ಕರ್ನಾಟಕ ಸರ್ಕಾರ
ವೈದ್ಯಕೀಯ ಶಿಕ್ಷಣ ನಿರ್ದೇಶನಾಲಯ
DIRECTORATE OF MEDICAL EDUCATION
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No. ME/TENDER/41/2021-22. **Dt. 06.01.2022**

"ನೋಟಿಸ್"

ಕೋವಿಡ್–19 ಸಂಬಂಧ ಕಲ್ಯಾಣ ಕರ್ನಾಟಕ ಅಭಿವೃದ್ಧಿ ಪ್ರದೇಶಾಭಿವೃದ್ಧಿ 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:– 07/01/2022 ರ 5.00 ಅಪರಾಹ್ನ 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 07.01.2022 5.00 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 07.01.2022 5.00 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.

ನಿರ್ದೇಶಕರು, ವೈದ್ಯಕೀಯ ಶಿಕ್ಷಣ
Directorate of Medical Education
Anand Rao Circle, Bangalore

List of required Equipments to be purchased under KKRDB

S NO.	Name of Medical Equipments
1	LMO 6 KL
2	LMO 20 KL
3	X-Ray Machine (300MA)
4	X-Ray Machine (500MA)
5	Mobile X-ray machine 100 Ma
6	Oxygen Cylinders D Type
7	Revolving stools
8	Semi Auto Analyzer.
9	Dialysis Units.
10	ICU Cot Pediatrics.
11	Intubating Flexible Laryngoscope
12	16 slice CT scan machine
13	Video Larrngoscope
14	Infrared Vien Viwer (Flex) for Neonatal & Pediatrics Patients
15	1000 LPH RO Plant for Dialysis Machine
16	Baby Incubator

ನಿರ್ದೇಶಕರು, ವೈದ್ಯಕೀಯ ಶಿಕ್ಷಣ,
Directorate of Medical Education
Anand Rao Circle, Bangalore

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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 Galvaniseddiamondmeshllofgauge50x50tobeused. o Providemechanicalstopperstothegatesuchthatgatecannotbeopenedinward

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

• Fencing o Fencing to be fabricated. o Fencingcomprisesof2"diameterpipeoflength2meters. o Thebottom500mmpipeportionstobeplacedinpcc. o Thesehavetobepaced2000mmtypicalposition. o Themeshtobeusedistobeof50X50Gl,9mmgauge. o Allpolepipestobepaintedwithblackpaint.Meshtobepaintedwithwhitepaint. o Spacetakenforinstallationshouldbeasperregulationofl ndianexplosivecontroller 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 Galvaniseddiamondmeshllofgauge50x50tobeused. o Providemechanicalstopperstothegatesuchthatgatecannotbeopenedinward

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

• Fencing o Fencingtobefabricated. o Fencingcomprisesof2"diameterpipeoflength2meters. o Thebottom500mmpipeportionstobeplacedinpcc. o Thesehavetobepaced2000mmtypicalposition. o Themeshtobeusedistobeof50X50GI,9mmgauge. o Allpolepipestobepaintedwithblackpaint.Meshtobepaintedwithwhitepaint. o Spacetakenforinstallationshouldbeasperregulationoflndianexplosivecontroller 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 WatertapalongwithlOmetersplastictubeisrequired. 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.

03. X-Ray Machine (300MA)

Name		300 mA Hf X-ray machine
		generAl
1. uSe		
1.1	**Clinical purpose**	Radiography of the bones and fractures and other arthropathies. X-Ray Chest for the supportive diagnosis of the Pulmonary Tuberculosis X-Ray Pelvis (KUB) for renal disorders and stones. Sinusitis, Fractures of the Skull Cardiac diseases and cardiac enlargement Silicosis and other respiratory conditions, like Pleual effusion, hydrothorax, Pneumothorax Peritonitis by X-Ray abdomen.
1.2	**used by clinical department/ ward**	
		teCHniCAl
2. teCHniCAl CHArACteriStiCS		

2.1	**technical characteristics (specific to this type of device)**	High Frequency X-Ray machine suitable for general Radiography. **X-ray generator** • High Frequency X-Ray generator having Frequency of 40 KHz more suitable for Radiography should be provided. • Power output of generator should be 25 KW or more. • Radiography KV range should be 40 to 110 KV or more. • mA range (Rad.): 300mA or more • Exposure time (Rad.): 1 ms to 2 sec. with maximum numbers of steps. **Control:** • A very compact, Soft Touch Control Panel having following functions & indications should be provided. The panel can be supplied in floor or wall mount with Spill Proof design Following features should be available on the control panel. • Machine ON/OFF switch • Digital Display of KV& mAs.• KV & mAs increase and decrease switches. • Tube focal spot selection switch.• Ready and x-ray on switch ith indicators. • Bucky Selection switch. • Self diagnostic Programme with Indicators for Earth fault error, KV error, filament error & Tube's Thermal Overload. **X-ray tube** • One No Dual focus Rotating Anode BEL/Toshiba/Imported X-ray tube thermally protected having focal spot: • 1mm or less small Focus, 2mm or less large Focus. • Anode heat storage capacity of tube should be more than 140 KHU. • One no manual collimator with aluminum filter & for adjustment of exposure area. Column Stand: • It should have floor to ceiling stand with vertical counter balanced travel. • It should have 360 deg. Rotation. • It should be provided one vertical bucky stand with machine. • Table. • Five position manual tilt table having buky grid ration of 8:1 with 85 lines per inches should be provided. • 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**	Heat Dissipation: Should maintain nominal Temp and the heat should be disbursed through an cooling mechanism
3.6	**mobility, portability**	Certified Room Installation
4. energy SourCe (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)**	I. Machine should be supplied with following transducers: II. 2 No. BARC Approved whole body lead apporns with all attachements. One Pair of 8 meter H. V. Cable.

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 temperature of 5 to 50 deg C and relative humidity of 15 to 80% in ideal circumstances. 2) Storage condition: Capable of being stored continuously in ambient temperature of 0 to 50 deg C and relative humidity of 15 to 90%.
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/BIS approved product. 2. Manufacturer and Supplier should have ISO 13485 certification for quality standards. 3. Electrical safety conforms to the standards for electrical safety IEC 60601-General requirements(or equivalent BIS Standard)

		4. Shall meet internationally recognised for Electromagnetic Compatibility (EMI/EMC) for electromedical equipment: 61326-1. 5. Certified to be compliant with IEC 61010-1, IEC 61010-2-40 for safety. 6. AERB type approved
7.2	**local and/or international**	Manufacturer/supplier should have ISO 13485 certificate for quality standard.

8. trAining And inStAllAtion

8.1	**pre-installation requirements: nature, values, quality, tolerance**	1) Availability of three phase uniform power supply. 2) Safety and operation check before handover. 3) To be installed in a separate room. 4) Facility for dark room should be availlable.
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; 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. 6) Satisfactory certificate for any existing installation from government hospital.
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.

4. 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- Ray Chest for the supportive diagnosis of the Pulmonary Tuberculosis. X - Ray Pelvis (KUB) for renal disorders and stones. Sinusitis, Fractures of the Skull. Cardiac diseases and cardiac enlargement. Silicosis and other respiratory conditions, like Pleual effusion,, hydrothorax, Pneumothorax. Peritonitis by X-Ray abdomen.
1.2	**used by clinical department/ ward**	Radiology Department
	teCHniCAl	
		2. teCHniCAl CHArACteriStiCS
2.1	**technical characteristics (specific to this type of device)**	High frequency X-Ray machine suitable for general radiography. **X-rAy generAtor:** - High Frequency X-Ray Generator having frequency of 50KHz or more should be provided. - Power output of generator should be 50KW. - Radiographic KV Range should be 40 to 125KV. - mA Range (Rad.): 500mA or more. - Exposure time (Rad.): 1ms to 3Sec. - mAs Range (Rad.): 1 to 200mAs. **Control:** A very compact, Soft Touch Control Panel having following functions & indications should be provided. The panel can be supplied in Floor or Wall mount with Spill Proof design. Following features should be available on the control panel. • Machine ON/OFF Switch. • Digital Display of KV & mAs. • KV & mAs increase and decrease switches. • Tube focal spot selection Switch.

		• Ready and X-Ray on switch with Indicators • Bucky Selection Switch. • Self diagnostic Programme with Indicators for Earth fault error, KV error, filament error & Tube's Thermal Overload. • Anatomical Programming Radiography (i.e. APR) should have Preprogrammed parameters of human Anatomy Up to 216 programs which helps the user to select exposure parameters based on body part, examination view and size of the patient.
2.1	**technical characteristics (specific to this type of device)**	A dual action hand switch with retractable cord should be provided for Radiation Protection of Operator. There should be provision for a cordless Exposure switch also. There should be provision of auto shut off of Control if no key is pressed for 10Min. **X-ray tube:** - Two Nos. Dual focus Rotating Anode X-Ray tube thermally protected - Anode heat storage capacity of tube should be more than 140KHU. - Two Pair of 8 meter H.V. Cable. - Two Nos. Collimator with auto shut off facility should be provided. **HV tAnK:** A very compact H.V. Tank filled with high dielectric transformer oil should be provided. The H.V. Tank should contain H.V. transformer, Filament Transformers, H.V. Rectifiers & H.V. Cable receptacles. **tuBe StAnd:** - Floor to Ceiling Stand with Counter Balanced Tube Head (Rotatable ± 180 Degree), 360 Degree Rotatable; mounted on Floor Ceiling Rails for convenient movements should be provided.
2.1	**technical characteristics (specific to this type of device)**	TABLE: - Motorized table should have motorized bucky consisting of bucky grid of size 17 ¼" x 18 7/8" ratio 8:1, 85 lines/inch. Spot Film Device (semi automatic) capable of doing all routine spot filming (4 on 1, 2 on 1, 1 on 1) for use with 8" x 10", 10" x 12", 14" x 14" cassettes. Grid size 15" x 15", 6:1 ratio, 103 lines per inch. Compression movement of spot film device is motorized. The fluoroscopic parameters (fluoro KV, fluoro mA and fluoro time) should be digitally displayed on the SFD. Control of fluoro KV should be available on SFD. VERTICAL BUCKY STAND: • Vertical Bucky Stand with oscillating Grid of Ratio 8:1, 85 lines/inch is provided. • The Bucky moves up & down & is equipped with a stainless steel cassette tray. • The stand is floor-mounted type & can accommodate cassettes up to 14" X 17". The Bucky is tilted in 6 steps of 15 degree Angle each for various 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**	Heat Dissipation: Should maintain nominal Temp and the heat should be disbursed through a cooling mechanism
3.6	**mobility, portability**	Stationary Installation

4. energy SourCe (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. 2 No. BARC Approved whole body lead apporns with all attachements.

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 temperature of 5 to 50 deg C and relative humidity of 15 to 80% in ideal circumstances. 2) Storage condition: Capable of being stored continuously in ambient temperature of 0 to 50 deg C and relative humidity of 15 to 90%.
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/BIS approved product. 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(or equivalent BIS Standard) 5. Shall meet internationally recognised standard for Electromagnetic Compatibility(EMI/EMC) for electromedical equipment: 61326-1. 6. Certified to be compliant with IEC 61010-1-3,IEC 61010-1-2,IEC 61010-2-54,IEC 61010-1-6 and IEC 62304 7. AERB type approved
7.2	**local and/or international**	Manufacturer / supplier should have ISO 13485 certificate for quality 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**	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; 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

05. Portable X ray 100 ma

Specifications for 100 mA High Frequency Portable /Mobile X Ray Unit

High frequency, microprocessor controlled, High Frequency Mobile X Ray unit having following features:

Compact, lightweight, easily transportable mobile X Ray unit suitable for bedside x-rays, trauma, Intensive care units, Operation theatre and Radiology department.

The unit should be fully counterbalanced and can be positioned to suit different bed heights. The unit should have facility of vertical swing and horizontal rotation of the tube head to ensure X Ray of any anatomy even within limited space.

The unit must have an effective braking system for parking and transport.

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)

The Generator:

a. Microprocessor controlled high frequency / inverter type of high frequency 200 KHz or more for constant output. Generator with higher switching Frequency of will be preferred.
b. It should have power rating of 4 kW or more
c. It should have a digital display of mAs and kV.
d. KV range : 40 kv to 100kV or more
e. mA range: 10 mA to 100 mA or more
mAS selection: 0.1 to 250 mAS or more

X-Ray Tube and Collimator:

a. Stationary / Rotating anode having focal spot size 1.8 mm or less.
b. The X-Ray tube should be Toshiba or BEL or CEI make
c. Light Beam diaphragm / Double layer Collimator with auto cut off switch. The light intensity must be at least 160 lux at 1 mtr distance from focal spot.
d. Collimator rotation - 90° to +90° must be possible

The unit should operate on single phase power supply and should have plugin facility to any standard wall outlet with automatic adaptation to line voltage 200 to 240 volts, 15 Amp plug.

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.

06. Oxygen Cylinder D type with applicable certificates

07. **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

08. **Semi Auto Analyzer**:

- It should be micro processor controlled, programmable ,semi autoanalyser to perform routine biochemistry tests with 10 modes including
  - I-point Linear(End–point),
  - 2-point Linear(Fixed Time),
  - Rate A Linear(Kinetic),
  - I-pointNon-linear(End-Point),
  - 2-PointNon-Linear(Fixed Time),
  - Rate A non-linear(differential),
  - Absorbance,
  - (Coagulation),
  - Enzyme immunoassays(withmultistandardcurvelblank&sixstandardscalibration & memorization) etc.
  - All modes can work with monochromatic as well as bi- chromaticfilterselections.
- It should offer a minimumof200 user definble chemistry parameters
- Instrument should have keys toaccess56Chemistry directly.
- It should have a peltier controlled reading block and below 20ul flow cell with temperature
- Programmable for off 25,30&37 C
- Flow cell with peristaltic pump should be part of the main 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) with wave length selectable from340–700nm.
- It should have a large 8 lines LCD display alphanumericdisplayandbuilt-infullgraphicprinterforprintingreactioncurvesandtestresults.
- Itshouldrequireminimumreagentpertesttypicallynotmorethat500ul / test
- Itshouldhavethefacilitytodisplaytheactualtemperatureonscreen
- ThesoftwareshouldbeuserfriendlyandguidetheprogrammerstepwithspecialHELP& CALIB key.
- TheinstrumentshouldalsobecapableofdoingcoagulatingassayswithprogrammablelSI value & INR can beprinted.
- The manufacturer / supplier should have a full– fledged service for ce and installation base for the quoted equipment.
- 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 h year onwards to the eighth year.

09. Dialysis Unit:

- TheHemodialysismachineshouldmeetfollowingcriteria.
- Itshouldhavefacilityforbicarbonate/acetatedialysis.
- Itshouldhavefacilityforsingleneedle/SNclickclack.
- Itshouldhavefacilityforultrafiltrationandsodium,UF&Bi-carbprofiles.
- Itshouldhave facilityforISOisolatedUltrafiltration.
- Itshouldhave facilityfor onlineHemo DiaFiltration: Optional
- ItshouldhavecolourATLEAST10.4"LCDscreendisplayofallparameters
- Itshouldhaveintelligentmonitoringofsetalarmlimits(freefalsealarm)
- Shuoldbesuitableforadultandpediatricdialysis.
- Shouldhavetrafficlightstatusindicator.
- ShouldhaveeasysoftwareupgradingbySDcard.
- Theonlineclearancemeasurementenablescontinuesmonitoringof Kt/V, plasma sodium concentration by a non-inventive technique whichrunsautomaticallyandrequiresadditionaldisposable,laborstaffeffo rt.
- The blood volume measurement is bases on ultrasound technology topermit exact online acquisition of relative changes in blood volumes,hemotocrit.
- Thereareshouldbefacilityfor bloodpressuremonitoring.
- Dialysisfluidflow rangeshouldbe0-300-500-800ml/min.
- Thereshouldbefacilityforconcentratesupplyinall3formsi.e.consters/centr alconcentratedeliverysystemandonlinedryconcentrate.
- In heparin pump –should have processor controlled syring pump withboluscapability.
- Machineshouldbecapableof doingUFatrate0-4Lt./hour.
- Blood leakdetector withhigh sensitivityof <0.5ml blood/minat flowof800 ml/min.
- Facilityforheat,chemical disinfectionwithautoontimerfunction.
- WaterinletpressureI.5-6.0bar
- Waterinlet tem50C–300C
- Max.drainheight1m
- Shouldhavemodernmonolithicdesign,

- automatedselftest.
- Shouldhaveoptionalcapabilitytobeconnectedwithpatienttherapydatam anagement system.
- Easycleaningofallsurface.
- Arterialpressuremonitoring-300mmofHgto+280mmHg
- Venouspressuremonitor –60 mm Hgto + 520mm Hg.
- Transmembranepressuremonitoring–60 mmHgto+520mmHg.
- Arterialbloodpump10ml350ml / m
- Single needle system facility with 2-blood pumps internalpressure / pressurecontrol.
- Airbubbledetector.
- Allthehydraulicscircuitshouldhaveelectrodesformonitoringthecorrectfu nction.
- Userfriendlysettingforallparametersofindividualhospitalparamedicalsta ff.
- Bloodpressuremonitor (NIBP)in builtfor patientsBP.
- Suitable RO system including plumbing and storage tank with minimummaintainsshould be supplied if needed.

2. PowerSupply

- PowerSUPPLY230 V-10%to6%50Hz,1A.
- Shouldhaveinternalbatterypowerbackupforatleast15min.
- Suitableservostabilizerforeachmachineshouldbesupplied.

3. Certification

- BISandISICertifiedasapplicable
- CE / FDAandISOCertified

4. Warranty

- Three(3)ManufacturerWarrantyandadditionalFive(5)yearsCMCfromthefort h year onwards to the eighth year.
- Shouldhaveexcellentquality
- promt24hrs localservicefacility.

10. Pediatrics ICU Cot:

11.Intubating Flexible Laryngoscope

- **AFullHighDefinitionNBISetshouldconsistoftheFollowingitems**:
  - Rhino–Laryngo Videoscope(Chip on Tip)with early cancer detectioncapability
  - FullHD VideoImage ProcessorWith Powerful InbuiltLED LightSource
  - Equivalentto300WXenon -01
  - 26"FullHDMedical GradeMonitor -01
  - HDRecordingDevice -01
  - SurgicalTrolley - 01
- **Rhino – Laryngo Videoscope (Chip on Tip) with early cancerdetectioncapability**
  - Distalend& Insertiontube outerdiameter shouldbe 2.6mmorless
  - Fieldof view shouldbe 90 degreeor more
  - Depthof field should be 3.5 mm or less
  - Angulationrangeshouldbeapprox. Up130deg&Dn130deg
  - Workinglengthshould bearound300–400mm
  - EarlyCancerDetectioncapability
  - RemoteSwitchesShouldbeMax4nos onScope
  - ShouldbeCompatible withStroboscopicLightsource
  - ShouldbesuppliedwithcompatibleLeakageTester
  - Shouldhave closefocusforaccuracy
- **FullHDVideo ImageProcessor**:
  - Shouldbeoflatestseries/ modelandhavefollowingspecifications:
  - Should have Integrated Light Source to make system a simple boxcompactEndovision system
  - Afullhighdefinitionprocessorshouldhaveresolutionof 1920x1080pixelswith 16:9 aspect ratio.
  - Should have provision of Optical image enhancement of capillaryvessels and fine patterns in the superficial layer of mucosa for earlydetectionoflesions.
  - ShouldbeupgradableorcompatiblewithIR(ICG)visualization
  - Shouldhave5ormoreDefaultUserPresetfordifferent surgicaldisciplinesincluding IR
  - Shouldhavetouch panelforeasy accessofsystem functions&settings
  - Shouldhavebuilt-in-FibremodeforFlexible Scopes
  - Should have Laser mode for maintaining uniform Brightness duringLASERuse withFlexiblescopes

- Should have Cysto Color adjustment mode for proper visualization ofenhancevessels under special light observation
- Automatic Shutter and microprocessor controlled Automatic GainControl
- Shouldhavemodesformaintainginguniformbrightnessandbrighteningofd arkareas in Endoscopic Image
- Shouldhave modesforFalse color overlay Image& Fluorescence blackandwhite image for ICG Visualization
- ShouldhaveUSBslotforcapturing HD / SDEndoscopicStill Images
- Shouldhaveprovisionofstoring 20usersettings&50Patientdata
- Should have one output each for DVI / HD-SDI and S- Video / Compositefor HD& SD videos

- **PowerfulLED LightSource**:

- A Powerful LED(equivalent to 300W Xenon) Light Source to keepLaparoscopyfieldbrightenbyprovidingadequatewhitelightintensit y
- Automaticallyadjustslightintensitytoachieveidealillumination
- Shouldhavespecial filter light for observation of capillary vessels andfinepatternsinthe superficiallayerofmucosaforearlydetection oflesions.
- Preferably Integrated Light Source with Camera Processor to makesystemasa singlebox compact systemfor Camera&light source

- **26" Full HD Medical Grade Monitor**: Should have followingspecifications:

- 26inchfullHDmonitorwithTFT / LCDScreenwithLEDbacklit havingresolutionof 1920X1080
- 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 / C and Video.
- Should be eco-friendly, having various power saving modes, lightweightand thinbody.
- Should have preferably provision of Clone o / p for recording 2 Channelssimultaneouslyinone.

- **HDRecordingDevice**:Shouldhavefollowingspecifications:

- A high definition video recorder system with real time recording facility for videos & still images
- Shouldhaveinternalharddiskdriveof300GBormoreandshould havefacility of recording on Blu Ray Disc / DVD Disc or USB memory stick ifrequiredbyuser.
- TherecordershouldhaveFollowinginputsofHD-SDI,Compositevideo

&S-videoinputsforrecordingfrom varioussources.

- Therecordershouldhaveoneoutputeachfor HD-SDI,Compositevideo&S- video for routing the image if required
- Should also have an facility for one channel audio recording in real timewithEndoscopy image
- The recording should be MPEG 4 AVC / H.264 format with a maximumnativeresolutionof1920x1080pixelsdependingontheinputsel ected.

- AgoodQualityTrolleyshouldbesuppliedtoaccommodateallequipment's.
- AllAbovementioneditemsshouldbefrom thesamemanufacturer
-

2. PowerSupply

- StandardIndustryPowerSupply

3. Certification

- CE / FDA Certified
- BISandISOasapplicable

4. Warranty

- Three(3)ManufacturerWarrantyandadditionalFive(5)yearsCMCfromthefort h year onwards to the eighth year.

12. **16 Slice CT Scan:**

1. **Specifications**

- **Gantry**
  - Minimumscantimeforonegantryrotationofcomplete360degreeshouldbei n 0.75sec or less
  - Sizeof gantry aperture–70 cmsor more
  - ShouldhaveGantryphysicalTilt: ±30°
  - TheCTiscapable ofacquiring32slices
- **X-RayTube**
  - TheX-Raytubeshouldhave capacityofatleast3.5MHUorabove
  - TheX-Raygenerator shouldbe40 kWor above
  - Tubevoltageshouldbevariable from80TO140kV Aorbetter
  - mA– 10TO350orabove
- **Patient Table**
  - MinimumTableLoad–175kgandhigher
  - Minimumfloatingtabletopwidthshouldbeatleast40cm
- **Spiral/HelicalSection(Sub-MMacquisition&Reconstruction)**
  - Thestemshouldhavespiralcapabilityofatleast100secondsorabove
  - Minslicethickness 0.625mmor lessand maximum10MMOR more
- **Detector**
  - thedetector shouldhaveminimum 16or morerowof elements.
  - Shouldhave minimumdetector widthof 17mm ormore
- **Resolution**
  - Lowcontrastresolutionshould be2.5mm at0.25%or better
  - SpecifytheCTdoseindex
- **MainConsoleComputerSection**
  - Itshouldhavelatest flatcolourscreen19 inchesorabovein size
  - Thereshould bea consolewith onemonitor
  - Thedisplaymatrixshouldbeatleast1024x1024
  - CPUofferedshouldbelatestmultipletaskingprocessorandamenudriverplat formwith RAM size of at least 8GB
  - 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, CINE DISPLAY, HRCT LUNG,DYNAMIC SCAN)
  - Itshouldhave facilitiesto storeat least2,00,000images
- **OtherFeature**
  - Scanningcapability:Highresolutionscanpackagetobeavailableasstandard.
  - Slicethicknessshouldbe freelyselectable
  - SuitableUPSwith15minutes backuptohandletheCTcomputer

2. PowerSupply

- Suitablestabilizertobeprovided
- Suitablepowerinfrastructuretobeprovidedasrequiredattheinstallationsite.
- Allcivilandelectricalinfrastructurefrompowersourceandthelocationofinstallat ionis the responsibility of the Tenderer.

3. Accessories

- Singleheadcontrastinjectorofreputedmakewith50nos.syringesandtubing
- Allstandardaccessoriesincludingadequate LeadGlass2FT.X4ft.etc.tobeprovided
- MultisizeDICOM LasercameraforFilmprinting

4. Certification

- TheequipmentmustbeAERBapproved.AERBcertificatetobeproducedforRadi ation standard. Necessarycertificates tobe enclosed.
- EquipmentmusthaveCE,FDA(USA),orequivalent(otherthanAERB)certificate. Necessary certificates to be enclosed.

5. Warranty

- Three (3) Manufacturer Warranty and additional Seven (7) years CMC

6. General(Essential)

- Thecompanymusthavelocalservicecentre.Mustbeabletoprovidemaintenance service on all the days.
- Detailedtechnicaldatasheetforofferedmake/ modelsistobeattached
- Make&Modelofoffered itemistobementionedbybidder
- Bidder should have past experience of supplying similar machine to otherusers and should submit the Performance letter issued by the user for suchsimilarmachine
- BiddershouldvisitthesiteinconsultationwithHODanddothenecessaryworkslikeGr aniteflooring,fallceilingforCTroom&ConsoleRoom95

includinginternalelectrical&lightingfittingworks.Sidewalls houldbecovered 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

13. 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.

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

15. 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.

I. 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.

16.Baby Incubator:

GMDNname		infantincubator
GMDNcode(s)		CT1432
Definition		An electrically-powered unit designed to provide an enclosed controlledenvironmenttomaintainappropriatetemperatureandhumiditylevelsmainlyforprematureinfantsandothernewbornswhocannoteffectivelyregulatetheirbodytemperature;itistypicallyonwheelsandalsodesignedfortransportinginfantseitheroutsideorwithinthehealthcarefacility. It typically consists of a clear removable plastic hood with a mattressandoperatesusingmainselectricity(AC-powered) whennotinusefor transportation.Duringtransport,itisconnectedtoanambulanceelectricaloutletorisbattery-poweredfromabatterypack.
GENERAL		
	1.USE	
1.1	**Clinicalpurpose**	designed to provide an enclosed controlled environment to maintainappropriatetemperatureandhumiditylevelsmainlyforprematureinfantsandothernewbornswhocannoteffectivelyregulatetheirbodytemperature
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.Self-testfunctionsareperformed. Builtfortransportofinfantsbetweenwardsorhealthfacilities,including by 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. Greenindicatorlightshlouldbeprovidedforitsreadytobeinnormal use. 9. Infantsstrapsshouldbeprovidedtorestrictthebabymovement.

		10. skin temperature probe should be small in size not more than 10mmdiameterand4mminheighttofixtheprobefirmlyonthein fant.Babycontact material should be biocompatible as per ISO 10993 standardrequirement. 11. Infantbedshouldbedrawable.Mattressfoamdensitysho uldbeminimum 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 theheaterisdisconnectedandanauditoryandvisualwarningisgive natanincubatortemperaturewhichdoesnotexceed40degC. 16. Shouldhaveelbowoperateableportsandheadaccessdoor. 17. Itshouldnottoppleoverat10deginclinedplane. 18. Patientskintemperaturerange:35degCto37.5degC.overrideupto 39degC. 19. Airtemperaturerange:30degCto39degC;Temperatureresolution ±0.1degC;Temperatureaccuracylessthan±0.2degC.
2.2	**Settings**	Patientskintemperaturerange:35degCto37.5degC.overrideupto39d egCAirtemperaturerange:30degCto39degC.humidity:40-80%.
2.3	**User'sinterface**	Displayistobebacklitandallowseasyviewinginallambientlightlevels.
2.4	**Softwareand/orstandardofcommu nication**	Inbuilt
2.5	**Others**	1. Patientleakagecurrentshouldbelessthan100µ . 2. emperatureonthebabymattressshouldnotexceed40degCan d43degforothermaterials. 3. Uniformityoftemperatureonthehorizontalmattressshallnotexce ed 1.5degC andintilted mattressnot exceed2deg C. 4. Theovershoottemperatureshallnotexceed2degC. 5. Thestabilityoftemperatureduringsteadytemperatureshallno tdifferfromtheaveragetemperaturebymorethan1degC.
		3.PHYSICALCHARACTERISTICS
3.1	**Dimensions(metric)**	Babybedshouldbeatleast60X30cmandthecanopyshouldbeatle ast80X40cm.
3.2	**Weight(lbs,kg)**	notexceeding40kg.(withoutcylinders).

3.3	**Configuration**	Oxygenportwithtubing,alsomountforoxygencylinderof5litresize.Accommodatesshelves,suctionunitandI/Vpoles. Double-walledcabinetwithatleasttwohandports.Should havecolapsibletrolleywithlockablecastors. Mounted on mobile base, lowest height setting of which is at least 80 cmhigh Minimum castor diameter 12cm At least two castors must be fittedwithbrakefacilityCastorsmustbemadeofconductivematerial androtate(swivel) freelyaroundtheverticalaxisThecanopyandinfantbedshouldbecrevicefreeforeaseofcleaning.
3.4	**Noise(indBA)**	<60dBA;Audiblesoundlevelshouldbeatleast65dBAat3meterdistancefromthedevice;thealarmsoundlevelinthecompartmentshallnot exceeddBA.
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,rechargeablebatteryallowsoperationforatleast twohoursintheeventofpowerfailure.
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: – Capableofoperatingcontinuouslyinambienttemperature of0to50degCandrelativehumidityof15to90%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,..);Performanceandsafety standards (specific tothedevicetype);Localand/orinternational**	ShouldbeFDA/CEapprovedproductManufacturer/suppliershouldhaveISO13485certificateforqualitystandard. Electricalsafetyconformstostandardsforelectricalsafety IEC-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