORIESWITHTHEIRPARTNUMBERANDCOSTING.
9.WARRANTYANDMAINTENANCE		
9.1	**WARRANTY**	NICKELCHROMEWIREFILAMENTANDTUBEOFQUARTZSHOULDHAVEALIFETIMEWARRANTY;EQUIPMENT-3YEARS.
9.2	**MAINTENANCETASKS**	MAINTAINANCEMANUALDETAILINGCOMPLETEMAINTAININGSCHEDULE.
9.3	**SERVICE CONTRACT CLAUSES,INCLUDINGPRICES**	WARRANTYOFONEYEARWITHFREESERVICING(MIN.3)DURINGWARRANTY.
9.4	**OTHERS**	THESPAREPRICELISTOFALLSPARESANDACCESSORIES(INCLUDINGMINOR)REQUIRED FOR MAINTENANCE AND REPAIRS IN FUTURE AFTER GUARANTEE / WARRANTY PERIODSHOULDBEATTACHED.
10,.DOCUMENTATION		
10.1	**OPERATING MANUALS, SERVICEMANUALS,OTHERMANUALS**	TO BE SUPPLIED.
10.2	**OTHERACCOMPANYINGDOCUMENTS**	USER/TECHNICAL/MAINTENANCEMANUALSTOBESUPPLIEDINENGLISH.
11.NOTES		
11.1	**SERVICE SUPPORT CONTACTDETAILS (HIERCHY WISE;INCLUDING A TOLL FREE/LANDLINENUMBER)**	SHOULDPROVIDECOMPLETECONTACTDETAILSOFSALESANDSERVICEDEPARTMENTS.
11.2	**RECOMMENDATIONSORWARNINGS**	ANYWARNING/PRECAUTIONSTOBEDECLARED.

Phototherapy Double Surface With trolley

NAMEANDCODING		
GMDNNAME		PHOTOTHERAPYUNITS/SYSTEMS.
GMDNCODE(S)		CT2066
DEFINITION		A NEONATAL PHOTOTHERAPY UNIT IS A DEVICE USED TO TREAT OR PREVENTHYPERBILIRUBINEMIA(ELEVATEDSERUMBILIRUBINLEVEL).THEDEVICECONSISTSOFONEORMORELAMPSTHATEMITASPECIFICSPECTRALBANDOFLIGHT,UNDER WHICHANINFANTISPLACEDFORTHERAPY.
GENERAL		
1.USE		
1.1	**CLINICALPURPOSE**	EMITSINTHEMAINRADIATIONSPECTRUMINTHERANGEBETWEEN400NMAND550NMFORREDUCINGTHECONCENTRATIONOFBILIRUBIN.
1.2	**USED BY CLINICAL DEPARTMENT/WARD**	NEWBORNSTABLISATIONUNIT,SNCU.
1.3	**OVERVIEWOFFUNCTIONALREQUIREMENTS**	PROVIDESFILTEREDLIGHTUSINGRADIANTELECTRICLIGHTS,NOTFIBREOPTICS. INFANTSUPPORTEDSECURELYINBASSINETTEBELOWBULBS. MONITORSHOURSOFRADIANTLIGHTEXPOSURE.
TECHNICAL		
2.TECHNICALCHARACTERISTICS		
2.1	**TECHNICAL CHARACTERISTICS(SPECIFICTOTHISTYPEOFDEVICE)**	PHOTOTHERAPYSHOULDBEBASEDONCFLTUBE/LEDTECHNOLOGY,WHICHAFTERFILTERING SHOULD PROVIDE, A LIGHT OF WAVELENGTH APPROXIMATELY 450 TO 470NMWITHPEAKWAVELENGTHOF450-460NMRANGE. IRRADIANCETOBEMINIMUM35MW/CM2/NMAT40CMHEIGHTANDUVSHOULDNOTEXCEED10-4W/M2IN180NMTO400NM. DIGITALHOURMETERSHOWINGTOTALEXPOSURETIMEFORCURRENTPATIENTTOBECLEARLYVISIBLEBYOPERATOR. EFFECTIVELIGHTFIELD>700CM2. LAMPLIFESHOULDBEMINIMUM20000HOURSINCASEOFLEDAND1000HOURSINCASE OFCFLAND SHOULDHAVETIMER TOINDICATE ITSUSAGE. OVER TEMPERATURESAFETYCUTOUTTOBEINCLUDED. UP,DOWNANDTILTINGOFHEADSHOULDBEPOSSIBLE. THEUNITSHOULDBEMOUNTEDWITHCASTORWHEELSWITHBRAKES. VARIATIONININTENSITYOVER5-6HOURS<10%. THE IRRADIANCERATIO(MIN TOMAX)SHALL BEGREATERTHAN 40%ONMATTRESS. GREENINDICATORLIGHTSHALLBEPROVIDEDTOINDICATETHATEQUIPMENTISREADYFORNORMALUSE. INTERRUPTIONANDARESTORATIONOFTHEPOWERSUPPLYDONOTCHANGEPRESETVALUES.CFL/LEDHEATCANBEREDUCEDBYNATURALCOOLING. CFL/LEDSHOULDBEPROTECTREDFROMFREEFALL. ITSHOULDNOTTOPPLEON10DEGINCLINEDANGLE. THETEMPERATUREOFBABYBEDANDMETALSURFACESSHOULDNOTEXCEED40DEGCAND43DEGCFOROTHERACCESIBLESURFACES.

		THERESHOULDBEINTUTIVEMETHODTOINDICATETHELIGHTSURFACEISATTHEAPPROPRIATETREATMENTDISTANCE. MOBILESTANDWITHMOVABLECASTORSANDHEIGHTADJUSTMENTFACILITY ALONGWITHEASYSWIVELLINGOFSOURCEBOX.UNITCANBEUSEDALONGWITHINFANTCARETROLLEY,RADIANTWARMERANDINCUBATOR.
2.2	**SETTINGS**	UP/DOWNADJUSTMENTOFOVERHEADUNIT;THEPHOTOTHERAPYUNITSHOULD BEABLETOPROVIDEEFFECTIVETREATMENTFORBEDSANDINCUBATORSOFVARYINGHEIGHTS (GENERALLY 1.0 TO 1.6M). ADJUSTMENT OF LIGHT INTENSITY MAY BEPROVIDED.
2.3	**USER'SINTERFACE**	MANUAL
2.4	**SOFTWARE AND/OR STANDARD OFCOMMUNICATION(WHERE EVERREQUIRED)**	LEDDISPLAYANDINBUILTSOFTWARE
2.5	**OTHERS**	
3.PHYSICALCHARACTERISTICS		
3.1	**DIMENSIONS(METRIC)**	MINIMUMSPEC:1650MMHEIGHTX750MMWIDTHX500MMLENGTH.
3.2	**WEIGHT(LBS,KG)**	<20KG
3.3	**CONFIGURATION**	CLEARCABINETFOROBSERVATIONOFINFANT. INFANTBASSINETTETOBEANINTEGRALUNITWHICHSHOULDBEDETACHABLE.UNIT TO PROVIDE SHIELDING OF INFANT IN THE EVENT OF BULB BREAKAGE. BULBMOUNTTOHAVEANGLEADJUSTMENTOFATLEAST30DEGREES.ALLSURFACESTOBEMADEOFCORROSIONRESISTANTMATERIALS. LIGHTUNITTILTINGFACILITYANDHEIGHTADJUSTMENTFACILITY.
3.4	**NOISE(INDBA)**	<60DBA
3.5	**HEAT DISSIPATION**	THETEMPERATUREOFBABYBEDANDMETALSURFACESSHOULDNOTEXCEED40DEGCAND43DEGCFOROTHERACCESIBLESURFACES.
3.6	**MOBILITY,PORTABILITY**	MINIMUM3CASTORSANDATLEAST2WITHBRAKES.
4.ENERGYSOURCE(ELECTRICITY,UPS,SOLAR,GAS,WATER,CO2 .....)		
4.1	**POWERREQUIREMENTS**	220TO240V,50HZ
4.2	**BATTERYOPERATED**	NA
4.3	**TOLERANCE (TO VARIATIONS,SHUTDOWNS)**	±10%OFINPUTAC
4.4	**PROTECTION**	ELECTRICAL PROTECTION BY RESETTABLE OVERCURRENT BREAKERS OR REPLACEABLE FUSES,FITTEDINBOTHLIVEANDNEUTRALLINES.
4.5	**POWERCONSUMPTION**	SHOULDNOTBEMORETHAN160W.
4.6	**OTHERENERGYSUPPLIES**	MAINSCABLE TO BE ATLEAST 2.5M LENGTH.
5.ACCESSORIES,SPAREPARTS,CONSUMABLES		
5.1	**ACCESSORIES (MANDATORY,STANDARD,OPTIONAL)**	COMPLETESETOFREPLACEMENTTUBESTOALLOW3MONTHS'CONTINUOUSOPERATION TWOREPLACEMENTSETSOFFUSES,IFREPLACEABLETYPEUSED.
5.2	**SPAREPARTS(MAINONES)**	NOSPARESREQUIRED.
5.3	**CONSUMABLES / REAGENTS(OPEN,CLOSEDSYSTEM)**	TOTAL 500NOS. INFANTEYEMASKS OFBOTHAVAILABLE SIZES(TERM ANDPRETERMBABIES).
6.ENVIRONMENTALANDDEPARTMENTALCONSIDERATONS		
6.1	**ATMOSPHERE/AMBIANCE(AIRCONDITIONING,HUMIDITY,DUST ...)**	CAPABLEOFOPERATINGCONTINUOUSLYINAMBIENTTEMPERATUREOF10TO40DEGCANDRELATIVEHUMIDITYOF15TO90%INIDEALCIRCUMSTANCES.

	6.2	**USER'S CARE, CLEANING,DISINFECTION&STERILITYISSUES**	COMPLETEUNITTOBEEASILYWASHABLEANDSTERILIZABLEUSINGBOTHALCOHOLANDCHLORINEAGENTS.
7.STANDARDSANDSAFETY			
7.1	**CERTIFICATES(PRE-MARKET,SANITARY,..);PERFORMANCEANDSAFETY STANDARDS (SPECIFIC TOTHE DEVICE TYPE);LOCAL AND/ORINTERNATIONAL**	SHOULDBEFDA/CEAPPROVEDPRODUCT. SHALL MEET IEC-60601-1-2:2007 MEDICAL ELECTRICAL EQUIPMENT -- PART 1-2:GENERALREQUIREMENTSFORBASICSAFETYANDESSENTIALPERFORMANCE-COLLATERALSTANDARD: ELECTROMAGNETIC COMPATIBILITY - REQUIREMENTS AND TESTS (OREQUIVALENTBIS). SHOULDMEETIEC60601-1:2005STANDARDREQUIREMENTS. SHALL NEET IEC 60601-2-50: 2009 MEDICAL ELECTRICAL EQUIPMENT – PART 2-50:PARTICULAR REQUIREMENT FOR THE BASIC SAFETY AND ESSENTIAL PERFORMANCE OFINFANTPHOTOTHERAPYEQUIPMENT. MANUFACTURERSHOULDBEISO13485CERTIFIED.
8.TRAININGANDINSTALLATION			
8.1	**PRE-INSTALLATION REQUIREMENTS:NATURE, VALUES, QUALITY,TOLERANCE**	SUPPLIERTOPERFORMINSTALLATION,SAFETYANDOPERATIONCHECKSBEFOREHANDOVER.
8.2	**REQUIREMENTSFORSIGN-OFF**	CERTIFICATEOFCALIBRATIONANDINSPECTIONFROMTHEFACTORY.
8.3	**TRAINING OF STAFF (MEDICAL,PARAMEDICAL,TECHNICIANS)**	TRAININGOFUSERSINOPERATIONANDBASICMAINTENANCESHALLBEPROVIDED.
8.4	**OTHERS**	
9.WARRANTYANDMAINTENANCE			
9.1	**WARRANTY**	3YEARSFORTHEMACHINEAND20,000HOURSFORLEDS/1000HOURSFORCFL.
9.2	**MAINTENANCETASKS**	MAINTAINANCEMANUALDETAILINGCOMPLETEMAINTAININGSCHEDULE.
9.3	**SERVICE CONTRACT CLAUSES,INCLUDINGPRICES**	LOCALCLINICALSTAFFTOAFFIRMCOMPLETIONOFINSTALLATION.
9.4	**OTHERS**	
10.DOCUMENTATION			
10.1	**OPERATING MANUALS, SERVICEMANUALS,OTHERMANUALS**	ADVANCEDMAINTENANCETASKSREQUIREDSHALLBEDOCUMENTED. USER,TECHNICALANDMAINTENANCEMANUALSTOBESUPPLIEDINENGLISHLANGUAGE. LISTTOBEPROVIDEDOFEQUIPMENTANDPROCEDURESREQUIREDFORLOCALCALIBRATIONANDROUTINEMAINTENANCE.
10.2	**OTHERACCOMPANYINGDOCUMENTS**	LIST TO BE PROVIDED OF IMPORTANT SPARES AND ACCESSORIES, WITH THEIR PARTNUMBERSANDCOST.CERTIFICATEOFCALIBRATIONANDINSPECTIONTOBEPROVIDED.
11.NOTES			
11.1	**SERVICE SUPPORT CONTACTDETAILS (HIERCHY WISE;INCLUDING A TOLL FREE/LANDLINENUMBER)**	CONTACTDETAILSOFMANUFACTURER,SUPPLIERANDLOCALSERVICEAGENTTOBEPROVIDED.
11.2	**RECOMMENDATIONSORWARNINGS**	LIST TO BE PROVIDED OF IMPORTANT SPARES AND ACCESSORIES, WITH THEIR PARTNUMBERSANDCOST.CERTIFICATEOFCALIBRATIONANDINSPECTIONTOBEPROVIDED.

23. Biluroninometer

1. Non Invasive Screening device that provides a fast (on spot) objective index of icterus in infants, neonatal patients with a gestational age >24 weeks
2. Hand-held device for outpatient/inpatient usage which is of Pocket size.
3. Shouldn't use any consumables (In case consumables are present , same to be included at no extra charge for 3000 measurements)
4. Should have a Reusable measuring probe, to apply wipe disinfection
5. For measurement of transcutaneous bilirubin (TcB)
6. Jaundice Meter should be of following specifications

a. Non invasive measurement with no consumables. Should use a light source – preferably pulse xenon arc lamp – to carry out readings

b. Detectors – Silicon photodiodes

c. Should be light weigh not more than 210 gm with integrated rechargeable battery

d. Should be capable of doing at least 250 measurements on a full charge. Battery should be easily rechargeable (2hrs)

e. Should have a choice of taking readings, between single, 2-5 measurements as an average

f. Should have an internal memory backup of at least 100 readings

g. Should have connectivity for electronic medical record (EMR) for data transfer

h. Should have Large touchscreen display for easily readout, should also display the date on which reading is taken

i. Should easily mark babies that need special attention with patient flagging

j. Should provide fast, accurate entry of nurse and patient identification information, barcode scanner can be optional

k. Should have charging station to check calibration on light wavelength

l. Should work with all skin colour

m. Measuring range 0.0 mg/dL to 20 mg/dL. Or 0 – 340 µmol/L

7. Scope of supply

a. Jaundice Meter

b. Charging unit with calibration checker

c. Instructions for use

8. Should have European CE

24. Revolving Stools:

Stainless Steel top and MS understructure.

Height adjusted through Threaded Screws

Four Legged base made up of 25 mm Steel tube mounted on rubber shoes

Diameter of top to be 300mm.

Height Adjustment should be 450 - 650 mm

25. **CPAP**

Specifications-CPAP Machine with Masks of different size– full face mask(large and medium)

- Facility for Spontaneous–CPAP/IPAP/EPAP • Measuring I/E–Ratio
- Monitoring TV/Respiratory Rate • IPAP– 4-20CM H2O • EPAP–4-20CMH2O • It should have S, S/T,T mode, CPAP.
- It should have Oxygen Port for delivery of oxygen
- Compatible masks for each equipment to be supplied. o Large size– 5masks o Mediumsize–5 masks 2. Power Supply
- Power supply input100-240v ac. 3. Certifications
- CE and/or US FDA Certified as applicable
- ISO9001 :Latest
- BIS and ISO Certified as applicable

Warranty and Maintenance

- Three(3)Manufacturer Warranty and additional Five(5)years CMC from the forth year onwards to the eighth year

26.Semi Auto Analyzer:

- It should be micro processor controlled, programmable ,semi autoanalyser to perform routine biochemistry tests with 10 modesincluding
  - 1-point Linear(End–point),
  - 2-point Linear(FixedTime),
  - Rate A Linear(Kinetic),
  - 1-pointNon-linear(End-Point),
  - 2-PointNon-Linear(Fixed Time),
  - Rate A non-linear(differential),
  - Absorbance,
  - (Coagulation),
  - Enzyme immunoassays(withmultistandardcurve1blank&sixstandardscalibration&memorization) etc.
  - All modes can work with monochromatic as well as bi- chromaticfilterselections.
- It should offer aminimumof200user definble chemistryparameters
- Instrument should have keystoaccess56Chemistrydirectly.
- Itshouldhaveapeltiercontrolledreadingblockand below20ulflowcell withtemperature
- Programmable for off25,30&37C
- Flow cellwith peristalticpump shouldbe partof themain unit.
- It should have facility to use both 6mm glass cuvettes and 10mm plastic cuvettes additionally.
- It should have minimum 8 narrow band staticin terferencefilter(notfilterwhe el)withwavelengthselectablefrom340–700nm.
- It should have a large 8 lines LCD display alphanumericdisplayandbuilt-infullgraphicprinterforprintingreactioncurvesandtestresults.
- Itshouldrequireminimumreagentpertesttypicallynotmorethat500ul/test
- Itshouldhavethefacilitytodisplaytheactualtemperatureonscreen
- ThesoftwareshouldbeuserfriendlyandguidetheprogrammerstepwithspecialHELP&CALIB key.
- TheinstrumentshouldalsobecapableofdoingcoagulatingassayswithprogrammableISIvalue &INR can beprinted.
- The manufacturer/supplier should have a full–fledged service for ce and installationbasefor thequotedequipment.
- The manufacturer should be able to supply kits locally against orders.

2. Power Supply

- Standard Industry Power Supply

3. Certification

- BIS and ISO Certified as applicable
- CE/FDA Certified as applicable

4. Warranty

- Three(3)ManufacturerWarrantyandadditionalFive(5)yearsCMCfromthefort hyearonwardstotheeighth year.

27. Dialysis Unit:

- TheHemodialysismachineshouldmeetfollowingcriteria.
- Itshouldhavefacilityforbicarbonate/acetatedialysis.
- Itshouldhavefacilityforsingleneedle/SNclickclack.
- Itshouldhavefacilityforultrafiltrationandsodium,UF&Bi-carbprofiles.
- Itshouldhave facilityforISOisolatedUltrafiltration.
- ItshouldhavefacilityforonlineHemoDiaFiltration:Optional
- ItshouldhavecolourATLEAST10.4“LCDscreendisplayofallparameters .
- ItshouldhaveIntelligentmonitoringofsetalarmlimits(freefalsealarm)
- Shuoldbesuitableforadultandpediatricdialysis.
- Shouldhavetrafficlightstatusindicator.
- ShouldhaveeasysoftwareupgradingbySDcard.
- Theonlineclearancemeasurementenablescontinuesmonitoringof Kt/V, plasma sodium concentration by a non-inventive technique whichrunsautomaticallyandrequiresadditionaldisposable,laborstaffeffort.
- Thebloodvolumemeasurementisbasesonultrasoundtechnology topermit exact online acquisition of relative changes in blood volumes,hemotocrit.
- Thereareshouldbefacilityforbloodpressuremonitoring.
- Dialysisfluidflow rangeshouldbe0-300-500-800ml/min.
- Thereshouldbefacilityforconcentratesupplyinall3formsi.e.consters/centralconcentratedeliverysystemandonlinedryconcentrate.
- In heparin pump –should have processor controlled syring pump withboluscapability.
- Machineshouldbecapableof doingUFatrate0-4Lt./hour.
- Blood leakdetector withhigh sensitivityof <0.5ml blood/minat flowof800ml/min.
- Facilityforheat,chemical disinfectionwithautoontimerfunction.
- WaterinletpressurE1.5-6.0bar
- Waterinlet tem50C–300C
- Max.drainheighT1m
- Shouldhavemodernmonolithicdesign,

- automatedselftest.
- Shouldhaveoptionalcapabilitytobeconnectedwithpatienttherapydatam anagementsystem.
- Easycleaningofallsurface.
- Arterialpressuremonitoring-300mmofHgto+280mmHg
- Venouspressuremonitor–60mmHgto+520mmHg.
- Transmembranepressuremonitoring–60 mmHgto+520mmHg.
- Arterialbloodpump10ml350ml/m
- Single needle system facility with 2- blood pumps internalpressure/pressurecontrol.
- Airbubbledetector.
- Allthehydraulicscircuitshouldhaveelectrodesformonitoringthecorrectfu nction.
- Userfriendlysettingforallparametersofindividualhospitalparamedicalsta ff.
- BloodpressuremonitorNIBPinbuiltforpatientsBP.
- SuitableROsystemincludingplumbingandstoragetankwith minimummaintainsshouldbesuppliedifneeded.

2. PowerSupply

- PowerSUPPLY230 V-10%to6%50Hz,1A.
- ShouldhaveinternalbatterypowerbackupforatleasT15min.
- Suitableservostabilizerforeachmachineshouldbesupplied.

3. Certification

- BISandISICertifiedasapplicable
- CE/FDAandISOCertified

4. Warranty

- Three(3)ManufacturerWarrantyandadditionalFive(5)yearsCMCfromthefort hyearonwardstotheeighthyear.
- Shouldhaveexcellentquality
- prOMT24hrs localservicefacility.

28.USG Machine:

nAme And Coding		
Name		Ultrasound system
generAl		
1. uSe		
1.1	**Clinical purpose**	Diagnostic sonography (ultrasonography) is an ultrasound-based diagnostic imaging technique used for visualizing internal body structures includingtendons,muscles,joints,vesselsandinternalorgansforpossible pathologyor lesions.Thepracticeofexaminingpregnantwomenusing ultrasoundiscalledobstetricsonography,andiswidelyused.
1.2	**usedbyclinicaldepartment/ ward**	Radiology laboratories
teCHniCAl		
2. teCHniCAl CHArACteriStiCS		
2.1		**ultrasoundscannerwithintegratedtrolleywithprobe,softtouch alphanumerickeyboardwithtrackball:** 1. Withpanelswitches&control'seasilyoperable. 2. IntegratedhighresolutionMonitor(17"). 3. Probes&Gelholder-conviniently placed(2each). **following transducers are to be supplied:** 1. A-2.0-5.0MHzMultifrequencyConvexTransducer-One. 2. B-5.0-12.0MHzMultifrequencyLineartransducer-One. 3. C-5.0-8.0MHzormoreEndoCavitoryprobe-One. **(+/- 1 mHz to be allowed for each):** a. All probes should be electronic transducers and multi-frequency preferablythreefrequenciesandshouldgiveaperture&depthsof scanning. b. ControlsforDepth,gaincompensation,bodymarkerswithtransducers position. c. Real-timecontinuousdynamicfocus. d. Autoannotationfacilityanywhereonimage. e. ImagedisplayinB,B/M&MModel(2B&2D). f. Zoomfacilityminimumfivetimesormore. g. Shadesofgrey256h.Inbuiltcinememory.

		h. UniteshouldbecapableofmeasuringBPD,CRL,FL&ACandotherGA parameters. i. Facilityforimagemagnification,inversion,changing,scan,direction, freezefacility. j. 8stepSTC/GTCshouldbeavailable. k. Framerateminimum50FPS,harddiskcapacityof200GBormore. l. Caliperwithtrackballforthemeasurementofdistancescircumfrences, areavolumeetc.shouldbepossibletomakedifferentmeasurementon singleimage. m. Alphanumerickeyboard,p.PanelSwitches&FootControls. n. PatientreportsforObs/GynaeincludingfetalgrowthtrendincludingHistogramfacilityforTissuetexture&TrendgraphforIUGRcases, Urology andorthopedics. o. Givethegainadjustable/Range&itssteps. p. Calculationsneeded,Velocity,Heartrate,Volumeaddl.modes. q. Dicom 3.0compatible. r. Reviewofstoredimagesisdesirable. s. Channels:1000ormore. t. Depth:25to30cm. u. Dynamicrange:170dB&above. v. Cinelooppreivewforminimum60secsormore. w. Minimum2activeportsshouldbethere.
2.2	**user's interface**	Manual
2.3	**Software and/or standard of communication(where ever required)**	NA
	3. pHySiCAl CHArACteriStiCS	
3.1	**dimensions (metric)**	Max: 400mm (L) x 300mm (W) 160mm (H)
3.2	**Weight (lbs, kg)**	Max:17 lbs
3.3	**Configuration**	NA
3.4	**noise (in dBA)**	NA
3.5	**Heat dissipation**	HeatDissipation:ShouldmaintainnominalTempandtheheatshouldbe disbursedthroughacoolingmechanism.
3.6	**mobility, portability**	Portable
	4.energySourCe(electricity,upS,solar,gas,water,Co2 .....)	
4.1	**power requirements**	Recharging unit: Input voltage- 220V-240V AC, 50Hz.
4.2	**Battery operated**	No
4.3	**tolerance (to variations, shutdowns)**	NA
4.4	**protection**	Should have over-charging cut-off with visual symbol.
4.5	**power consumption**	-
	5. ACCeSSorieS, SpAre pArtS, ConSumABleS	
5.1	**Accessories (mandatory, standard, optional); Spare parts (main ones); Consumables/ reagents (open, closed system)**	The system should be supplied with the following accessories: 1. B&Wthermalprinterwith50rolls. 2. TwoKVAonlinesuitableUPS.

Bidding/proCurement termS/donAtion reQuirementS		
6. enVironmentAl And depArtmentAl ConSiderAtonS		
6.1	**Atmosphere/Ambiance (air conditioning, humidity, dust ...)**	1) Operating condition: Capable of operating continuously in ambient temperatureof10to50degCandrelativehumidityof15to90%inideal circumstances. 2) Storagecondition:Capableofbeingstoredcontinuouslyinambient temperatureof0to50degCandrelativehumidityof15to90%.
6.2	**user's care, Cleaning, disinfection & Sterility issues**	1) Disinfection:PartsoftheDevicethataredesignedtocomeintocontact with the patient or the operator should either be capable of easy disinfectionorbeprotectedbyasingleuse/disposablecover. 2) Sterilization notrequired.
7. StAndArdS And SAfety		
7.1	**Certificates (pre-market, sanitary, ..); performance and safetystandards(specificto thedevicetype);localand/or international**	1. ShouldbeFDA/CE/BISapprovedproduct. 2. ManufacturerandSuppliershouldhaveISO13485certificationfor qualitystandards. 3. Electricalsafetyconformstothestandardsforelectricalsafety IEC60601-Generalrequirements(orequivalentBISStandard). 4. Shall meet internationally recognised for Electromagnetic Compatibility(EMI/EMC) for electromedical equipment:61326-1. 5. CertifiedtobecompliantwithIEC61010-1,IEC61010-2-40forsafety.
7.2	**local and/or international**	Manufacturer/suppliershouldhaveISO13485certificateforquality standard.
8. trAining And inStAllAtion		
8.1	**pre-installation requirements: nature, values, quality, tolerance**	1) Availabilityof5ampsocket. 2) Safetyandoperationcheckbeforehandover. 3) MachinetobeinstalledonlywhenPNDTregistrationisobtainedby health carefacility.
8.2	**requirements for sign-off**	Certificate of calibration and inspection from the manufacturer
8.3	**trainingofstaff(medical, paramedical,technicians)**	1) Trainingofusersonoperationandbasicmaintenanceatleastfortwo weeks. 2) Advancedmaintenancetasksrequiredshallbedocumented.
9. WArrAnty And mAintenAnCe		
9.1	**Warranty**	3 years
9.2	**maintenance tasks**	CMC 5 years 2 PM Visits Annually. All Breakdown calls to be attended within 24 hrs of registartion.
9.3	**Service contract clauses, including prices**	Thespareprice listofallsparesandaccessories(includingminor)required formaintenanceandrepairsinfutureafterguarantee/warrantyperiod should beattached;
10. doCumentAtion		
10.1	**operating manuals, service manuals, other manuals**	Should provide 2 sets (hardcopy and soft-copy) of: 1) User,technicalandmaintenancemanualstobesuppliedinenglish/hindi languagealongwithmachinediagrams; 2) Listofequipmentandproceduresrequiredforlocalcalibrationand routinemaintenance; 3) Serviceandoperationmanuals(originalandcopy)tobeprovided; 4) Advancedmaintenancetasksdocumentation;

		5) Certificateofcalibrationandinspection. 6) Satisfactorycertificateforanyexistinginstallationfromgovernment hospital.
10.2	**other accompanying documents**	Listofimportantsparesandaccessories,withtheirpartnumbersandcost;
11. noteS		
11.1	**Service Support Contact details (Hierarchy Wise; including a toll free/landline number)**	Contactdetailsofmanufacturer,supplierandlocalserviceagenttobeprovided; AnyContract(AMC/CMC/add-hoc)tobedeclaredbythemanufacturer;
11.2	**recommendations or warnings**	Any warning signs would be adequately displayed.

29.Nasal CPAP Unit for Neonatal.

Nasal CPAP Unit for Neonatal.

- Suitable for treating newborns with respiratory distress weighing 500gms to 5000gms.
- CPAP pressure with oscillations should be generated by creating resistance in water column and bubbling of exhaled gas in the water column.
- The system should be suitable for both CPAP and high flow nasal cannula therapy.

Humidifier

- It should have servo controlled heated humidifier with following features :
  Temperature and flow sensor with feedback mechanism.
  Monitoring temperature of gas at chamber end and near patient end additionally temperature of airway, chamber and heater plate.
  Display for temperature of saturated gas.
  Modes: intubated and mask mode.

Alarms

- High temperature and low temperature.
- Water out alarm / POP off pressure adjustment.
- Heater adaptor faulty/ disconnect.
- Temp cum probe faulty / disconnect.
- Hardware faults.

Delivery system

- The patient heating circuit should have integrated spiral heated coil for uniform heating.
- The delivery system should have Maximum Input Flow- 15L/min and maximum mean CPAP- 15cmH20.
- Humidification chamber should be auto feed with dual float system
- Chamber Compressible volume 260- 300 ml
- Max peak flow should be 180ltr/min.
- CPAP Bubble generator should have adjustable probe for pressure settings 3-10 cm of H20.It should have detachable overflow container to maintain constant water level. Volume for generator ~ 500ml.
- The system should have safety mechanism with pressure relief valve and ports for pressure and Fio2 monitoring. Pressure relief should be 17 cmh20 and above @8L.
- System should be compatible to wean babies to HFNC without having the need to change the circuit.
- Should be CE/FDA Approved

Interface

- Nasal prongs/ masks of silicon of at least 3 different sizes useful for babies weighing between 750-1250g, 1250-1750g, 1750-2000g, 2000-2500g. Where the resistance to flow at pressure port of nasal tubing should be 0.4 cm H20, 0.6cmH20 or 0.2cm/H20.
- Flexible nasal tubing with glider technology from block and fixing guide with sizes ranging from 50mm to 100mm where resistance to flow should be 0.49cm/H20,0.53cm/H20, 0.55cm/H20 respectively flow of 6 lit/min.
- Infant caps of following sizes: 17-22, 22-25, 25-29, 29-36cm Circumference.
- Nasal cannula of preterm and term sizes. Cannula should be kink proof and have hydrocolloid based adhesive to secure on skin and facilitate kangaroo mother care.
- Nasal masks suitable for preterm and term babies.
- Nasal masks should be interchangeable to nasal prongs.
- The mask should be soft and anatomically shaped.

30. Pediatrics ICU Cot:

31.Intubating Flexible Laryngoscope

- **AFullHighDefinitionNBISetshouldconsistoftheFollowingitems**:
  - Rhino–LaryngoVideoscope(ChiponTip)withearlycancer detectioncapability
  - FullHDVideoImageProcessorWithPowerfulInbuiltLEDLightSource
  - Equivalentto300WXenon -01
  - 26”FullHDMedicalGradeMonitor -01
  - HDRecordingDevice -01
  - SurgicalTrolley -01
- **Rhino– LaryngoVideoscope(ChiponTip)withearly cancerdetectioncapability**
  - Distalend&Insertiontubeouterdiametershouldbe2.6mmorless
  - Fieldofviewshouldbe90degreeormore
  - Depthoffieldshouldbe3.5mmorless
  - Angulationrangeshouldbeapprox. UP130deg&Dn130deg
  - Workinglengthshould bearound300–400mm
  - EarlyCancerDetectioncapability
  - RemoteSwitchesShouldbeMax4nosonScope
  - ShouldbeCompatible withStroboscopicLightsource
  - ShouldbesuppliedwithcompatibleLeakageTester
  - Shouldhave closefocusforaccuracy
- **FullHDVideoImageProcessor**:
  - Shouldbeoflatestseries/modelandhavefollowingspecifications:
  - ShouldhaveIntegratedLightSourcetomakesystemasimple boxcompactEndovisionsystem
  - Afullhighdefinitionprocessorshouldhaveresolutionof 1920x1080pixelswith16:9aspectratio.
  - Should have provision of Optical image enhancement of capillaryvesselsandfinepatternsinthesuperficiallayerofmucosa for earlydetectionoflesions.
  - ShouldbeupgradableorcompatiblewithIR(ICG)visualization
  - Shouldhave5ormoreDefaultUserPresetfordifferent surgicaldisciplinesincludingIR
  - Shouldhavetouchpanelforeasyaccessofsystemfunctions&settings
  - Shouldhavebuilt-in-FibremodeforFlexibleScopes
  - ShouldhaveLasermodeformaintaininguniformBrightness duringLASERuse withFlexiblescopes

- ShouldhaveCystoColoradjustmentmodeforpropervisualization ofenhancevesselsunderspeciallightobservation
- Automatic Shutter and microprocessor controlledAutomatic GainControl
- Shouldhavemodesformaintaininguniformbrightnessandbrighteningofd arkareasinEndoscopicImage
- ShouldhavemodesforFalsecoloroverlayImage&Fluorescence blackandwhiteimageforICGVisualization
- ShouldhaveUSBslotforcapturingHD/SDEndoscopicStillImages
- Shouldhaveprovisionofstoring20usersettings&50Patientdata
- ShouldhaveoneoutputeachforDVI/HD-SDIandS- Video/CompositeforHD&SDvideos

- **PowerfulLEDLightSource**:
- A Powerful LED(equivalent to 300W Xenon) Light Source to keepLaparoscopyfieldbrightenbyprovidingadequatewhitelightintensit y
- Automaticallyadjustslightintensitytoachieveidealillumination
- Shouldhavespecialfilterlightforobservationofcapillaryvessels andfinepatternsinthesuperficiallayerofmucosaforearlydetection oflesions.
- PreferablyIntegratedLightSourcewithCameraProcessorto makesystemasasingleboxcompactsystemforCamera&light source
- **26"FullHDMedicalGradeMonitor**:Shouldhave followingspecifications:
- 26inchfullHDmonitorwithTFT/LCDScreenwithLEDbacklit havingresolutionof1920X1080
- AspectRATIO16:9
- Should have multi-modality display compatibility ,including Picture-in- Picture , Picture-out-Picture and preferably clone out for various imagesizescombinations.
- Should have at least one input and output terminals each including3G/HD/SD-SDI,DVI,HD15,Y/CandVideo.
- Shouldbeeco-friendly,havingvariouspowersavingmodes, lightweightandthinbody.
- ShouldhavepreferablyprovisionofCloneo/pforrecording2Channelssimultaneouslyinone.
- **HDRecordingDevice:**Shouldhavefollowingspecifications:
- Ahighdefinitionvideorecordersystemwithrealtimerecording facilityforvideos&stillimages
- Shouldhaveinternalharddiskdriveof300GBormoreandshould havefacilityofrecordingonBluRayDisc/DVDDiscorUSBmemory stick ifrequiredbyuser.
- TherecordershouldhaveFollowinginputsofHD-SDI,Compositevideo

&S-videoinputsforrecordingfrom varioussources.

- Therecordershouldhaveoneoutputeachfor HD-SDI,Compositevideo&S-videoforroutingtheimageifrequired
- Shouldalsohaveanfacilityforonechannelaudiorecordinginreal timewithEndoscopyimage
- The recording should be MPEG 4 AVC / H.264 format with a maximumnativeresolutionOF1920x1080pixelsdependingontheinputsel ected.
- AgoodQualityTrolleyshouldbesuppliedtoaccommodateallequipment's.
- AllAbovementioneditemsshouldbefromthesamemanufacturer
-

2. PowerSupply

- StandardIndustryPowerSupply

3. Certification

- CE/FDACertified
- BISandISOasapplicable

4. Warranty

- Three(3)ManufacturerWarrantyandadditionalFive(5)yearsCMCfromthefort hyearonwardstotheeighthyear.

31. Digital X Ray Machine

nAme And Coding		
GMDN name		Digital Radiography System(HF)
GMDN code		NA
generAl		
1. uSe		
1.1	**Clinical purpose**	UsedforRadiographicImagesinadigitalformat(DICOM)greatlyreducing thetimeforimagecaptureandprocessing. Ideal for heavy workload facilities and tertiary care facilities.
1.2	**usedbyclinicaldepartment/ ward**	Radiology Department
teCHniCAl		
2. teCHniCAl CHArACteriStiCS		
2.1	**technical characteristics (specifictothistypeofdevice)**	UnitshouldbeHighfrequencyDigitalRadiographysystemwithrotating anodeX-Raytube.3Dceilingsuspendedstandwith Autotracking.2separate detectorsbeprovided.Oneintableandoneintheverticalbuckyeach. Systemshouldhavefollowingfeatures. A. HIGH FREQUENCYGENERATOR: Generatorshouldbeoflatesttechnologywithhighfrequency40KHzormore X-Raygenerator. Constant Power output of 65KW. KVrangeshouldbe40to150KVin1KV/step. mAoutput:800mA mAs range should be 1 to 600mAs or more. It should have solid state automatic exposure control device. B. TUBE: A Dual focus Rotating anode X-ray tube. LargeAnodeHeatstoragecapacityforhighpatientthroughput(250KHUor more). Multileafcollimatorhavinghalogenlamp/brightlightsourceandautoshut provisionofthelight. HV Cable: 1 Pair of 12 meter HV cable. C. FullyIntegratedx-raygeneratorconsolecontrol: • Systemshouldbefullyintegrated.Alltheexposurefactorsshouldbe controlledfromtheimageacquisitioncomputerandexposureparameters informationshouldbeattachedtoacquiredimageinDICOMformat. • SystemshouldhaveunlimitedAnatomicalPrograms(APR). • AnatomicalProgramsshouldbeflexibleandshouldbeeditablebyuser according to his/her convenience. • Exposureinterlocksandselfdiagnosticmessagesshouldbeavailableon Imageacquisitionscomputerforeasytroubleshootingofthesystem.

2.1	**technical characteristics (specifictothistypeofdevice)**	D. Stand: 3D- Ceiling Suspended tube stand should be a new generation stand providingtheuserthree-dimensionalmovementsofthetubeheadcovering a huge area. Noiseless and swift up/down movement of the tube head should beprovided. • StandshouldhaveAutotrackingfacilitywithtable&verticalbuckystand. • StandshouldhavemotorizedLongitudinal,Transverseandvertical movementwithautomaticstop.ItshouldhaveTubeHeadRotation along itsaxis. • Movementsofstandshouldbe: – Longitudinalmovementmotorized:2500mmormore – Transversemovementmotorized:1500mmormore – Verticalup/downmovementmotorized:1000mmormore – TubeheadRotation(alongwithVerticalColumnaxis):±90° – TubeheadrotationalongHorizontalaxis-±90° • Smartcollisionavoidancesystemshouldbeprovided. • Manualoverridefacilityforxandyaxis. • Electromagneticlocksshouldbeavailableforcomfortableoperations. DigitaltouchbaseddisplayshouldbeavailableontheX-raytube/Collimator Assemblyatleastwithfollowingfeatures: • DisplayandcontrolofExposureparameterslikeKVandMAS • DisplayandcontrolofMechanicalparameterslikeSIDandtubeInclination • DisplayofAPRandpatientpositionguideimage • DisplayofAcquiredx-rayimage
2.1	**technical characteristics (specifictothistypeofdevice)**	Theautotrackingsystemshouldalsobecapableofdoingmotorizedoblique trackingwithVerticalBuckyStandduringspecialcases. E. Table: Horizontaltablewithfloatingtabletopandadjustableheightshouldbe provided.Tabletopshouldhavethree-dimensionalmovement,foreaseof operationandusebypatients. • TableshouldbeprovidedwithInbuiltFPD(FLATPANELDETECTOR) beneaththetabletophavingmanualmovement.Itshouldhave electromagneticlockingfacilityandshouldbeunlockedbythefoot switchforitsmovement. • Transverseandlongitudinalmovementsofthetabletopshouldbe locked by electromagnetic locks. • Tableshouldhaveup/downmotorizedmovementanditshouldbe controlled by two up & down foot switches. • Movements of table top should be: Transverse movement: 18cm or more,Longitudinalmovement:45cmormore.Heightadjustmentfacility should beavailable. • Maximumweightcarryingcapacityforthetableduringup/down movement should be 150Kg or more. F. VerticalBucky(VB)Stand: FloormountedMotorizedVerticalbuckystandshouldhaveinbuiltFPD(FLAT PANELDETECTOR)forlungandskeletonx-rayexaminations.Itshouldhave userfriendlydesignandhandling. VBstandshouldhaveprovisiontodochestradiographywithandwithoutgrid. MotorizedTiltingshouldbe-30degreeto+90degree. Vertical Up Down Movement Speed should be 60mm/sec or more G. FlatpanelDetector(EachforTablebuckyandverticalbucky): Acompleteimagingsolutionwithcuttingedgeofperformanceintegrated with X-raysystems.

2.1	**technical characteristics (specifictothistypeofdevice)**	Specifications: ThedetectorshouldbeflatpaneltypewithA-Si(amorphoussilicon)andCsI forscintillation. Sizeofdetectormustbe43cmx43cm. ActiveImagematrix3Kx3K. Image depth should be 14bit. Pixelsizeshouldbelessthan150um(Smallerpixelsizeisproffered) Detectorresolutionshouldbemorethan3.3lp/mm. DQE (Detector Quantum Efficiency) should be more than 65%. H. IMAGE ACQUISITION SOFTWARE: SOFTWAREprovidescompletecontrolofallimagecapturefunctionswithin the examination room, enhancing the entire workflow by delivering diagnostic images instantly, and allowing users to move X-ray images electronicallytoremoteworkstations,imagearchives,andprinters,alsohas thesuperexcellentperformanceonimagequalitycontrolsuchas:
2.1	**technical characteristics (specifictothistypeofdevice)**	i. ImageAcquisitionandProcessing: • Digitalimageprocessingtechnology • Previewimageshouldbeavailableinlessthan5seconds. • Processedimageshouldappearinlessthan8seconds. • ExamSpecificAlgorithmsimageprocessingforconsistentimagequality of all body parts. • Automatic imageoptimization • Imageharmonizationalgorithmsforuniformimages. • Presetimageprocessingtoolsfordifferentanatomy • PresetGAMMAcorrectiontablewithmanualoverride • Imagecropping • Image mirror,rotate. • Imageannotationwithcircle,square,rectangle,Arrowmarkers • Addimageaccept/rejectcomments • Rejectedimagesarchivalwithprovisionofconvertingthemto Accepted images. • SeparatelogforRejected,AcceptedandPrintedimages. • Truesizeforprinting • Userdefinedprintingformats. • Shouldhavehighimagestoragecapacitywith1TBHDD. ii. DoseReduction: • Advancednoisereductionandimageenhancementtechnologyfor best image quality at minimum dose.
2.1	**technical characteristics (specifictothistypeofdevice)**	iii. ExcellentMaintainability • Remoteonlinesystemdiagnosis • Remoteonlinesoftwareupgrade • Imagequalitycontroltools • EasyandquickOffsetandgaincalibrationwithbadpixelremovalalgorithm. • Automaticprogrammedoffsetcalibrationforbestimagequality. iv. FullDICOM3.0Compatibility • GetDICOMworklistfromHIS/RIS • StoreImagesthroughPACSnetworksystem • SupportuserdefinedformatDICOMimageprint • Support DICOMMPPS v. ImageManagement: • Resend/ Reprintimage

		• Send/print queuemanagement • Re-previewimage • Protect patientrecord • Rejected imagemanagement Image Stitching: Imagestitchingsoftwareshouldbeprovidedforlonglimbimaging. Atleast4imagesshouldbestitchedtogether.
2.1	**technical characteristics (specifictothistypeofdevice)**	H.MONITORS:1No.19"HighBrightnessMonochromeLCDMedicalgrade monitorshouldbeprovided. additional Work station: Additionalworkstationshouldbeprovided.Itshouldhavefollowingfeatures: • DICOMconnectivity • Imagereview • Imageprocessing • PatientReporting • ImageSEND,RECEIVE,PRINTfacility • ShouldhaveDIOCMconnectivityforexistingPACS,RISsystem. • Shouldhavelargeimagearchivalcapacity(atleast1TBHDD).
2.2	**user's interface**	manual
2.3	**Software and/or standard of communication(where ever required)**	In built
	3. pHySiCAl CHArACteriStiCS	
3.1	**dimensions (metric)**	NA
3.2	**Weight (lbs, kg)**	NA
3.3	**Configuration**	NA
3.4	**noise (in dBA)**	Noise-free system
3.5	**Heat dissipation**	HeatDissipation:ShouldmaintainnominalTempandtheheatshouldbe disbursedthroughacoolingmechanism
3.6	**mobility, portability**	Stationary Installation
	4.energySourCe(electricity,upS,solar,gas,water,Co2.....)	
4.1	Power Requirements	Power supply: 230V, AC, 50Hz. 15 Amps ,three phase, Line resistance < 0.4 ohms.
4.2	Battery operated	no
4.3	Tolerance (to variations, shutdowns)	line regulation of ±10%.
4.4	Protection	NA
4.5	Power consumption	??????
	5. ACCeSSorieS, SpAre pArtS, ConSumABleS	
5.1	**Accessories (mandatory, standard, optional); Spare parts (main ones); Consumables / reagents (open, closed system)**	Machine should be supplied with following transducers:- I.2No.BARCApprovedwholebodyleadappornswithallattachements.
	Bidding / proCurement termS / donAtion reQuirementS	
	6. enVironmentAl And depArtmentAl ConSiderAtonS	
6.1	**Atmosphere / Ambiance (air conditioning, humidity, dust ...)**	1) Operatingcondition:Capableofoperatingcontinuouslyinambient temperatureof5to50degCandrelativehumidityof15to80%inideal circumstances. 2) Storagecondition:Capableofbeingstoredcontinuouslyinambient temperatureof0to50degCandrelativehumidityof15to90%.

6.2	**user's care, Cleaning, disinfection & Sterility issues**	1) Disinfection:PartsoftheDevicethataredesignedtocomeintocontact with the patient or the operator should either be capable of easy disinfectionorbeprotectedbyasingleuse/disposablecover. 2) Sterilization notrequired.
	7. StAndArdS And SAfety	
7.1	**Certificates (pre-market, sanitary, ..); performanceand safetystandards(specificto thedevicetype);localand/or international**	1. ShouldbeFDA/EuropeanCE/BISapprovedproduct. 2. ManufacturerandSuppliershouldhaveISO13485certificationfor qualitystandards. 3. Electricalsafetyconformstothestandardsforelectricalsafety IEC60601- 1-Generalrequirements(orequivalentBISStandard) 5. Shallmeetinternationallyrecognisedstandardfor Electromagnetic Compatibility(EMI/EMC)forelectromedicalequipment:61326-1. 6. CertifiedtobecompliantwithIEC61010-1-3,IEC61010-1-2,IEC61010-2-54,IEC61010-1-6andIEC62304 7. AERB typeapproved
7.2	**local and/or international**	Manufacturer/suppliershouldhaveISO13485certificateforquality standard.
	8. trAining And inStAllAtion	
8.1	**pre-installation requirements: nature, values, quality, tolerance**	Three phase stable power supply
8.2	Requirements for sign-off	Certificateofcalibrationandinspectionofpartsfromthemanufacturer
8.3	**trainingofstaff(medical, paramedical,technicians)**	1) Trainingofusersonoperationandbasicmaintenance; 2) Advancedmaintenancetasksrequiredshallbedocumented
	9. WArrAnty And mAintenAnCe	
9.1	**Warranty**	3 years
9.2	**maintenance tasks**	CMC 7 years 2 PM Visits Annually. All Breakdown calls to be attended within 24 hrs of registartion.
9.3	**Service contract clauses, including prices**	Thesparepricelistofallsparesandaccessories(includingminor)required formaintenanceandrepairsinfutureafterguarantee/warrantyperiod should beattached;
	10. doCumentAtion	
10.1	**operating manuals, service manuals, other manuals**	Should provide 2 sets(hardcopy and soft-copy) of:- 1) User,technicalandmaintenancemanualstobesuppliedinenglish/hindi languagealongwithmachinediagrams; 2) Listofequipmentandproceduresrequiredforlocalcalibrationand routinemaintenance; 3) Serviceandoperationmanuals(originalandcopy)tobeprovided; 4) Advancedmaintenancetasksdocumentation; 5) Certificateofcalibrationandinspection
10.2	**other accompanying documents**	Listofessentialsparesandaccessories,withtheirpartnumbersandcost;
	11. noteS	
11.1	**Service Support Contact details (Hierarchy Wise; including atoll free/landlinenumber)**	Contactdetailsofmanufacturer,supplierandlocalserviceagenttobe provided; AnyContract(AMC/CMC/add-hoc)tobedeclaredbythemanufacturer;
11.2	**recommendations or warnings**	Any warning signs would be adequately displayed

33. 3 Channel ECG machine

- SimultaneousChannelECGrecordingwiTH12LEADSsimultaneousacquisition
- Shouldhavevisualalarmforopenlead
- Shouldhaveadigitaldisplayof3-channelECGwithtouchscreenforeasyoperation.
- ECGMachineshouldhavemodesofoperation–AutomaticandManual.
- Shouldhaveamaintenance-freedigitalthermalarrayprinter.
- Printershouldworkwithstandardthermalpaperwith6x2FORmatandpapersizE105x20mtrs.
- PrintershouldbeabletoprintECGreportandshouldhaveon/offselection.
- Shouldbecompactandportable,andshouldhavecarryhandleforportability.
- ShouldhaveMedian,longlead,interpretationfacility,shouldhavereviewfacility
- RecordingspeedshouldbE25MM/secand50mm/sec
- Shouldhavedefibrillationprotection
- CMRRshouldbe>90dBortheSamplingrateshouldbe>7000
- Frequencyresponse0.05HzTO129Hz
- ShouldhaveadigitalfilterforACandEMG

PowerSupply

- EquipmentshouldhavesufficientbatterybackupfortakingminimuM100ECGwithout ACpower
- ShouldoperateONMAINS(220v-50Hz)andrechargeablebattery(builtin)

Accessories

- Shouldbesuppliedwith:
  - Patientcablesets –1Nos.
  - cliponelectrodes –4nos.
  - ChestelectrodewithsiliconrubberbulB –6Nos.
  - RollsofrecordingpapeR –10NOS.
  - BottleofJelly –1Nos.

2. Certifications

- SafetycertificatefromacompetentauthorityEuropeanCEcertified/FDA.

3. WarrantyandMaintenance

- Three(3)ManufacturerWarrantyandadditional 7 yearsCMCfromtheforthyearo nwardstotheeighthyear.

34. 16 Slice CT Scan:

1. **Specifications**
   - **Gantry**
     - Minimumscantimeforonegantryrotationofcomplete360degreeshouldbei n0.75secorless
     - Sizeofgantryaperture–70cmsormore
     - ShouldhaveGantryphysicalTilt:±30˚
     - TheCTiscapable ofacquiring32slices
   - **X-RayTube**
     - TheX-Raytubeshouldhavecapacityofatleast3.5MHUorabove
     - TheX-Raygeneratorshouldbe40kWorabove
     - Tubevoltageshouldbevariable from80TO140kVAorbetter
     - mA– 10TO350orabove
   - **PatientTable**
     - MinimumTableLoad–175kgandhigher
     - Minimumfloatingtabletopwidthshouldbeatleast40cm
   - **Spiral/HelicalSection(Sub-MMacquisition&Reconstruction)**
     - ThestemshouldhavespiralcapabilITYOFATLEAST100secondsorabove
     - Minslicethickness0.625mmorlessandmaximum10MMORmore
   - **Detector**
     - thedetectorshouldhaveminimum16Ormorerowofelements.
     - Shouldhaveminimumdetectorwidthof17mmormore
   - **Resolution**
     - LowcontrastresolutionshouldbE2.5mmat0.25%orbetter
     - SpecifytheCTdoseindex
   - **MainConsoleComputerSection**
     - Itshouldhavelatestflatcolourscreen19inchesoraboveinsize
     - Thereshouldbeaconsolewithonemonitor
     - Thedisplaymatrixshouldbeatleast1024x1024
     - CPUofferedshouldbelatestmultipletaskingprocessorandamenudriverplat formwithRAMsizeofatleast8GB
     - HarddiskcapacityforbothimageandrawdatashouldbE150GBormore
     - Themainconsoleshouldhavestandardsoftwarelike3Dvolumerendering, MIP, 3D artefact suppression, colour angio display. auto boneremoval,endoscopy vascularassessment
     - Thefollowingsoftwareshouldbeofferedasstandard(MPR,ROI,VOLUMECA LCULATION,CTNUMBERMeasurementofbetween-10,000to+25,000,WINDOWWIDTH,WINDOWLEVELTOPOGRAMDISPLAY, CINEDISPLAY,HRCTLUNG,DYNAMICSCAN)
     - Itshouldhavefacilitiestostoreatleast2,00,000images
   - **OtherFeature**
     - Scanningcapability:Highresolutionscanpackagetobeavailableasstandard.
     - Slicethicknessshouldbefreelyselectable
     - SuitableUPSwiTH15minutes backuptohandletheCTcomputer

2. PowerSupply

- Suitablestabilizertobeprovided
- Suitablepowerinfrastructuretobeprovidedasrequiredattheinstallationsite.
- Allcivilandelectricalinfrastructurefrompowersourceandthelocationofinstallat ionistheresponsibilityoftheTenderer.

3. Accessories

- Singleheadcontrastinjectorofreputedmakewith50nos.syringesandtubing
- AllstandardaccessoriesincludingadequateLeadGlass2FT.X4ft.etc.tobeprovided
- MultisizeDICOMLasercameraforFilmprinting

4. Certification

- TheequipmentmustbeAERBapproved.AERBcertificatetobeproducedforRadi ationstandard.Necessarycertificatestobeenclosed.
- EquipmentmusthaveCE,FDA(USA),orequivalent(otherthanAERB)certificate. Necessarycertificatestobeenclosed.

5. Warranty

- Three(3)Manufacturer Warranty and additional Seven (7)yearsCMC

6. General(Essential)

- Thecompanymusthavelocalservicecentre.Mustbeabletoprovidemaintenance serviceonallthedays.
- Detailedtechnicaldatasheetforofferedmake/modelsistobeattached
- Make&Modelofoffered itemistobementionedbybidder
- Bidder should have past experience of supplying similar machine to otherusersandshouldsubmitthePerformanceletterissuedbytheuserfor suchsimilarmachine
- BiddershouldvisitthesiteinconsultationwithHODanddothenecessaryworkslikeGr aniteflooring,fallceilingforCTroom&ConsoleRoom

includinginternalelectrical&lightingfittingworks.Sidewallshouldbecovered with Granite up to 6 feet and Suitable split Air Conditioners shouldbe supplied.

- Adequateonsiteclinicaltrainingtobeprovided
- All turnkey works shall be carried out by the vendor and cost should be included in the equipment cost

35. 12 Channel ECG Machine:

GENERAL		
1. USE		
1.1	**CLINICAL PURPOSE**	CONTINUOUSLYDETECT,MEASURE,ANDDISPLAYAPATIENT'SELECTROCARDIOGRAM(ECG)THROUGHLEADSANDSENSORSATTACHEDTOTHEPATIENT.
1.2	**USEDBYCLINICALDEPARTMENT/ WARD**	ALL
1.3	**OVERVIEW OF FUNCTIONAL REQUIREMENTS**	CONTINUOUS DISPLAY OF PATIENT ECG AND HEART RATE ON SCREEN. ALLOWSDISPLAYOFSINGLE,5LEADECGORSIMULTANEOUSDISPLAYOFATLEAST5WAVESSELECTEDFROMUPTO12POINTS. OPERATOR CAN SET AUDIOVISUAL ALARM LEVELS FOR LOW OR HIGH HEART RATE. OPERATES FROM MAINS VOLTAGE OR FROM INTERNAL RECHARGEABLE BATTERY. PATIENTCONNECTORSTHATARESTERILISABLEANDREUSABLEAREPREFERRED,THOUGHREUSABLECABLESTHATATTACHTODISPOSABLECONNECTIONPATCHESAREALSO ACCEPTABLE. HARD COPY PRINTOUT OF TRACES WILL BE REQUIRED.
TECHNICAL		
2. TECHNICAL CHARACTERISTICS		
2.1	**TECHNICAL CHARACTERISTICS (SPECIFICTOTHISTYPEOFDEVICE)**	1. HEARTRATEMEASUREMENTRANGETOBEATLEAST30TO250BPM ,WITHACCURACYBETTERTHAN±5BPM. 2. HEARTRATETRENDDISPLAYOFATLEASTPREVIOUS24HOURS. 3. ARRHYTHMIADETECTIONFACILITYREQUIRED;MINIMUMGRADATIONOF1 BPM. 4. HEARTRATEMEASUREMENTRANGETOBEATLEAST30TO250BPM ,WITHACCURACYBETTERTHAN±5BPM.
2.2	**SETTINGS**	AUDIOVISUALALARMSREQUIRED:HIGHANDLOWHEARTRATE(OPERATOR VARIABLE SETTINGS),CARDIACARRHYTHMIA,SENSOR/WIREDISCONNECTED,LOWBATTERY.
2.3	**USER'S INTERFACE**	MANUAL
2.4	**SOFTWARE AND/OR STANDARD OF COMMUNICATION**	IN BUILT
3. PHYSICAL CHARACTERISTICS		
3.1	**DIMENSIONS (METRIC)**	NA
3.2	**WEIGHT (LBS, KG)**	LESS THAN 5 KGS
3.3	**CONFIGURATION**	CASE IS TO BE HARD AND SPLASHPROOF. DISPLAYMUSTALLOWEASYVIEWINGINALLAMBIENTLIGHTLEVELS. SUPPLIEDINPROTECTIVECASEFORCLEANSTORAGEANDSAFETRANSPORT.

3.4	**NOISE (IN DBA)**	<50 DB
3.5	**HEAT DISSIPATION**	HEATDISSIPIATION:SHOULDMAITAINNOMINALTEMPANDTHEHEATSHOULDBEDISBURSEDTHROUGHAEXHAUSTCOOLINGFAN.
3.6	**MOBILITY, PORTABILITY**	SUPPLIED IN PROTECTIVE CASE FOR CLEAN STORAGE AND SAFE TRANSPORT.
	4.ENERGYSOURCE(ELECTRICITY,UPS,SOLAR,GAS,WATER,CO2)	
4.1	**VOLTAGE(VALUE,ACOR DC, MONOPHASE ORTRIPHASE)**	220 TO 240V, 50 HZ
4.2	**BATTERY OPERATED**	BATTERY POWERED, SILENCEABLE ALARM FOR POWER FAILURE. BATTERYCHARGERTOBEINTEGRALTOMAINSPOWERSUPPLY,ANDTOCHARGE BATTERYDURINGMAINSPOWEROPERATIONOFUNIT. INTERNAL,REPLACEABLE,RECHARGEABLEBATTERYALLOWSOPERATIONFOR ATLEASTONEHOURINTHEEVENTOFPOWERFAILURE.
4.3	**TOLERANCE (TO VARIATIONS, SHUTDOWNS)**	VOLTAGECORRECTOR/STABILIZERTOALLOWOPERATIONAT±30%OFL OCALRATED VOLTAGE.
4.4	**PROTECTION**	ELECTRICALPROTECTIONPROVIDEDBYFUSESINBOTHLIVEANDNEUTRALSUPPLYLINES.
4.5	**POWER CONSUMPTION**	
4.6	**OTHER ENERGY SUPPLIES**	MAINS CABLE TO BE AT LEAST 3M LENGTH.
	5.ACCESSORIES,SPAREPARTS,CONSUMABLES	
5.1	**ACCESSORIES (MANDATORY, STANDARD, OPTIONAL)**	12 LEAD ECG CABLE. 5 LEAD ECG CABLE (IF OPTION OFFERED). 100SETSOFECGCONNECTIONELECTRODES(IFDISPOSABLETYPE). 5SETSOFECGCONNECTIONELECTRODES(IFREUSABLETYPE).
5.2	**SPARE PARTS (MAIN ONES)**	TWO SETS OF SPARE FUSES (IF NON-RESETTABLE FUSES USED)
5.3	**CONSUMABLES/REAGENTS (OPEN, CLOSED SYSTEM)**	5 TUBES ELECTRODE GEL (IF REQUIRED)
	6. ENVIRONMENTAL AND DEPARTMENTAL CONSIDERATONS	
6.1	**ATMOSPHERE/AMBIANCE (AIR CONDITIONING, HUMIDITY, DUST ...)**	OPERATING CONDITION: - CAPABLEOFOPERATINGCONTINUOUSLYINAMBIENTTEMPERATUREOF0TO 50DEGCANDRELATIVEHUMIDITYOF15TO90%INIDEALCIRCUMSTANCES.
6.2	**USER'S CARE, CLEANING, DISINFECTION & STERILITY ISSUES**	THE CASE IS TO BE CLEANABLE WITH ALCOHOL OR CHLORINE WIPES.
	7. STANDARDS AND SAFETY	
7.1	**CERTIFICATES (PRE-MARKET, SANITARY, ..); PERFORMANCE AND SAFETY STANDARDS (SPECIFIC TO THE DEVICE TYPE); LOCAL AND/OR INTERNATIONAL**	SHOULDBEFDA/CEAPPROVEDPRODUCT;MANUFACTURER/SUPPLIERSHOULDHAVE ISO13485CERTIFICATEFORQUALITYSTANDARD.ELECTRICALSAFETYCONFORMSTO STANDARDSFORELECTRICALSAFETYIEC-60601-1. SHALLMEETIEC-60601-1-2(GENERALREQUIREMENTSFORSAFETY-ELECTROMAGNETIC COMPATIBILITY) AND IEC 60601-2-25 (ESSENTIAL PERFORMANCE OF ELECTROCARDIOGRAPHS).
	8. TRAINING AND INSTALLATION	
8.1	**PRE-INSTALLATION REQUIREMENTS: NATURE, VALUES, QUALITY, TOLERANCE**	AVAILABILITY OF 5 AMP/15 AMP. ELECTRICAL SOCKET.

8.2	**REQUIREMENTS FOR SIGN-OFF**	SUPPLIERTOPERFORMINSTALLATION,SAFETYANDOPERATIONCHECK SBEFOREHANDOVER. LOCAL CLINICAL STAFF TO AFFIRM COMPLETION OF INSTALLATION.
8.3	**TRAINING OF STAFF (MEDICAL, PARAMEDICAL, TECHNICIANS)**	TRAINING OF USERS IN OPERATION AND BASIC MAINTENANCE SHALL BE PROVIDED. ADVANCED MAINTENANCE TASKS REQUIRED SHALL BE DOCUMENTED.
9. WARRANTY AND MAINTENANCE		
9.1	**WARRANTY**	3 YEAR

36.Color Doppler:

nAme And Coding		
Name		**Color doppler machine**
generAl		
1. uSe		
1.1	**Clinical purpose**	Dopplerultrasonographyisanon-invasivediagnosticprocedurethat changessoundwavesintoanimagethatcanbeviewedonamonitor. anultrasonictechniquefordetectinganatomicdetailsbycolorcodingof velocityshifts.Incardiographybloodflowinginonedirectionappearsred, andbloodflowingintheoppositedirectionappearsblue.Thetechnique canalsoindicatethevelocityofredbloodcorpusclesmovingthroughthe circulatorysystem,whichmakesitpossibletoquantifytheflow,measure thepressureswithintheheartchambers,andcalculatethestrokevolume. In laparoscopy, Doppler color flow allows for rapid identification and differentiationofductsandvalvesintheviscera,particularlyindetection anddiagnosisofpancreaticandlivertumorsandcolorectallivermetastases.
1.2	**usedbyclinicaldepartment/ ward**	Radiology diagnostic laboratories.
teCHniCAl		
2. teCHniCAl CHArACteriStiCS		
2.1	**technical characteristics (specifictothistypeofdevice)**	Thesystemshouldbestateartwithfull DigitalTechnology&shouldbe capableofwholebodysonography&otherapplicationforadult&pediatrics (Infants &Neonates) which includes abdominal, Obs/Gyn, Endovascular, Peripheralvascular,transcranial,transvaginal,transrectal&smallparts. 1) Thesystemshouldincorporatefacilityforhighresolution2D,3D,M mode,PWcolorimaging,PowerDopplerAngioImagingModes. 2) Thesystemshouldhavemorethan20000DigitalChannels&onthesite tohighernumberofchannels(preferable). 3) Thesystemshouldhave256Greyshadeormore. 4) Thesystemshouldhavecapabilityoftriplexdisplayinrealtimewithallprobes. 5) Thesystemshouldhaveaveryhighframerateof700framespersecond ormore.Pleasespecifyframerateintriplexmode. 6) ThesystemshouldhaveHarmonicimagingforhardtoimagepatients. ThesystemshallsupportTissueHarmonicImagingcapabilityonphased, linear,3Dandcurvedarraytransducers. 7) Thesystemshouldhaveadvanceimageprocessingalgorithmstoanalyze betweentargets&artifactssoastosharpentargetanatomy,reducethe sparkle&artifactstoimproveimagequality.

		8) ThesystemshallofferHarmonicImaginginPowerDopplerImaging modeforimprovedsensitivityandspecificityindifferentiatingblood/ agent fromtissue. 9) ThesystemshouldhavefacilityforZoom(Real-timeandFrozen-image)& manipulation of image through pre-processing and post-processingwith cineloopviewingimageofallmodes. 10) Systemshouldhavediscofatleast500GBormore. 11) Thesystemshouldhavefacilityofdigitalstorage&retrievalofB/W& colorimagedata(Bothfrozen&cineloops)onbuiltinaswellasramble media(CD, DVD)USBport. 12) Thesystemshouldhaveautomaticrealtimequantificationof Doppler parameterlikevelocity,frequency,timeheartratestop,flowvolume, plasticityindex,resistivityindex,peakvelocity,averagevalue,point value,area&diameterflowvolumeetc. 13) Thesystemshouldhavehighdynamicrangeof170dBwithscanning depthof30cmormore. 14) Alltransducers (minimum3)shouldbebroadband width,Frequency range 2 to 12 MHz or more with universal ports for transducer interchange.Twoactiveportsandoneparkingprobeisrequired. 15) Systemshouldhave19"HDdisplaywithtiltandswivelFacilityalongwith alphanumerickeyboardwithilluminatingkeysandstatusfunction. 16) Dicom 3.0compatible. 17) Reviewofstoredimagesisdesirable.
2.2	**user's interface**	Software,Automatic(stagestobedisplayedorrecordableforprinting).
2.3	**Software and/or standard of communication (where ever required)**	
3. pHySiCAl CHArACteriStiCS		
3.1	**dimensions (metric)**	NA
3.2	**Weight (lbs, kg)**	NA
3.3	**Configuration**	NA
3.4	**noise (in dBA)**	Noise-free system.
3.5	**Heat dissipation**	HeatDissipation:ShouldmaintainnominalTempandtheheatshouldbe disbursedthroughancoolingmechanism.
3.6	**mobility, portability**	Certified Room Installation.
4.energySourCe(electricity,upS,solar,gas,water,Co2 .....)		
4.1	**power requirements**	Power unit: Input voltage- 220V-240V AC, 50Hz Single-phase.
4.2	**Battery operated**	No
4.3	**tolerance (to variations, shutdowns)**	NA
4.4	**protection**	NA
4.5	**power consumption**	-
5. ACCeSSorieS, SpAre pArtS, ConSumABleS		
5.1	**Accessories (mandatory, standard, optional); Spare parts (main ones); Consumables/reagents (open, closed system)**	Machine should be supplied with following transducers: I. Broadbandconvexarraytransducerwithmulti-frequencyrangeof2to5 MHzorwiderrange-1No. II. Broadbandtransvaginal/transrectalprobewithmulti-frequencyrange between5to8MHzorwiderrange-1No. III. LinearprobeTransducer5to12MHzormore.

		The system should have following documentation devices a) Lasercolorprinterforcolorimageprinting b) B/WThermalprinteroflatestmodel c) GlazedthermalpaperrollS50no.&5rimofGlossypapersheet. d) OnlineUPSforpowerbackupofminimum30minutes e) 50nos.ofCDstobesupplied
Bidding/proCurement termS/donAtion reQuirementS		
6. enVironmentAl And depArtmentAl ConSiderAtonS		
6.1	**Atmosphere/Ambiance (air conditioning, humidity, dust ...)**	1) Operatingcondition:Capableofoperatingcontinuouslyinambient temperatureof5to50degCandrelativehumidityof15to80%inideal circumstances. 2) Storagecondition:Capableofbeingstoredcontinuouslyinambient temperatureof0to50degCandrelativehumidityof15to90%.
6.2	**user's care, Cleaning, disinfection & Sterility issues**	1) Disinfection:PartsoftheDevicethataredesignedtocomeintocontact with the patient or the operator should either be capable of easy disinfectionorbeprotectedbyasingleuse/disposablecover. 2) Sterilization notrequired.
7. StAndArdS And SAfety		
7.1	**Certificates (pre-market, sanitary, ..); performanceand safetystandards(specificto thedevicetype);localand/or international**	1. ShouldbeFDA/EuropeanCE/BISapprovedproduct. 2. ManufacturerandSuppliershouldhaveISO13485certificationfor qualitystandards. 3. Electricalsafetyconformstothestandardsforelectricalsafety IEC60601-Generalrequirements(orequivalentBISStandard) 5. ShallmeetinternationallyrecognisedforElectromagneticCompatibility (EMI/EMC)forelectromedicalequipment:61326-1. 6. CertifiedtobecompliantwithIEC61010-1,IEC61010-2-40forsafety.
7.2	**local and/or international**	Manufacturer/suppliershouldhaveISO13485certificateforquality standard.
8. trAining And inStAllAtion		
8.1	**pre-installation requirements: ature, values, quality, tolerance**	1) Availabilityof5ampsocket; 2) Safetyandoperationcheckbeforehandover; 3) Tobeinstalledinaseparateroom.
8.2	**requirements for sign-off**	Certificateofcalibrationandinspectionofpartsfromthemanufacturer
8.3	**trainingofstaff(medical, paramedical,technicians)**	1) Trainingofusersonoperationandbasicmaintenancefor2weeks; 2) Advancedmaintenancetasksrequiredshallbedocumented
9. WArrAnty And mAintenAnCe		
9.1	**Warranty**	3 years
9.2	**maintenance tasks**	CMC 7 years 2 PM Visits Annually. All Breakdown calls to be attended within 24 hrs of registartion.
9.3	**Service contract clauses, including prices**	Thespareprice listofallsparesandaccessories(includingminor)required formaintenanceandrepairsinfutureafterguarantee/warrantyperiod should beattached;
10. doCumentAtion		
10.1	**operating manuals, service manuals, other manuals**	Should provide 2 sets(hardcopy and soft-copy) of:- 1) User,technicalandmaintenancemanualstobesuppliedinenglish/hindi languagealongwithmachinediagrams; 2) Listofequipmentandproceduresrequiredforlocalcalibrationand routinemaintenance;

		3) Serviceandoperationmanuals(originalandcopy)tobeprovided; 4) Advancedmaintenancetasksdocumentation; 5) Certificateofcalibrationandinspection
10.2	**other accompanying documents**	Listofessentialsparesandaccessories,withtheirpartnumbersandcost;
	11. noteS	
11.1	**ServiceSupportContactdetails (Hierarchy Wise; including a toll free/landlinenumber)**	Contactdetailsofmanufacturer,supplierandlocalserviceagenttobeprovided; AnyContract(AMC/CMC/add-hoc)tobedeclaredbythemanufacturer;
11.2	**recommendations or warnings**	Any warning signs would be adequately displayed

37. Video Laryngoscope

1. Should be a portable video laryngoscope for intubations with minimal manipulation of head & neck dedicated features for teaching, training & learning in the specialty

2. Minimum 1 megapixel camera should be available

3. Should have a free fog optical polymer material/ poly carbonate material blades

4. Should have a suitable view angle to visualize glottis without much head & neck manipulation, ergonomically

5. The system should have portable colour video display LCD of at least 2.3" or above size for the real time clear view

6. Weight of handle should be light and not be more than 250 g

7. Should have passed the drop test for one meters

8. Light sources should be high-intensity LED

9. Should have facility to run independently on a battery and back up should have minimum four hours. The rate for the battery shall be offered in the BOQ and the same will be fixed for 5 years from the date of price bid opening. The rate will be taken for evaluation.

The system should be supplied with a set of different sizes of disposable blade size 1,2,3,4 and one additional blade for difficult intubation

11. Should be immersible for complete disinfection (without battery)

12. Should supply the following blades free of cost along with the machine - 25 nos. of size 1, size 2, size 3, size 4 and 10 numbers of 'additional blade for difficult intubation'

13. The rate for the 5 types of blades shall be mentioned in the BOQ (taken for evaluation) and the rate will be freeze for 5 years from the date of price bid opening.

14. Device should have durable medical grade thermoplastics

15. Should have safety certificate from a competent authority CE issued by a notified body registered in European commission / FDA (US). Copy of the certificate / test report shall be produced along with the technical bid.

38.Infrared Vien Viwer (Flex) for Neonatal &Pediatrics Patients

39. 1000 LPH RO Plant for Dialysis Machine:

Equipment :R.O Plant a. Sand Filter – Capacity – 2000 lph, Media – Sand / Pebbles, MOC – FRP / Composite, Backwash : Automatic, Multiport valve : Timer based with 3 cycle backwash sequence, Pressure gauge and fittings – 1 set. b. Activated Carbon Filter – Capacity : 2000 lph, Media : Carbon ID 900, MOC : FRP / Composite, Make: Pentair / equal, Backwash : Automatic, Multiport valve : Timer based with 3 cycle backwash sequence, Pressure gauge and settings : 1 set c. Water softner/ High Definition Carbon/Ion Remover(As per feedwater quality) – Capacity : 2000 lph, Media : Ion exchange resins (ion exchange / thermax or equivalent)/ High Definition Carbon/ Ion Remover, Regeneration: Automatic, Multiport valve : Timer based with 3 cycle backwash/regeneration sequence, Pressure gauge and settings : 1 set d. MEMBRANE ELEMENTS – Sufficient quantity and arrays to satisfy the output condition of 1000 LPH at 50-75% rejection for the given water quality. e. Antiscalent dosing system : Capacity : 3 lph, MOC : PP, Dosing tank : 50 ltrs, Level switch and fittings – 1 set. f. UV Lamp with SS 304 Housing with quartz reflectors. Flow rate 1000 LPH g. The vessel size shall be at least 13" X 54" II. WATER STORAGE TANK a. Raw water storage tank sintex or equivalent capacity 2000 Litres. b. Softened water tank sintex or equivalent, capacity 1000 Litres. c. RO Water storage tank should be stainless steel SS304 Grade – 2000 Litres. III. PUMP. a. Raw water pump – 1 HP (1+1) – Crompton / Grundfos or equivalent. b. Softened water booster pump – 1 HP (1+1) – Crompton / Grundfos or equivalent. c. SS RO Distribution Pump – 1 HP (1+1) – Crompton / Grundfos or equivalent.

IV. OTHERS

a. Should have 1 Micron pre-filter, 20 inch height and 4" diameter. b. Should have automatic inlet shut-off valve c. Should have Permeate and Concentrate flow meters. d. Should have Digital display of critical parameters through range of sensors. e. Should have User friendly RO controller and ensure automatic trouble free operations. f. RO controller should have automatic and manual mode. g. Should have automated pre treatment for RO. h. Should have Salt rejection around 96 – 98%. i. RO recovery range shall be 50-75% j. Permeate Rate : 1000 LPH, Concentrate Rate : 1000-1200 LPH k. Should have P.E flexible tubing used to collect permeate into RO tank. l. Should have Thermal motor protection. m. Should have Pre-filter, post filter, primary and final pressure gauges. n. Should have Flow control centre including concentrate and recycle valves. o. Should have Auto flush valve in reject line. p.

Should have Low inlet pressure switch before HPP q. 3 way Solenoid valve in feed before HPP r. Inlet shutoff solenoid valve in smaller system 250 to 1000lph. s. Glycerin filled SS pressure gauges at feed / high pressure / reject lines. t. Panel mounted Rotameter in reject / re-circulate and permeate lines. u. Ball check valve in recirculation line, Spring check valve in permeate line & Conductivity meter in permeate line & Globe / needle valves in re-circulate and reject lines. v. Should have 5 micron cartridge filters big blue in feed line. w. Should have Digital conductivity meter with programmable relay x. Should have Alarms for Low Inlet pressure & Motor starter overload. y. Frame shall be made of stainless steel – 304 grade z. Membrane housing shall be made of stainless steel 304 grade or FRP. aa. Inlet plumbing shall be Sch 80 PVC. bb. High pressure plumbing shall be CPVC. cc. Permeate / concentrate tubing shall be Polyethylen / NSF approved wet parts. dd. CPVC Piping with SS push pull connectors. Should operate on mains 220-240Vac, 50 Hz single phase power supply. ff. All wetted parts should be INERT, SS or compatible to Haemodialysis procedure. gg. Control enclosures should be NEMA 1 & Motor starters should be NEMA 4 X hh. The outlet of the RO system must conform to AAMI standards both in terms of chemical contamination and bacterial contamination. The endotoxin limit for the RO water is 1 Eu/ml and the limit of bacterial growth shall be not more than 200 CFU/ml. The Certificate / test report shall be obtained after installation and shall be produced alongwith invoice for payment. ii. Should supply Test kit for checking hardness of water / portable TDS Meter. jj. Replacement of all necessary filters including 1 micron & 5 micron, Replacement of Sand / Pebbles / Carbon, resins, UV Lamps, Antiscalent chemical, and Acetic acid cleaning whenever requires should be done free of cost during the warranty period and also in the CMC period. kk. RO Membrane shall be replaced at free of cost during the warranty period whenever required. The replacement charge for RO Membrane replacement during CMC period shall be included in the CAMC rates.

40.Baby Incubator:

GMDNname		infantincubator
GMDNcode(s)		CT1482
Definition		An electrically-powered unit designed to provide an enclosed controlledenvironmenttomaintainappropriatetemperatureandhumiditylevels mainlyforprematureinfantsandothernewbornswhocannoteffectivelyregulatet heirbodytemperature;itistypicallyonwheelsandalsodesignedfortransportinginf antseitheroutsideorwithinthehealthcarefacility. It typically consists of a clear removable plastic hood with a mattressandoperatesusingmainselectricity(AC-powered)whennotinusefor transportation.Duringtransport,itisconnectedtoanambulanceelectricaloutlet orisbattery-poweredfromabatterypack.
GENERAL		
1.USE		
1.1	**Clinicalpurpose**	designed to provide an enclosed controlled environment to maintainappropriatetemperatureandhumiditylevelsmainlyforprematureinfants andothernewbornswhocannoteffectivelyregulatetheirbodytemperature
1.2	**Used by clinical department/ward**	(Ex : Intensive care unit (ICU), radiology department, orthopaedics,emergencies,...)
1.3	**Overviewoffunctionalrequirements**	Controlof air temperature and infant skin temperature. Clear, hard cabinet for infant viewing Easy access control panel, with lighttouchoperationswitches. Facilitytoelevatebase,adjustablerange.Sel f-testfunctionsareperformed. Builtfortransportofinfantsbetweenwardsorhealthfacilities,includingby vehicleMusthaveskintemperaturedisplay
TECHNICAL		
2.TECHNICALCHARACTERISTICS		
2.1	**Technical characteristics(specifictothistypeofdevice)**	1. Visualandaudiblealarmsfor: (i) Patientandairhigh/lowtemperaturealarm. (ii) Aircirculation/probe/system/powerfailurealarm. 2. Heaterpowerindicator. 3. Airvelocity0.35m/sec. 4. Oxygeninputflowrate5to15litres/minoroxygenconcentrationrange25to70 %. 5. MaximumCO2concentrationinsideincubator0.2%. 6. Internalnoiselevel<60dB. 7. Modeofoperationshouldbeproperlydisplayed. 8. Greenindicatorlightshlouldbeprovidedforitsreadytobeinnormaluse. 9. Infantsstrapsshouldbeprovidedtorestrictthebabymovement.

		10. skin temperature probe should be small in size not more than 10mmdiameterand4mminheighttofixtheprobefirmlyontheinfant.Babycontact material should be biocompatible as per ISO 10993 standardrequirement. 11. Infantbedshouldbedrawable.Mattressfoamdensityshouldbeminimum 25kg./cm3 and infant bed mattress cover should bebiocompatiblematerial. 12. Examinationlightshouldbeprovidedforinspection. 13. Shouldhaveheaterpowerindicator. 14. Warmuptime30-40minutesandshallnotdifferbymorethan20%. 15. Shall be equipped with a thermal cut-out. It shall be so arranged that theheaterisdisconnectedandanauditoryandvisualwarningisgivenatanincubatortemperaturewhichdoesnotexceed40degC. 16. Shouldhaveelbowoperateableportsandheadaccessdoor. 17. Itshouldnottoppleoverat10deginclinedplane. 18. Patientskintemperaturerange:35degCto37.5degC.overrideupto39degC. 19. Airtemperaturerange:30degCto39degC;Temperatureresolution±0.1degC;Temperatureaccuracylessthan±0.2degC.
2.2	**Settings**	Patientskintemperaturerange:35degCto37.5degC.overrideupto39degCAirtemperaturerange:30degCto39degC.humidity:40-80%.
2.3	**User'sinterface**	Displayistobebacklitandallowseasyviewinginallambientlightlevels.

2.4	**Softwareand/orstandardofcommunication**	Inbuilt
2.5	**Others**	1. Patientleakagecurrentshouldbelessthan100µA. 2. Temperatureonthebabymattressshouldnotexceed40degCand43degforothermaterials. 3. Uniformityoftemperatureonthehorizontalmattressshallnotexceed 1.5degC andintilted mattressnot exceed2deg C. 4. Theovershoottemperatureshallnotexceed2degC. 5. Thestabilityoftemperatureduringsteadytemperatureshallnotdifferfromtheaveragetemperaturebymorethan1degC.
	3.PHYSICALCHARACTERISTICS	
3.1	**Dimensions(metric)**	Babybedshouldbeatleast60X30cmandthecanopyshouldbeatleast80X40cm.
3.2	**Weight(lbs,kg)**	notexceeding40kg.(withoutcylinders).
3.3	**Configuration**	Oxygenportwithtubing,alsomountforoxygencylinderof5litresize.Accommodatesshelves,suctionunitandI/Vpoles. Double-walledcabinetwithatleasttwohandports.Shouldhavecolapsibletrolleywithlockablecastors. Mounted on mobile base, lowest height setting of which is at least 80 cmhigh Minimum castor diameter 12cm At least two castors must be fittedwithbrakefacilityCastorsmustbemadeofconductivematerialandrotate(swivel)freelyaroundtheverticalaxisThecanopyandinfantbedshouldbecrevicefreeforeaseofcleaning.
3.4	**Noise(indBA)**	<60dBA;Audiblesoundlevelshouldbeatleast65dBAat3meterdistancefromthedevice;thealarmsoundlevelinthecompartmentshallnotexceeddBA.
3.5	**heat dissipation**	Shouldmaintainupto37degtemp.
3.6	**Mobility,portability**	Yes,oncastors.
	4.ENERGYSOURCE(Electricity,UPS,Solar,Gas, Water,CO2……)	
4.1	**Voltage(value,ACorDC,monophaseortriphase)**	220to240V,50Hz
4.2	**Batteryoperated**	Batterychargertobeintegraltomainspowersupply,andtochargebatteryduring mains power operation of unit.Electrical protection by resettableovercurrent breakers or replaceable fuses, fitted in both live and neutrallines.Batterybackupof2hoursforequipmentoperation.Thebatteryshouldbeprotectedfromovercharging.

4.3	**Tolerance (to variations,shutdowns)**	Voltagecorrector/stabilizertoallowoperationat±30%oflocalratedvoltage.
4.4	**Protection**	Internal,replaceable,rechargeablebatteryallowsoperationforatleasttwohoursin theeventofpowerfailure.
4.5	**Powerconsumption**	
4.6	**Otherenergysupplies**	Mainscabletobeatleast3mlength.
	5ACCESSORIES,SPAREPARTS,CONSUMABLES	
5.1	**Accessories (mandatory,standard,optional)**	Withwashableandremovablestrapsandbinders.
5.2	**Spareparts(mainones)**	Twoextrasetsofallsensors.
5.3	**Consumables / reagents(open,closedsystem)**	Twoextrasetsoffliters,twoextrasetoffuses(ifreplacablefusesused).
	6.ENVIRONMENTALANDDEPARTMENTALCONSIDERATONS	
6.1	**Atmosphere/Ambiance(airconditioning,humidity,dust…)**	Operatingcondition: – Capableofoperatingcontinuouslyinambienttemperatureof0to50degC andrelativehumidityof15to90%inidealcircumstances. – anambientairvelocityislessthan0.3m/s.
6.2	**User's care, Cleaning,Disinfection&Sterilityissues**	Unit layout to enable easy cleaning and sterilization of all surfaces, with nounreachable fluid traps.The case is to be cleanable with alcohol or chlorinewipes.
6.3	**Others**	
	7.STANDARDSANDSAFETY	
7.1	**Certificates(pre-market,sanitary,..);Performance andsafety standards (specific tothedevicetype);Localand/orinternational**	ShouldbeFDA/CEapprovedproductManufacturer/suppliershouldhaveISO13485certificateforqualitystandard. ElectricalsafetyconformstostandardsforelectricalsafetyIEC-60601-1. ShallmeetIEC-60601-1-2(Generalrequirementsforsafety-electromagneticcompatibility)ShallcomplywithIEC60601-2-20transportincubatorstandardrequirement.
	8.TRAININGANDINSTALLATION	
8.1	**Pre-installation requirements:nature,values,quality,tolerance**	Suppliertoperforminstallation,safetyandoperationchecksbeforehandover.
8.2	**Requirementsforsign-off**	CertificateofCalibrationandinspectionfromthefactory.
8.3	**Training of staff (medical,paramedical,technicians)**	Trainingofusersinoperationandbasicmaintenanceshallbeprovided.
	9.WARRANTYANDMAINTENANCE	
9.1	**Warranty**	3years

9.2	**Maintenancetasks**	Advancedmaintenancetasksrequiredshallbedocumented.
9.3	**Service contract clauses,includingprices**	Localclinicalstafftoaffirmcompletionofinstallation.
	10.DOCUMENTATION	
10.1	**Operating manuals, servicemanuals,othermanuals**	User,technicalandmaintenancemanualstobesuppliedinenglishlanguage. Certificateofcalibrationandinspectiontobeprovided. List to be provided of equipment and procedures required for localcalibrationandroutinemaintenanceListtobeprovidedofimportantsparesandaccessories,withtheirpartnumbersandcost.
10.2	**Otheraccompanyingdocuments**	User/Technical/MaintenancemanualstobesuppliedinEnglish
	11.NOTES	
11.1	**Otherinformation**	AnyContract(AMC/MC/add-hoc)tobedeclaredbythemanufacturer
11.2	**Recommendationsorwarnings**	Anyrecommendationsforbestuseandsupplimentarywarningforsafetyshouldbedeclared

41. Portable Ultrasound:

Technical specification For Portable Colour Doppler Ultrasound Unit

A state of art fully digital, compact portable Colour Doppler Ultrasound machine (weight <4 kg) is required with following technical features

1. Unit should be able to give very high image quality with advance technologies like compound imaging for better cardiac contrast resolution, tissue differentiation and edge detection, equivalent to high end cart based systems. Please specify the technology.
2. System should be able to support speckle reduction imaging for better tissue differentiation and edge enhancement please specify the technology.
3. The system shall have the ability to enhance tissue margins and improve contrast resolution by reducing artifacts and improving visualization of texture patterns & needle tip within the image, please specify the technology.
4. System should have both online (Read) as well as offline(Write) zoom facility
5. Imaging modes of Real time 2D, Colour Doppler, Pulsed wave Doppler, Continuous wave Doppler, Power Doppler must be available on all cardiac transducers.
6. System must have fast start up to scanning in less than 20 seconds from off condition, for use in critical and emergency situations.
7. System should non-windows based for virus free operation & faster boot up.
8. System should support transducer technologies like phased array, convex, linear, TEE etc.
9. Cine memory on all modes.
10. The system shall process a dynamic range that is at least 165db. The system must display at a maximum depth of 35 cm.
11. The system must have a dedicated cardiac calculation packages with PISA, TDI calculation packages, vascular calculations package.
12. The unit must be compact, portable and lightweight, weighing less then 4 kg.
13. Unit must be sturdy, resistant to breakage & damage on fall/ hit against the wall or hard surface for out of the hospital use (Certified to be drop tested).
14. Flat LCD/ TFT monitor of at least 10 inches with flicker free image.
15. Alphanumeric soft keys keyboard with easy access scans controls, facility to sanitize the system keyboard to avoid cross contamination.

16. The system must have the ability to function by AC/DC or battery power with the same degree of functionality, the battery life (run time) shall be al least 2(Two) hours, this need to be demonstrated.
17. The system must have archive capability for storage and retrieval of images and clips.data.
18. Data Transfer facility should be available as standard , to transfer images etc. easily onto another system/computer etc.
19. The system shall support the all DICOM functionality, Storage, Print, and Work List, also ready to connect to PACS.
20. **System should posses' software for Enhanced Needle Visualization to track the needle clearly at steep angles during the procedures while maintaining striking image quality of the target structures and the surrounding anatomy with simple On/Off functionality.**
21. The equipment should be mountable on trolley & locking mechanism should be inbuilt into the trolley for safety & security of the system.
22. System should have both European CE and US FDA quality certification.
23. System should support Hockey stick probe

Any two Transducers to be supplied as standard as per the choice of customer

1. 2-5 (+/-1)MHz multi-frequency broadband curved array transducer for general purpose, abdominal, deep nerve access applications
2. 6-13 (+/-1)MHz multi-frequency, broadband linear array transducer for vascular, nerve imaging with less then 40 mm size for vascular access, small parts, vascular, musculoskeletal applications. Higher frequency will be preferred.
3. 1-5(+/-1) MHzBroadband Phased Array probe for Adult /pediatric cardiac applications with less than 21mm size for Echo –1 No.
4. Mobile cart with transducer holder and space for printer
5. Triple Transducer probe Hub to be supplied with system

42. **1.5 Tesla MRI System**

Feature	Detailed Specification
General	
Technical advancement requirements	The vendor should guarantee that the system supplied is not refurbished and the MR system quoted is the latest available model in the segment. Please mention that year of launch of the quoted model.
Certification requirement	The offered model should be CE and USA FDA approved (authentic and legible certificate for the same to be annexed).
Magnet System	
Field strength	1.5T
Type of magnet	Superconducting
Material of magnet	Niobium-Titanium alloy
RF shielding	Should support RF shielding
Filed stability	< 0.1 ppm/h
Shimming system	Should be equipped with shimming system
Shimming	Should have both active and passive shimming
High order shimming	Should have at least 1 channels high order shimming or Auto Shimming or Equivalent
Length of magnet	≤150cm
Patient bore size	≥70cm
Liquid helium boil-off rate	0.0 L/year
Helium volume	≤1400L
Type of cold head	4K cold head
5 Gauss line (axial × radial)	≤4.0m × 2.5m
Gradient System	
Gradient control technique	Should have digital and real-time control techniques
Cooling type	Water cooling

Maximum gradient strength in each axis	≥40 mT/m
Maximum gradient slew rate in each axis	≥200 mT/m/ms
Minimum rise time	≤0.25 ms
Simultaneously achieve max. gradient strength and max. gradient slew rate	Yes
Duty cycle of full FOV	100%
Shielding	Should have active shielding in X/Y/Z planes
Noise reduction technology	Should have noise reduction technology
RF System	
Power of RFPA	≥15kW
Type of RFPA	Should be water cooling and digital interface
Transmit coil	Should be tuning free
Independent receive channels	≥48
Sampling resolution	100MHz
Dynamic range (1 Hz bandwidth)	≥160dB
Noise figure	< 0.5dB
Demodulation filtering	Should have fully digital quadrature demodulation and fully digital filtering techniques
Receive coil	Calculation of coil channels independently
Transmit/receive body coil	Should be equipped with transmit/receive body coil
Head and neck coil	≥20 channels with combination of two coils in single FOV
Body array coil	≥32 channels with combination of two coils
Spine coil	≥24 channels
Large flex coil	≥4 channels
Small flex coil	≥4 channels
Breast coil	≥16 channels with combination of two coils in single FOV

Knee coil	≥12 channels
Shoulder coil	≥12 channels
Wrist coil	≥12 channels
Lower extremity coil	≥24 channels
Cardiac coil	≥24 channels
Coil for infant imaging	≥24 channels
Number of coil interface	≥6
Combined imaging technology	Should have combined imaging technology for multi-body parts
Computer System	
Host	
CPU	≥3.0GHz
Memory capacity	≥32GB
Hard drive capacity	≥1000GB
Image storage (512x512)	≥600000
Monitor resolution	≥1920 x 1200
Monitor size	≥21 inch
High speed MR reconstruction	
CPU	Core number≥44, frequency≥2.0GHz
Memory capacity	≥64GB
Hard drive capacity	≥1000GB
image reconstruction speed (256x256)	≥70,000 frame/second
Maximum MR acquisition matrix	1024×1024
Maximum MR reconstruction matrix	512 x 512
Integrated operating system	The operating system can support the whole process of patient information management, patient registration, scanning, image browsing, post-processing, film printing, archive management, etc.
Interfaces	

Parallel scanning and storage	Should provide parallel scanning and storage
DICOM 3.0 interface and PACS connection	Should provide DICOM 3.0 interface and PACS connection
Network connection with PACS	Support printing, transmission, receiving, query, worklist, etc.
Spin echo (SE)	
2D/3D spin echo	Should provide 2D/3D SE
2D/3D fast spin echo	Should provide 2D/3D FSE
Tissue relaxation time measurement	Should providerelaxation time measurement technique
Variable angle SE sequence	Should provide variable angle SE sequence
Single shot fast spin echo (SSFSE)	Should provide single shot fast spine echo sequence
Gradient echo (GRE)	
Spoiled gradient echo	Should provide gradient echo with RF spoiled technology
3D fast spoiled gradient echo	Should provide 3D fast spoiled gradient echo that utilizes fast fat-saturated pulse, acquiring multiple encoding lines in k-space continuously after each fat-saturated pulse, to reduce acquisition time.
Steady state free precession	Should provide the steady state free precession sequence
Balanced steady state free procession	Should provide balanced steady state free procession to ensure steady-state by spatial, phase and frequency-encodings and finish fast imaging with high SNR
Contrast enhanced MRA sequence	Should provide sequence to conduct contrast enhanced MRA
Time of flight (TOF)	Should provide TOF sequence that enhances signal intensity relative to static tissue by using inflow blood
Phase contrast (PC)	Should provide PC sequence that utilizes phase changes of inflow blood to suppress background tissue but highlight inflow blood
Multi echo combined gradient sequence	Should provide sequence that utilizes shifts of readout gradient after each small-angle RF excitation to acquire multiple gradient echoes
Echo planar imaging (EPI)	
Single shot EPI	Should provide single shot EPI sequence

SE-EPI	Should provide SE-based EPI sequence
GRE-EPI	Should provide GRE-based EPI sequence
EPI IR	Should provide combined EPI and IR technique
Fat saturation technique	
Fat Saturation	Should provide technique that uses chemical shift differences in water/fat molecules to complete selective saturation of fat peak for excellent fat suppression
Spectral attenuated inversion recovery	Should provide technique that uses fat saturated and adiabatic pulses to suppress the maximum fat signals with automatic calculations of inverse time
Spectral excitation	Should provide technique that uses frequency and spatial selected binomial pulses, to combine multiple pulses with various flip angles in different directions
STIR	Should provide STIR technique that is insensitive to inhomogeneous magnetic field/RF filed and provides remarkable fat suppression on large FOV and off-center scanning
EPI-IR	Should provide EPI-IR technique that combines EPI and IR sequence to suppress fat signals and completes EPI acquisitions
Diffusion imaging	
ADC acquisition	Should be able to perform ADC acquisition
Isotropic acquisition	Should be able to perform isotropic acquisition
Anisotropic acquisition	Should be able to perform anisotropic acquisition
ADC measurement	Should be able to perform ADC measurement
ADC mapping	Should be able to perform ADC mapping
Angiography	
2D/3D time of flight (TOF)	Should provide TOF technique to utilize enhanced effect of inflow blood and saturation of background tissue to generate excellent blood-tissue contrast
2D/3D phase contrast (PC)	Should provide PC technique to utilize phase changes and flow velocity encoding to suppress background tissue but highlight angiographic signals
Magnetization transfer contrast	Should provide MTC technique to improve contrast of MR angiography

(MTC)	
Maximal intensity projection (MIP)	Should provide MIP technique
Multi planar reconstruction (MPR)	Should provide MPR technique
Curved planar reconstruction (CPR)	Should provide CPR technique
Artifacts reduction technology	
Flow compensation	Should provide flow compensation technique to reduce the phase error and motion artifacts
Respiratory trigger	Should provide respiratory trigger technique to reduce respiratory motion artifacts
Multi-breath hold scan	Should provide multi-breath hold technique to reduce respiratory motion artifacts
Average mode	Should provide technique to average acquired data for improving SNR and suppressing motion artifacts.
Motion artifact reduction acquisition	Should provide the motion insensitive technology to do radial k-space filling and reduce motion artifacts. Specify the technology name.
Image filtering	Should provide image filtering to improve image quality
Radial acquisition	Should provide the radial acquisition technology to reduce motion artifact caused by pulsation, breathing or swallowing
Fast acquisition technique	
Half Fourier	Should provide Partial Fourier that fills out k-space with acquired phase-encoding lines based on its conjugate-symmetric theory
Partial read out	Should provide partial read out that utilizes sequences without echo-train and reduces TE to decrease acquisition time or increase acquisition slice numbers
Rectangular FOV	Should provide rectangular FOV technique that could save scanning time
Parallel imaging	Should provide parallel imaging technique to accelerates routine clinical scanning to improve patient throughput and optimizes temporal/spatial resolution within same acquisition time
Elliptical acquisition	Should provide elliptical acquisition technique that can partial fill k-space with central information by elliptical acquisition technology

Other standard techniques	
Sequential and interleaved slice acquisition	Should provide sequential and interleaved slice acquisition method
Variable bandwidth	Should provide method that is open for users to adjust sequence bandwidth
adjustable receiving gain	Receiving gains should be adjustable for acquired signals.
Frequency offset	Scanning frequency offset can be adjusted automatically and manually
Graphical and interactive slice planning	Should provide Graphical and interactive slice planning technique
Variable-rate selective excitation	Should provide variable-rate selective excitation to optimize RF energy
Automatic coil selection	Should provide automatic coil selection technique
Comprehensive application package	
Neuro examination	Should provide dedicatedly designed sequences, protocols and workflow for neuro imaging
Body examination	Should provide dedicatedly designed sequences, protocols and workflow for body imaging
Orthopedics examination	Should provide dedicatedly designed sequences, protocols and workflow for orthopedics imaging
Oncology examination	Should provide dedicatedly designed sequences, protocols and workflow for oncology imaging
Breast examination	Should provide dedicatedly designed sequences, protocols and workflow for breast imaging
Vessel examination	Should provide dedicatedly designed sequences, protocols and workflow for vessel imaging
Cardiac examination	Should provide dedicatedly designed sequences, protocols and workflow for cardiac imaging
Pediatric examination	Should provide dedicatedly designed sequences, protocols and workflow for pediatric imaging
Advanced application	
Compressed sensing or compressed sensing-based acceleration technology	Should support compressed sensing technique, and it cannot be replaced by other technologies such as parallel imaging technology.

Compressed sensing for dynamic imaging	Specify the highest temporal resolution achievable for the quoted MR system
Compressed sensing for static imaging	Should support compressed sensing technique for 2D / 3D static imaging
High speed reconstruction machine for compressed sensing	Should provide high speed reconstruction machine for compressed sensing imaging data
Susceptibility weighted imaging	Support amplitude map, phase map, and Min IP reconstruction
Susceptibility weighted imaging with blood signal suppression	Should support blood signal suppression in susceptibility weighted imaging
Susceptibility weighted imaging in abdomen	Support fast acquisition for a single layer to obtain a comparison of tissue susceptibility
Magnet resonance spectroscopy	Support single voxel and multi voxel acquisition
Diffusion tensor imaging (DTI)	Should support ≥128 directions diffusion tensor imaging
Brain perfusion	Should support brain perfusion to show high temporal resolution imaging of brain tissue
Functional MRI with BOLD technology	Should support BOLD to analyze brain function, such as motion and cognitive positioning, and data of activated brain region with respect to susceptibility changes
Fat quantification technology	Should support fat quantification technique, specify the technology name
Computed DWI technology	Should support computed DWI technology that produces computed b value DWI images
Small FOV DWI	Should support DWI in small FOV, specify the technology name
Mapping technology	Should provide sequences for tissue T1, T2. Mapping
Smart examination	Should support automatic “one-button-to-push” anatomical orientation for examination process
Head smart examination	Should support smart examination for head
Spine smart examination	Should support smart examination for spine
knee smart examination	Should support smart examination for knee
Cardiac smart examination	Should support smart examination for cardiac
Multiple protocols manipulation	Should support manipulation of multiple protocols within a single user interface
Cardiac imaging package	Should provide cardiac imaging package

Advanced image post-processing workstation	Should provide the latest version of image post-processing workstation
BOLD analysis	Should provide post-processing software for evaluation of functional MRI data
MRS analysis	Should provide post-processing software for evaluation of MRS data, including single voxel and multiple voxel data
Brain perfusion analysis	Should provide post-processing software for evaluation of MR brain perfusion data
Tractography	Should provide post-processing software for DTI and Tractography, estimation of ADC, FA, fiber tracking, fiber statistics and display of fiber tracts on anatomical images
Breast evaluation and analysis (optional)	Should provide post-processing software for evaluation of MR breast imaging data
Maps analysis	Should provide post-processing software for the calculation of T1, T2., R2. and ADC
Image fusion	Should provide post-processing software for images fusions of different MRI contrasts
Vessel analysis	Should provide post-processing software for angiography analysis, with the accurate extraction of blood vessels and fast automatic measurement
Cardiac analysis	Should provide post-processing software for cardiac function analysis
Examination environment	
Communication system	Should provide two-way intercom to communicate with patient for scan instruction and patient's anxiety elimination
MR compatible headphone	Should provide MR compatible headphone to play music or to communicate with patient
Adjustable patient comfort setting in tunnel	Should provide adjustable patient comfort setting of ventilation and in-bore lightness
Control panels	Should provide dual-side control panels with touching screen
Emergency alarm device	Should provide emergency alarm device for patient during examination
Maximum weight of patient table	≥200kg
Maximum horizontal moving speed of patient table	≥20cm/s
Length of patient table	≥260cm

Scanning range	≥200cm
Automatic table movement for multi-station scan	Should provide automatic table movement for multi-station scan
Emergency stop button	Should have emergency stop button on each side of patient table
MR compatible drip stand	Should provide MR compatible drip stand
MR compatible paper roll stand	Should provide MR compatible paper roll stand
Coil cabinet	Should provide coil cabinet for coils storage
Three independent High-end OEM make dedicated workstations with 24 Inch Medical Grade Monitor	A standalone workstation with hardware and software of the same user (OEM) interface as of main console is required with the availability with all software and applications in each of them including advanced post processing for Neuro, Cardiac etc
Camera	MR compatible OEM make camera should be provided inside the Scanning Room , to observe the patient condition while scanning .

Local Third-Party Standard Accessories
160 KVA ups for the MRI with 30 mts back up
Metal detector doors to be installed at the entrance points These detectors are recognized to be the most accurate ferromagnetic detectors for MRI on the market.
Handheld Metal Detectors
MRI compatible Fire Fighting System,
Fire Detectors with Fire Extinguishers.
Music Systems.
Closed circuit CCD camera for the entire MRI work floor.
Dry Imager with two Online Trays: 1 no of 508 DPI or more should be provided. XRAY film viewer 14'' x 17'': 3 film viewers of 14'' x 17'' size- 1no should be provided.
X RAY film viewer 14'' x 17'': 3 film viewers of 14'' x 17'' size- 1no should be provided.
MR Compatible Oxygen Cylinder.
MRI Console Table & Two Chairs for Technician and Doctors.

MR compatible stethoscope
MR compatible IV stand
MRI compatible
Medicine trolley
wheelchair
patient trolley
Suitable chiller for MRI system.
Three latest generation Computer for online reporting (16 GB Ram, 1TB hard disc, 21 inch) with UPS.
RF cabin and interior and RF interior Room and air- conditioning of the same should be provided.
RF coil storage cart.
Color laser printer (all in one, scan, copy, print)
200 DVD and 10 pen drive (32 GB)
Patient comfort kit including following and other standards.
Noise guard head set for adult, children and neonatal.
MRI compatible Dual Head Pressure Injector with 50 syringe
Earphones.

Turn Key Civil works for Installation of MRI system for of 1200 SFT should be carried by the Bidder
Turn Key offer – to include for existing MRI designated area
Total Civil Works : False ceiling, flooring and wall painting for the following room i) Magnate Room , Cabinet Room , Console Room, Radiologist Reporting Room and Dress change Room .
Electrical Works :Power panel, Electrical wiring and electrical fittings for the magnet, Cabinet, Console room and other attached area including copper earthing.
Air conditioning of the above specified area.
Warranty : Bidder should give warranty (3) three years for complete system including all accessories

&Third party items supplied along with the MRI system .

Bidder should also quote for 7 years CMC prices for the complete system including all accessories & Third party items supplied.

Note: Operator's console to have the following.

1. Emergency scan abort capability.

2. Manual over rise.

3. Audio System for communication.

4. Room Oxygen indicator.

- Should comply to Govt of Karnataka Order No. FD 455 exp-12 2020 Dated 25.08.2020.

Declaration should be submitted should be submitted in the tender .

- Should comply to CDSCO GOI .F . NO 29/Misc/03/2021-DC(28) Dated 03.11.2021.
  Documents complying CDSCO GOI .F . NO 29/Misc/03/2021- DC(28) Dated 03.11.2021 to be submitted should in the tender .

43. Bubble CPAP

TECHNICAL SPECIFICATION – BUBBLE CPAP

- Suitable for treating newborns with respiratory distress weighing 500gms to 5000gms.
- CPAP pressure with oscillations should be generated by creating resistance in water column and bubbling of exhaled gas in the water column.
- The system should be suitable for both CPAP and high flow nasal cannula therapy.

Humidifier

- It should have servo controlled heated humidifier with following features
  Temperature and flow sensor with feedback mechanism.
  Monitoring temperature of gas at chamber end and near patient end additionally temperature of airway, chamber and heater plate.
  Display for temperature of saturated gas.
  Modes: intubated and mask mode.

Alarms

- High temperature and low temperature.
- Water out alarm / POP off pressure adjustment.
- Heater adaptor faulty/ disconnect.
- Temp cum probe faulty / disconnect.
- Hardware faults.

Delive s stem

- The patient heating circuit should have integrated spiral heated coil for uniform heating.
- The delivery system should have Maximum Input Flow- 15L/min and maximum mean CPAP- 15cmH20.
- Humidification chamber should be auto feed with dual float system
- Chamber Compressible volume 260- 300 ml
- Max peak flow should be 180ltr/min.
- CPAP Bubble generator should have adjustable probe for pressure settings 3-10 cm of H20.It should have detachable overflow container to maintain constant water level. Volume for generator ~ 500ml.
- The system should have safety mechanism with pressure relief valve and ports for pressure and Fio2 monitoring. Pressure relief should be 17 cmh20 and above @8L.
- System should be compatible to wean babies to HFNC without having the need to change the circuit.
- Should be CE/FDA Approved

Interface

- Nasal prongs/ masks of silicon of at least 3 different sizes useful for babies weighing between 750-1250g, 1250-1750g, 1750-2000g, 2000-2500g. Where the resistance to flow at pressure port of nasal tubing should be 0.4 cm H20, 0.6cmH20 or 0.2cm/H20.
- Flexible nasal tubing with glider technology from block and fixing guide with sizes ranging from 50mm to 100mm where resistance to flow should be 0.49cm/H20,0.53cm/H20, 0.55cm/H20 respectively flow of 6 lit/min.
- Infant caps of following sizes: 17-22, 22-25, 25-29, 29-36cm Circumference.
- Nasal cannula of preterm and term sizes. Cannula should be kink proof and have hydrocolloid based adhesive to secure on skin and facilitate kangaroo mother care.
- Nasal masks suitable for preterm and term babies.
- Nasal masks should be interchangeable to nasal prongs.
- The mask should be soft and anatomically shaped.