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(1) TONOMETER - NON CONTACT

1. Air Puff non contact tonometer to measure IOP without actual eye contact.
2. Should have facility for Digital display of IOP.
3. The minimum measuring range should be from 10 to 50mmHg or better.
4. Non invasive automatically activated as the cornea is in focus.
5. User friendly interface.
6. There should be soft air pulse.
7. Display should be LCD.
8. Corneal thickness compensation for precise tonometry with corneal response technology or inbuilt pachymetry.
9. Safety stopper should be there to avoid contact of nozzle with the eye.
10. Fully Automatic tracking system to align focus and puff for both the eyes.
11. Adjustable chin rest.
12. Should be USFDA/ European CE (Certified or approved or self declaration)

Accessories:

1. It should have motorized stand and surgeon's chair.
2. CVT of adequate rating.
3. Chin rest paper 10 packs.
4. Printer paper 10 rolls.
5. Dust Cover.

Note: These Specifications are general in nature not tailor made.

(2) Operating Microscope EYE

Apochromatic optics :	Full
5 steps magnification:	4X-20X or better
Focusing Range :	40-50 mm
Binocular tube :	45 degree inclined
Eye pieces :	12.5X
Objective lens :	200 mm.apochromatic
Total magnification :	5x to 20x or better
Illumination :	Halogen illumination, Fibre light guide, 12 V 100 W as light source. Facility to changeover in case of failure of lamp.

Integrated retina protection Filter,

Swing in daylight filter

Foot switch for focusing

Stand Arm Section

Type : Floor stand type

Arm extension : 1045 mm

Balance arm vertical stroke:400 mm

Should be USFDA/ European CE (Certified or approved or self declaration)

Spares : Dust Cover-
: CVT off adequate rating
: Serviceable and detachable caps for knobs (5 sets)
: Extra fuses 10No.
: Extra bulb 6 No.

Note: These Specifications are general in nature not tailor made.

(3)Surgical operating Microscope for ENT with Standard Accessories.

1. Magnification : Zoom 1:6
2. Working Distance : 200 mm to 400 mm or better
3. Focusing : Should have motorized focusing.
4. Optics : Should have apochromatic optics.
5. Eyepieces : Wide-field eyepiece for spectacle wearers 10 X/12.5X and diopter setting -8 D to + 5 D with adjustable eye cup.
6. Main Illumination : 150 W Halogen illumination/Xenon lamp with similar backup.
7. Illumination : Illumination field diameter with white light distribution.
8. Field diameter : Automatically adjusted to the field of vision and manually adjustable.
9. Binocular tube : 160° or better inclinable binocular eyepiece head.
10. The floor stand should be H type and have Mechanical brakes.
11. Hand grip : The handgrips should have the buttons for the control of motorized zoom, focus and illumination.
12. Video Camera : The microscope should have built in /integrated HD video camera.
13. LCD Monitor : The 29 inch LCD monitor should be supplied with the system.
14. The CVT of suitable ratings should be supplied along with the system.
15. All cables should be integrated in the stand for protection.

Note: These Specifications are general in nature not tailor made

(4) Technical Specification of Digital Radiography (DR)

High powered X-ray unit with two digital flat panels for various radiographic examinations, for the Department of Radio diagnosis.

The Unit should be completely integrated system (integrated x-ray generator and image acquisition control console). The X-ray generator and the X-ray Tube should be manufactured by same company. Unit should have the following specifications.

Sr. No.	Specification as per Tender
1	Generator
	<ul style="list-style-type: none"> • 1000 mA unit with microprocessor controlled high frequency X-ray generator with power output of 80 KW or more
	<ul style="list-style-type: none"> • The exposure range should be 40- 150KV
	<ul style="list-style-type: none"> • Specify exposure time range
	<ul style="list-style-type: none"> • The minimum exposure time should be 1ms or less.
	<ul style="list-style-type: none"> • There should be provision for automatic exposure control to cover whole body.
2	X Ray Tube
	<ul style="list-style-type: none"> • Ceiling suspended
	<ul style="list-style-type: none"> • Dual focus tube
	<ul style="list-style-type: none"> • Small focal spot should be 0.6mm or less and large focal spot should be 1.25mm or less
	<ul style="list-style-type: none"> • Tube loading should be at least 30 KW for small and at least 80 KW for large focus.
	<ul style="list-style-type: none"> • Motorized movement of ceiling suspended tube.
	<ul style="list-style-type: none"> • Mention range of tube movements in vertical, longitudinal and horizontal planes.
	<ul style="list-style-type: none"> • Electromagnetic locks with collision protection sensor.
	<ul style="list-style-type: none"> • Field size programming should be possible.
	<ul style="list-style-type: none"> • Anode heat storage capacity should be 300 KHU or more.
	<ul style="list-style-type: none"> • X ray tube and collimator section should have automated image shuttering and cropping facility in collimator.
	<ul style="list-style-type: none"> • All the movements of the overhead tube suspension (3D column stand) should be fully motorized. It should be possible to override it manually.
	<ul style="list-style-type: none"> • There should be auto positioning of the overhead tube suspension against both the vertical detector and the table detector. This

	should be possible through selected protocol from both the console as well as from wall stand control.
	<ul style="list-style-type: none"> Overhead tube suspension (3D column stand) should also have a screen with display of important parameters and controls.
	<ul style="list-style-type: none"> Horizontal and vertical tube rotation should be +/- 180°
	<ul style="list-style-type: none"> Should have motorized copper filter to avoid unwanted radiation.
3	Horizontal Bucky Table
	<ul style="list-style-type: none"> Motor driven, adjustable height floating table top of carbon fibre or equivalent material.
	<ul style="list-style-type: none"> Compact Bucky table with digital flat panel detector.
	<ul style="list-style-type: none"> Mention range of vertical, horizontal and longitudinal movements of the table.
	<ul style="list-style-type: none"> Foot switches for adjusting height, longitudinal/side to side movements, locking.
	<ul style="list-style-type: none"> Detector movement should be synchronized with movement of the X-Ray tube.
	<ul style="list-style-type: none"> Removable grid for SID of 100cms for horizontal table applications.
	<ul style="list-style-type: none"> Automatic exposure control should be available to cover whole body.
4	Vertical Bucky (Wall stand)
	<ul style="list-style-type: none"> Motorized, counter balanced adjustable height vertical Bucky with digital flat panel detector.
	<ul style="list-style-type: none"> Should be possible to tilt the vertical detector system (-150 to + 900) and should travel from 1' to 6 ½' above floor level.
	<ul style="list-style-type: none"> Detector movement should be synchronized with movements of the x- Ray tube.
	<ul style="list-style-type: none"> Removable grid for SID of 180cms for vertical Bucky applications.
	<ul style="list-style-type: none"> Automatic exposure control should be available.
5	Detector System
	<ul style="list-style-type: none"> Detector material should be made of amorphous silicon with CSI Scintillator.
	<ul style="list-style-type: none"> Two digital flat panel detector systems with detector integrated into the Bucky table as well as wall stand.
	<ul style="list-style-type: none"> At least one detector should be 40cms x 40cms or more.
	<ul style="list-style-type: none"> Image matrix size 2k x 2k pixels or more.

	<ul style="list-style-type: none"> • Pixels size should be 200um or less.
	<ul style="list-style-type: none"> • Image resolution should be 2.5 lps/mm or more.
	<ul style="list-style-type: none"> • DQE of detector system should be 65% or more at 0 lps.
	<ul style="list-style-type: none"> • Tube assembly movement to be automatically synchronized with both the horizontal and vertical detectors movement.
	<ul style="list-style-type: none"> • Should allow centered/de-centered collimation.
	<ul style="list-style-type: none"> • Specify refresh cycle (time for second exposure).
	<p>The detector which will be supplied along with the system must be from the principal vendor or the principal company must be having joint venture for manufacturing of the detector.</p>
6	Operating (acquisition) station
	<ul style="list-style-type: none"> • Should have a high resolution LED monitor of minimum 21" size or more (fully flat) with minimum 1024 x 1024 or more display matrix and antireflective front screen.
	<ul style="list-style-type: none"> • Image acquisition matrix should be minimum of 2k x 2k.
	<ul style="list-style-type: none"> • System should have auto protocol select.
	<ul style="list-style-type: none"> • Operating control should have facility for patient identity entry, viewing and processing image, documentation.
	<ul style="list-style-type: none"> • Preview image should be ready in 5 sec or less.
	<ul style="list-style-type: none"> • System should have auto protocol select.
7	Image viewing , Post- Processing and reporting station and Documentation
	<ul style="list-style-type: none"> • Additional work station with connectivity in radiologist room
	<ul style="list-style-type: none"> • Should have independent monitor of high resolution LED monitor of 21" or more.
	<ul style="list-style-type: none"> • Image display matrix should be of high resolution, minimum of 1.5 K x 1.5 K
	<ul style="list-style-type: none"> • Post-acquisition image processing, viewing, reprocessing, hard copy documentation and onward transmission should be possible.
	<ul style="list-style-type: none"> • Image processing function like rotate, mirroring, zoom, move, and windowing filter should be possible.
	<ul style="list-style-type: none"> • An additional workstation should be provided based on latest high speed processor
	<ul style="list-style-type: none"> • There should be facility for measurements.
	<ul style="list-style-type: none"> • Should be connected to a dry chemistry Camera of 500 DPI or more for documentation. The camera should accept all size films

	upto 14" x 17" size (three film size trays should be active)
	<ul style="list-style-type: none"> • Multi format printing should be possible with user selectable options.
	<ul style="list-style-type: none"> • It should be possible to create alphabetical, date wise and exam based, work list.
	<ul style="list-style-type: none"> • System should have hardware for acquisition and software for stitching without seams for whole spine and whole lower limb.
	<ul style="list-style-type: none"> • Work list should be auto refreshing
	<ul style="list-style-type: none"> • System should have facility of Auto image stitching/image pasting for complete spinal column, extra-long leg (sample film to be enclosed).
8	Image Storage and Transmission
	<ul style="list-style-type: none"> • Hard disc storage capacity should be of 1Tb or more .
	<ul style="list-style-type: none"> • The systems should support storage of images on compact discs and DVD.
	<ul style="list-style-type: none"> • The system should be DICOM 3.0 (or higher version) ready (likes send, receive, print, record on CD/DVD, acknowledge etc.) for connectivity to any network, computer/PC etc. in DICOM format.
	<ul style="list-style-type: none"> • Easy integration and networking should be possible with any other existing/future networking including other modalities, HIS and RIS and PACS. Vendor will connect it to existing network without extra cost.
9	Accessories
	<ul style="list-style-type: none"> • 150 KVA or more online suitable UPS for the computer including peripherals supplied along with the equipment with 30 minute backup.
	<ul style="list-style-type: none"> • Voltage stabilizer for the complete system to provided.
	<ul style="list-style-type: none"> • Vendor to install mike system for calling patients who are waiting outside.
	<ul style="list-style-type: none"> • Abdominal compression device which can be attached to table railings for IVP studies.
	<ul style="list-style-type: none"> • Lead glass 100 x 150 cm to be provided as per AERB recommendations.
	<ul style="list-style-type: none"> • Two light weight aprons Kiran Make as per AERB Requirement.
	<ul style="list-style-type: none"> • One no latest version of desktop and one no laptop computers of reputed company along with one no. laser printer to be provided
	<ul style="list-style-type: none"> • Six no computer chairs, two no computer tables, one table for console and additional workstation each along with patient preparation couch to be provided

	<ul style="list-style-type: none"> Two no of good quality LED view boxes of 3 films to be provided
10	Upgrading requirement
	<ul style="list-style-type: none"> A free comprehensive software upgrade (compatible with the existing platform) guarantee for 10 years after installation.
11	Warranty/CMC :
	<p>The firm will give warranty for a period of 2 years from the date of satisfactory installation for the whole system including (Including AC and ups with batteries).</p> <p>Firm should quote rates of CMC for at least 8 years after the warranty period expire. The CMC should include all the Parts and items (Including AC and ups with batteries) supplied by the firm.</p> <p>The firm will attend four quarterly preventive maintenance calls per years, unlimited breakdown calls or emergency call can be made to them according to the requirements. Forenoon calls will be attended on the same day; however afternoon will be attended next day except for the weekends. CMC will be renewed every year and will be treated in continuation unless cancel in writing.</p>
12	CIVIL WORKS
	<p>Wall tiles of reputed make upto door height in machine room, console room and reporting room and anti skid vitrified flooring tiles in above rooms along with false ceiling with acoustic lining and concealed lighting and suitable air-conditioning.</p>

Valid type approval from AERB / BARC should be attached along with the documents
The firm will have to demonstrate the quoted model to the technical committee at its own expense.
List of installations at reputed institutes in the region should be given
User certificates from reputed institutes in the region should be provided.

Note: These Specifications are general in nature not tailor made

(5) Technical Specification for CELL COUNTER (3 Parts Differential)

1. Automated Hematology Analyzer with 3 part differential count.
2. 18 parameters or more.
3. Counting modes: CBC only
4. 2 Operating mode: Whole Blood and Prediluted Mode.
5. 3 histograms.
6. Throughput: 50-60 Samples per hour.
7. Sample Storing: 1000 or more samples results (Including histograms) can be stored.
8. Parameters : Shall include 3 parts CBC.
9. Principles: Electrical Impedance for counting as per reference method.
10. Performance Parameter 3 Parts DLC with 3 histograms.
11. Sample Volume for Pre - Diluted : 20µl, Whole Blood : 10µl or more
12. Aperature Diameter : 80µm
13. Carry Over : HGB<1.5%, Quality Control.
14. Menu: Count, Review, Quality Control, Set up, Service, Calibration.
15. Display: Color LCD Display.
16. Resolution : 640 X 480
17. Input / Output Rs. 232 X 2, Parallel printer (Optional), Bar Code Scanner (Optional), Keyboard Interface.
18. Printout: Thermal and laser Printer.
19. Operating Environment: Temperature 15°C ~ 30°C, Humidity: 30% ~ 85%.
20. Power Requirement: AC 100V ~ 240V, 50HZ/60HZ.
21. CE / USFDA Approved.
22. Demonstration Required.
23. Rates of Cost/Test shall be freezed for a period of 7 years.
24. UPS Should be provided as per electrical rating of the Equipment.

Note: These Specifications are general in nature not tailor made

(6) Technical Specifications of Dental X-Ray Machine

1. Dental X-ray Machine should be high frequency DC with current up to 8mA and KVP ranging from 60-70 KVP.
2. Tube head should be lead coated.
3. Scissor pantographic arm with both options of wall mounting/floor mounting.
4. Pantographic arm should be flexible with smooth right and left, vertical and horizontal movements.
5. Line voltage should be minimum 220-230 V, 50-60 Hz.
6. Arm reach should be minimum 170 cm/67 inches (with a tolerance of +/- 1 %.)
7. Dental X-ray unit should be equipped with a timer i.e. inbuilt or separate and can be fixed on the wall or on the wheel mount.
8. Timer setting should have child/adult/sensor/manual programme.
9. Focal spot should be in between 0.4-0.8mm.
10. The supplied X-Ray unit may have provision of wired / wireless exposure switch and may be capable of doing exposure in manual.
11. Timer should range from 0.1-3.2 seconds.
12. Angular indicating system for positioning in various radiographic techniques.
13. The supplied unit should be ISO: 9000 (in case of Manufacturer) and European CE Marked / USFDA/BIS. The manufacturer shall provide relevant documents in support thereof.
14. Suppliers shall provide the AERB type approval of the quoted model.
15. The dental X-ray machines should be provided with lead apron.
 - i) Should have AERB / BARC approval.
 - ii) Should be hook and loop type.
16. Provided with 3KV voltage stabilizer.
17. QA Certificate should be provided.
18. Developer Box (Manual) should be supplied as along with the equipment.
 - a) Non corrosive tanks for solution (3 Nos.)
 - b) Hanger of 10 Clips (1 Nos.)
 - c) Loose Clips (5 Nos.)

Note: These Specifications are general in nature not tailor made

(7) Technical Specification of MULTI PARAMETER MONITOR

1. Monitor should be light weight, portable and rechargeable battery operated.
2. Should have at least 10" or more TFT/LCD display diagonal for bright and wide angle visibility of wave forms with bright display of various measures value like SP02, NIBP, Pulse, Temperature etc.
3. Ability to monitor 3/5 leads ECG, SP02, NIBP, Temperature and respiration.
4. Battery life of more than two hours.
5. Comprehensive Audio- Visual alarms for all parameters.
6. Tolerance of power voltage from 110-240 volts.
7. Should have 24 trending.
8. Should have S-T detection and Arrhythmia analysis facility.
9. Should be FDA &/ or CE approved for the quoted model.
10. Warranty for 2 years and 5 years for CMC after warranty. The prices for CMC shall be quoted at the time of tendering process. The prices of CMC shall be considered for the evaluation process.
11. Demo of the product will have to provide.

Note: These Specifications are general in nature not tailor made

(8) Technical Specification of Resuscitation Trolley cum Crash Cart

1. Frame work made up of stainless steel tube.
2. Good quality rust free stainless steel should be used.
3. Approx. size: L 900 to 960mm, W 450 to 500 mm, H 1500 to 1550 mm.
4. Two light weight polystyrene boxes each with three Drawers.
5. Provision to hold oxygen cylinder, cardiac massage board and S.S IV rod.
6. Should have at least 6 colour handout bins to keep important supplies at eye level.
7. At least two S.S. Shelves to carry monitors, ECG Machines etc.
8. Should have suitable size castors of noise free with flexible transportation with easy operation brakes.
9. Company should have ISO 13485:2003.
S.S Material asked for in any specification should be of S.S 304 Grade.

Note: These Specifications are general in nature not tailor made

(9) Specifications of Syringe pump

- 1 Syringe pump should accommodate 10, 20 and 50, 60ml syringes.
- 2 There should be automatic detection of syringe size.
- 3 Flow rate should be adjustable from 0.1 ml/hr to 900 ml/hr or more.
- 4 Flow rate should be adjustable in increments of 0.1 ml/hr.
- 5 Flow rate adjustment should not involve stopping of the existing infusion rate.
- 6 The accuracy of flow rate should be +/- 2%.
- 7 The flow rate should be displayed in ml/hr. Automatic calculation delivery rate by presetting of volume & time.
- 8 It should have facility of automatic K.V.O(Keep Vein Open)
- 9 It should be able to deliver bolus dose.
- 10 Pump should have commonly used drugs library of at least 15 names.
- 11 Should work on both a 220 volt AC, 50 Hz source and an in-built rechargeable battery.
- 12 The battery life should be of minimum 6 hrs when fully charged.
- 13 The following audio and visual alarms should be incorporated:
 - a AC power supply failure
 - b Occlusion pre & post both
 - c Near empty syringe pre & post both
 - d Low battery pre & post both
- 14 The occlusion pressure should be displayed in digital manner and it should be adjustable.
- 15 There should be a method of automatic bolus volume reduction after occlusion release.
- 16 The pump should be waterproof, so that any spillage of any fluid should not enter into the pump and short circuit it.
- 17 The syringe pumps should be capable of standalone functioning as well as being fixed on a frame/platform/stand.
- 18 Frame/platform/stand each capable of holding at least 3 syringe pumps and operable with single power cable should be supplied along with the pumps.

- 19 The pump should be CE certified or US-FDA approved.
- 20 The equipment should be supplied with a comprehensive warranty for a minimum of 2 years after successful installation.
- 21 The supplier must quote the CMC for 5 years beyond the warranty period.
The equipment must be repaired within 48 hours of notification of its malfunction/non-function. In case of failure to repair, there will be a penalty of 0.5% of the equipment cost per day for non functional period.
- 22
- 23 Demonstration to the committee is required for technical bid satisfaction/approval.

Standards, Safety and Training:

- 1 complete unit & CVT/UPS if any supplied should be FDA, CE, UL or BIS approved product.
- 2 The device should be ISO 13485 certified manufacture (certificate to be submitted)
- 3 It should be CE /FDA approved. (Certificate to be submitted)
- 4 It should meet IEC 60601-1-2 & requirement of safety for EMC compatibility with 89/366/EEC (certificate to be submitted)
- 5 companies should have local service facility. The service provider should have the necessary equipments recommended by the manufacturer to carry out preventive maintenance test as per guidelines provider in the service/maintenance manual.
- 6 Warranty for 2 years and 3-10 years for AMC/CMC after warranty. The prices for AMC & CMC shall be quoted at the time of tendering process. The Prices of AMC & CMC shall be considered for the evaluation process.
- 7 The prices for the calibration tools required for calibration & spares must be submitted at the time of tender.

Documentation

- 1 User/Technical/maintenance manuals to be supplied in English.
- 2 List of installation base with their contact nos.
- 2 Certificate of calibration and inspection from Parent company/OEM supplier.

- 3 List of equipments available for providing calibration and routine preventive Maintenance Support. As per OEM documentation in service/technical manual.
- 4 List of important spare parts and accessories with their part number and costing
- 5 Log book with instructions for daily, weekly. Monthly and quarterly maintenance checklist. The job description of the hospital technician and company service engineer should be clearly spelt out.

Note: These Specifications are general in nature not tailor made

(10) Specification of Oxygen Concentrator

1. The unit comprises of ABS moulded cabinet with superstructure base & compressor plate. It should have moulded handgrip for easy transportation and free moveable roller base for max. Maneuverability.
Supply with reusable minimum 5 meter long medical grade oxygen tubing.
2. It must have circuit breaker with reset function.
3. It should have variable flow rate of 0-5 lpm with pediatric flow meter of graduation/calibration of 0.125 l/min.
4. The output pressure from 10psi or more, or based on atmospheric pressure of 14.7 psi.
5. The system should deliver with a purity level more than 90%.
6. The unit must give alarm if purity level decreases or below 85%.
7. The unit comprises of visual & audible alarm for hi/low oxygen level, power failure, pressure drop.
8. The following filters must be supplied along with the unit.
 - Gross particle cabinet filter
 - Compressor filter
 - Bacterial filterThe prices of all filters must be quoted along with the unit. The prices of filter will be freezed for 4 years.
9. Electrical Requirement:
The unit shall be able to operate at 220-240v, 50Hz.
10. Standard Accesories:
 - Humidifier: 02 nos.
 - Nasal canula with external tubing: 01 nos.
 - Spare bacterial filter: 01 nos.

Note: These Specifications are general in nature not tailor made

(11) Specification of Hydraulic OT Table

1. The table should be multipurpose can used for all kind of specialties like Ortho, General surgery, Gynae, Uro & Laparoscopic surgery
2. The table must have divided foot section with an option of interchangeable leg & head section leg section must be splitted.
3. The material of the base & body of the table should be of high quality SS for hygiene & durability.
4. The table should be movable on high quality castors when it is not locked. It must have base locking mechanism for rigid locking.
5. Base and supporting column should be eccentrically placed towards head section.
6. Table can take load of min. 140 kg.
7. The table should have advanced hydraulic system.
8. The Table should have inbuilt Kidney bridge.
9. It should have radiolucent top and mattress, suitable for fluoroscopy and capable of moving C-arm under and around table throughout its length.
10. Table top should allow the use of x-ray cassette all over its length.
11. The table should be manually operated.

Measurement dimensions acceptable with +/-10% variation

- Length Width Height 1950mm 500mm 730-1040mm
- Back section/Head +/-30 deg to +/-45 deg.
- Trendelberg/reverse trendelberg = 25 deg.
- Leg section = - 90 deg to 0 deg, detachable or more.
- Lateral tilt = +/- 15 deg.

STANDARD ACCESSORIES:

- Anesthesia screen with clamps
- Padded arm rest with straps-pair with clamps
- Side supports pair with clamps
- Shoulder supports pair with clamps
- Infusion rod with clamp
- Patient straps
- SS drain pan with tube for urology application
- Universal lithotomy holders.
- Should be ISO: 9001 & ISO: 13485 Certified.

Note: These Specifications are general in nature not tailor made

(12) Specifications of C-Arm Compatible OT Table

1. OT Table with four section table top with detachable foot section with complete Stainless steel construction (Stainless Steel).
2. Radiolucent perineal post.
3. Radiolucent table top and mattress to enable whole body x-ray and fluoroscopy.
4. Should have adjustment for all table positions like high, low, backrest, lateral tilt, trendelenberg and anti trendelenber.
5. Should have rectangular eccentric table top to enable max C-arm movement.
6. Should have side rails with provision for attachment of various side supports. Side Rails should be sturdy to withstand heavy loads e.g. in obese patients.
7. Should have full lift capability for patients up to 160 KG
8. Heavy and sturdy T shaped base allowing fam. foot room for operating team.
9. Mobile on smooth running castors and floor locking system for stability.
10. Certification: Should be ISO 9001:2008/ ISO 13485: 2003 and CE Certified.
11. Technical Specifications:
 - i. Length with head rest: 200-220 cm
 - ii. Width with side rails: 45-55 cm
 - iii. Height (min.): 75-85 cm
 - iv. Height (max.): 105-115cm
 - v. Trendelenberg: 15-25 degree
 - vi. Reverse Trendelenberg: 15-25 degree
 - vii. Lateral tilt (either side): 10-20 degree
 - viii. Back plate up: 50-70 degree
 - Ix. Back plate down: 50-70 degree
12. Standard Accessories: -
 - i. Anaesthesia Frame: 1 No.
 - ii. Shoulder Support with pad : 1 pair
 - iii. Lateral support with pad : 2 pair
 - iv. Arm board with radiolucent top: 2 nos.

v. Knee crutches goepel type: 1 pair

vi. Wrist strap: 1 pair

vii. Body restraint strap: 2 nos.

viii. Water proof rubber mattress: 1 set (anti static)

13. Orthopedic Accessories: -

1. Orthopedic traction extension device for orthopaedic surgery with traction bars made up of chrome nickel steel with traction bars installed so as to be pivotable at two Joints each making possible trouble free intra operative use of image intensifier in AP and lateral planes.

2. Steinmann pin holder for traction should be U Shaped the width of which should be 1.5 cm or more and should have joint in the middle of the U portion for easy Insertion.

3. The orthopaedic accessories should provide for following operations:

a. Femoral nailing in both supine and lateral positions.

b. Femoral neck – intra capsular, extra capsular fracture fixation – there should be facility to place the operating hip eccentrically, the perineal post should be fixable eccentrically.

c. The table should have necessary accessories to do the tibial interlock nailing at extreme downward angle of 70 degree or more.

d. Humerus interlocks nailing.

e. Forearm surgery on radiolucent side table – C arm compatible.

f. Knee support for arthroscopy.

Note: These Specifications are general in nature not tailor made

(13) Technical Specification of Double Dome Operation Theatre Light Ceiling Mounted With LED Technology.

1. Should have Multi Lens Matrix for a shadow free and homogeneous white light beam.
2. Should be flat, sealed light head specially designed for ceiling laminar flow O.T. Rooms.
3. Should have light beam given IR free illuminations avoiding tissue desiccation.
4. All arms are freely rotatable (without stops) at all vertical joints.
5. Dome should be made of Aluminum /SS/ Plastic.
6. Should have one touch control for intensity and spot size over the field.
7. Should have dome diameter between 500-800 mm.
8. Should have colour temperature 3800-500 K.
9. High illuminating intensity is 160000 lux per dome or more at 1m distance.
10. Variable colour temperature control by touch button.
11. Should have light intensity control variable between 70000 to 160000 lux or more.
12. Should have ideal dual control and one on the light unit and one as remote control.
13. Product has ISO 9001-2008, ISO 13485 certified.
14. Should have colour rendering index: RA95 to RA97.
15. Life of LED should be more than 40000 hours.
16. There should be a sterilizable knob at the lower side of the light head for the adjustment switching ON/OFF, light intensity control (10-100%) should be on the light head and or control panel on the wall.
17. Power Grid Quality, adequately earth grounded 230 V+15%, 50 Hz +3%, 6v3 prong outlet.
18. Operating temp up to 40 Degree C.
19. Measurement (all dimensions acceptable with +/-10% variation

Note: These Specifications are general in nature not tailor made

(14) Technical Specification of Combination of Microwave Diathermy & Traction with Couch

Both Microwave Diathermy & Computerized Traction Unit should be attachable to a single couch so that both the therapies can be given to a patient simultaneously with cumulative benefits with following specification:

Microwave Diathermy

- Microwave Diathermy should be of the latest modern technology.
- It should have linear output without High Frequency Cables.
- It should be without separate radiators/emitters.
- Microwave radiated through a brass wave Guide with three slits
- Operating frequency: 2450 Mhz
- Main Voltag 230V +/- 10%, 50Hz.
- Pulse Output- 1500 W peak.
- Maximum Average Output 205 watts.
- Mobil Movements Range setting for Mircowave Diathermy.

Computerized Traction Unit:

- Traction unit should be computerized.
- The unit should perform State Force, Intermittent force, Pulsation force and Combination of static, Intermittent, Pulsation forces.
- Traction unit should perform Lumber Traction and Cervical Traction.
- Unit should provide with Belts, Straps and Flexation Stool for Lumber and Cervical Traction.
- With 60 Programs for Extension i.e. 59 fixed and one variable programs.
- Provision of Safety Switch controllable by patient.
- Maximum Lumber forces- 60Kg.
- Maximum Cervical Forces – 12 Kg.

Couch

- Couch should be non magnetic steel.
- Couch Frame should be of rugged metal frame with padding material.
- Couch should be in sections having a free rolling section to avoid any frictional errors of force.
- Microwave Diathermy & Computerized Traction Unit should be attachable to a single couch.

Note: These Specifications are general in nature not tailor made

(15) TECHNICAL SPECIFICATIONS OF BASIC ANAESTHESIA MACHINE (BOYLES APPARATUS)

1. Anesthesia delivery trolley based ergonomically designed with sturdy vertical profile.
2. The machine should have separate indexed (pin- index)/ DISS/ NIST) provision for connecting central pipe line gas supply of oxygen and Nitrous oxide. It should have mounting capability of one oxygen and one nitrous oxide pin-indexed gas cylinders.
3. High pressure Tubing for Oxygen and Nitrous oxide for central supply connection with pipeline connectors should be supplied with machine.
4. There should be pressure indicating gauges for each gas for both cylinders well as pipeline supply in accordance to ISO requirements.

5. Gas Flow Management:

a). Mechanical color and touch coded flow-meters : precisely calibrated tube flow meters for oxygen and nitrous oxide with oxygen down the stream.

Flow meters should have at least following range:

- O₂ double taper or cascaded flow meter – 100ml/min to 10L/min.
- N₂O double taper or cascaded flow meter – 100ml/min to 10L/min.

b). Mechanical hypoxic guard to ensure minimum concentration of 25% oxygen, across all oxygen – nitrous oxide mixtures and oxygen failure alarm with nitrous oxide cut-off comforting to ISO requirements.

6. Vaporizers:

a) Vaporizers shall mount to a Select manifold of atleast two vaporizers which allows easy exchange between them.

b) Vaporizers must be isolated from the gas flow in the off position and prevent the simultaneous activation of more than 1 vaporizers.

c) with each machine temperature, pressure and flow compensated anesthetic agent specific vaporizer for Halothane should be provided. Vaporizers should quick loading unloading type.

7. Breathing system:

a) Closed circle system with carbon dioxide observant canisters should be part of machine. There should be common gas outlet for using other type of breathing system with machine. Breathing system shall be fully autoclavable silicon to 134 degree C and natural latex free.

b) There should be facility to bypass closed system for changing soda lime while the machine is in used.

c) Facility to connecting to scavenging system

8. Anesthesia machine should be mounted on 4 large antistatic castor wheels with foot break/ locking facility for atleast front 2 wheels.
9. There should be work surface and atleast 1 drawer with locking facility.
10. Integrated battery/ online 1KVA UPS for half an Hour power backup. There should be single electric power cable going to the machine.

Essential Accessories.

- Each anesthesia machine should be supplied with complete accessories and spares to make its all operational.
- Magill breathing systems 2 sets, circle system tubing(Silicon autoclavable) 2 sets, **2L reservoir bag 2, 1 L reservoir bag 2, Baines breathing system 2.**

Others:

- The quoted equipment should be displayed in for practical demonstration to check for is accurate functioning and meeting specifications.
- Warranty for 2 years and CMC for 5 years after warranty.
- Price of accessories and consumables should be fixed for 7 years.

Other Conditions

- Turnover Class.
- Govt. institute Supply.
- C/S or USFDA Approved.

Note: It is certified that these Specifications are not tailor made.

(16) Specification of Mortuary Chambers 4 Bodies

COLD STORAGE FOR MORTUARY
Specification for Mortuary Chamber

Temperature Control

Storage temperature: 2-8° C (Standard)

Temperature Controller: Solid state digital controller/ PID optional displayed – LED/LCD, vapor proof light with switch

Temperature Sensor: PT 100

Water Quality: Distilled/ Ionized

Alarm: Electronic Safety system which operates whenever there is fluctuation/ deviation from set temperature operates even in case of power failure (with battery) by audio/ visual alarm.

Drop in self contained refrigeration system with digital thermometer and easy to adjust temperature controller.

Safety Thermostats

Temperature variation adjustments – 3(with PID controllers only)

Automatic temperature setting – Yes

Adjustable limits – Yes

Construction – All stainless steel 304 which include inner, front door carriage tray 304 Stainless steel etc. carriage frame should be having telescopic, fabricated of extruded aluminium with nylon rollers.

Base should be 2.5 feet from the ground level. Base should be MS with coating make it rust free.

Sections – The inside is divided in to four individual compartments each equipped with individual hinged door sealed. Automatic locking facility of carriage for storage when returned to close position.

Separate individual sections should have separate power supply so that individual section unit may work independently.

CONDENSOR

Air circulation – Forced

Refrigerant – R134 Non CFC

Light intensity (Both Sides)

Accessories

De-icing module – Required

Serial Port – RS232

Water Reservoir – 18ltr

Castors lockable – Yes

Capacity

Storage capacity – 4 bodies

Internal Dimensions (mm) – Width 685 (2.22 feet)

Each chamber – Depth 2140(7 feet)

Height – 460 (1.5 feet)

Maximum permitted load per self – 155 kg

Power Consumption

Nominal Power – 950-1450W

Nominal Voltage – 220-230voltage, 50Hz single phase

CMC for 5 years including all spares.

Note: These Specifications are general in nature not tailor made

(17) SPECIFICATION OF ELEVATING PEDESTAL AUTOPSY TABLE

Should be constructed of stainless steel

- Dimension:

Length: 264 cm

Width: 85 cm

Height: 35 (Elevating)

- Should be constructed of stainless steel 304 type. Tested piece of metal used certified by the vendor.
- Should have Heliarc-welded seams and joints.
- Should have Radii on all inside and outside corners for easy cleaning.
- Facility of vertical height adjustment via hydraulic mechanical actuator.
- Should have Hydro aspirator (built in vacuum breaker) with cold water control valve and backflow protection.
- Should have Spray hose assembly with control valve, nozzle, 10 feet of flexible hose and backflow protection.
- Should have mixing faucet with gooseneck spout and wrist blade handles.
- Should include digital scale with shelf.
- Should have double bowl large compartment sink basin of dimension 35x30x20 cm deep.
- Flexibility for complete room wash-down.
- Should have three solid or per perforated stainless steel body supports, 20 cm wide.
- Should have rapid and positive drainage.
- Should have removable access panel.
- Should have waterproof GFCI electrical outlet.
- Plumbing and electrical lines should be factory installed and should require only single point connection at the installation site.
- Elevation control from 81 cm to 96 cm.
- Should include stainless steel headrest.
- Should include organ grossing station.
- Engraved measurement scale on one side for easy measurement of cadaver.
- Manufactured without rivets, bolts or other devices so that work surface remains smooth and prevent cumulation of bacteria.

- CMC for period of 5 years is mandatory.
- Authorized dealers, quoting on behalf of the manufacturer, should submit a certificate from the manufacturer that the responsibility for after the sale service during warranty period and thereafter, will be provided by the manufacturer, if the dealer fails in providing the same.

Note: These Specifications are general in nature not tailor made

(18) Specification of Mobile C-Arm with Accessories

Generator:-

Mobile C-Arm image Intensifier TV system should have high frequency generator of 40 KHz or more with KV output of 40KV to 110 KV or more for both radiography and fluoroscopy with field size of 9" or more.

X – Ray Tube:-

Dual focus rotating anode X-Ray Tube of minimum 200KHU.

TV System:-

Two 17" Monitor, flicker free with facility for continuous image (clockwise & anticlockwise), left/right, up/down image rotation on control panel. Monitor should be fitted on a mobile trolley.

Memory: - Unit should at least 30 frame memory with last image hold.

C-Arm Movement:-

The unit should have steerable wheels with locks.

Motorized vertical movement 200mm or more.

Horizontal movement 125 degree or more.

C-Arm rotation 360 degree.

Swing of 25 degree.

Control Panel should have touch sensitive buttons with digital display of KV mA etc.

Accessories:-

I. Suitable Voltage stabilizer (01 No.)

II. Lead Aprons (05 No.)(Kiran Make)

1. Manufacturers should have ISO/CE certification.
2. List of users with performance certificate to be enclosed.
3. AERB Formalities shall be completed by the firm.
4. QA and Calibration of the equipment on yearly basis shall be done by the firm.

(19) SLIT LAMP with REFLECTION UNIT

TECHNICAL SPECIFICATION

1. Main Microscope Galilean, 5 Steps Magnification
2. Eye pieces 12.5x
3. Diopter Adjustment from +6 to -6 or more.
4. Interpupillary Distance Adjustable from 55mm-75mm
5. Magnification Manual 5 steps 6x, 10x, 16x, 25x, 40x.
6. Slit Width 0 to 14 mm
7. Slit length 0 to 14 mm
8. Slit Angles 0-180 deg.
9. Filter Heat Absorbing Filter and UV, Green and BLUE Filters.
10. Light source 6V/12W, Halogen.
11. Movement Ranges:
 - Longitudinal in/out 90mm.
 - Lateral (Left/Right) 100 mm.
 - Vertical (Up/Down) 30 mm
 - Chinrest Range 60mm
12. Voltage 220-240V, 50/60Hz.
13. CE marked/US FDA approved
14. Compatible Applanation tonometer to be provided with measuring range 0-80mmHg in 2mmHg increments.

Accessories:	Dust Cover	
	Chin rest papers	10 packs
	Spare bulb	2
	Extra Fuses	10

Ophthalmic Refraction Unit

One fully upholstered elegant ophthalmic chair with full motorized recline facilities and full up and down movements for 300 mm.

One stand and console

With illuminating soft light for examination

With all controls for chair and one foot pedal for up and down movements

Good quality trial lens set

21" LCD visual acuity Chart, wall & stand mountable with all type of tests.

Note: These Specifications are general in nature not tailor made

(20) Technical Specification of 300mA High Frequency X-Ray Machine

X-Ray Generator:

- High Frequency X-ray machine with power output of generator should be 30 KW or more.
- Radiographic KV Range should be 40 to 125 KV.
- mA Range (Rad.): 300 mA or more.
- mAs Range (Rad.): upto 200 mAs.

X-RAY TUBE:-

- Dual focus Rotating Anode X-Ray tube with heat Dissipation of 100 KHU or more.
- The light beam collimator shall be manually operated.

Tube Stand:-

- The unit should have floor to Ceiling Stand with Counter Balanced Tube Head 360 Degree Rotatable; mounted on floor Ceiling Rails for convenient movements should be provided.

Table:-

- The table should be fixed and radiolucent table top.
- The Bucky should be motorized with grade ratio of 10:1 and 60 LPC.
- The unit shall be supplied with 1.5 mm single panel lead screen with lead glass and 2 nos. Kiran make lead aprons of 0.5 mm thickness.

Power Requirement:-

- The unit should be operated on 3 Phase, 440Volts, AC 50Hz with line resist less than 0.4 Ohms. Line Regulation $\pm 10\%$.

Other Requirements:-

- Rate for Servo Stabilizer of standard make & suitable capacity and should be quoted separately. The rates shall be freeze and may be provided to location wherever it is required.
- Mandatory Calibration of X-ray machine shall be provided by parent supplier during the life span of equipment. The Calibration will be included in warranty and CMC.
- QA to be done periodically as per AERB guidelines.

- Unit should be approved by B.I.S. (Bureau of Indian Standard) for Mechanical & Electrical Safety.
- The unit should be approved by AERB.
- QA certificate should be attached as AERB requirement.
- The company should have a local Service centre.
- The company should have proven track record in Govt. Sector and should have installation of quoted model in the region.
- The shortlisted Firm shall facilitate the Department to have AERB approval from the Agency. All type of formalities shall be completed by Firm.
- Two year warrenty including X-ray Tube.
- 8 Years CMC including X-ray Tube.

Note: These Specifications are general in nature not tailor made

(21) 500 mA X-Ray Machine (RADIOGRAPHY UNIT- 500mA)

A.	Generator:
1.	Generator should be high frequency/inverter type for constant output & Microprocessor controlled.
2.	Output 50 KW or more.
3.	KV range 40 KV – 150 KV.
4.	Output at 100 KV should be 600 mAs or more.
5.	It should have automatic exposure control (AEC) device for both vertical bucky as well as table.
6.	It should have digital display of KV & mAs.
7.	Anatomical programming radiography should be possible.
8.	It should have over loading protection.
B.	X – Ray Tube, Collimator & Column Stand:
1.	The x-ray tube should be rotating anode high speed, compatible with the generator and must have dual focus. Focal spots of following sizes: Large Focus: 1.2/2.0 mm or better. Small Focus: 0.6/1.0 mm or better. Tube with anode heat storage capacity 300 KHU or more.
2	Motorized collimator having additional filters (for Dose Reduction), auto shut provision for the light and auto collimation according to SID and size of the inserted cassette.
3.	Counterbalanced floor/floor to ceiling stand with rotation of both tube as well as column with electromagnetic locking system for smooth positioning.

D.	X - Ray Table:
1.	Horizontal table with floating table top. It should be able to take patient load of 150 Kg or more.
2.	It should have transverse \pm 10 cm or more and longitudinal movements \pm 35 cm or more with electromagnetic brakes.
3.	The table should be CE certified.
4.	It should be provided with bucky which can hold all standard sizes of cassettes upto 14"x17".
5.	Bucky should have a grid ratio 12:1 or more with 40 lines per cm.
E.	Vertical Bucky Stand:
1.	It should have provision to do chest radiography without grid. It should be able to take up cassettes of different sizes up to 14"x17". It should have electromagnetic locking facility for smooth positioning.
F.	Essential Accessories: The following essential accessories to be provided with the unit.
1.	Voltage stabilizer of 75 KVA/Suitable Capacity with spike suppressor. The make of the voltage stabilizer should be specified.
2.	Lateral cassette holder - One.
3.	One radiation protection Single panel screens should be supplied. Two split AC of 1.5 Ton capacity each with suitable voltage stabilizer should be supplied (Optional).Two no. of Lead Apron Kiran make to be supplied.
H.	Warranty:
	Warranty of 24 months of all parts as well as accessories and auxiliary units supplied with the main equipment including x - ray tube.
I.	C.M.C.:

	C.M.C. for 8 years for whole equipment including labour cost, spare cost, accessories supplied with the unit like A.C. etc. and x-ray tube.
J	The unit should have NOC/Type Approval of AERB & IEC/CE/FDA for radiation protection. Manufacturing firm should be ISO approved.
K	In case of imported item, the firm should get the third party inspection done before dispatch of the equipment at its own cost, certifying that the equipment is brand new and as per NIT/specifications.

Payment and Supply

The price should include the cost of installation like internal wiring of the room with copper and fixing of the beams etc. for installation. The department would provide only three phase power supply in the room. The rest of the work will be done by the firm on “turnkey basis” including rails for floor to ceiling column stand etc., if required. Earthing to be provided by the firm, if required.

Note:

1. Manufacturing firm must have established centers and offices with available spare parts in Haryana/Delhi/Chandigarh and trained engineer for prompt after sales service.
2. Firm must have installation of X-Ray equipments in North India. The firm/manufacturer should submit the list of installation of X-Ray equipments and their certificate of satisfactory performance from reputed Government hospital – at least 3 Hospitals.
3. Total equipment should be guaranteed for trouble free performance and defective material or workmanship including free replacement of X-Ray tube for two (2) years from the date of Installation.
4. The above specifications are bare minimum, higher specification may be given added weightage, if considered useful by the committee.
5. Rates should be FOR destination.
6. CMC should be furnished for 8 years after expiry of guarantee period of 2 years for the whole system.(including X-ray Tube)
7. During the guarantee period/CMC, the firm will provide four quarterly preventive maintenance visits and attend to unlimited number of breakdown calls.
8. .CMC will be renewed every year. Will be treated in continuation unless cancelled in writing

Note: These Specifications are general in nature not tailor made

(22) Technical Specification of Electrolyte Analyzer

1. The instrument should be capable of measuring Na^+ , K^+ , Ca and should have facility to be upgradable to Cl the same machine.
2. Instrument should be ISE (Ion- Selective Electrode) Analyzer.
3. Should be able to perform measurements on Serum, Plasma, Whole Blood, Urine and QC Samples.
4. Should have an in-built thermal printer.
5. The reagent pack required should be the same for all parameters.
6. Should have ISE precision sensors.
7. Sample size should not be more than 95 μl .
8. Analysis time should not be more than one minute.
9. Instrument should have programmable/manual Stand-by mode.
10. An alphanumeric should display measurement results, QC results and user menus.

Note: These Specifications are general in nature not tailor made

(23) Auto Refractometer with Keratometer

Refraction Measurement	Sphere	-20 ~ +20 D or better
	Cylinder Range	0D ~ ± 10 D
	Axis Range	0° ~ 180°
Minimum Measurable Pupil Diameter		2.0mm

Corneal Curvature Mode

Corneal Curvature Radius	5.00-10.00mm
Refraction index	1.3375
Corneal Refraction	67.5D to 33.75 D
Corneal Astigmatism	0D ~ ± 10 D
PD measurement Range	0-85 mm
Display	5 Inch or More colour LCD
Output	RS-232C/USB
Printer	Inbuilt Printer

Should have Auto Start, Auto focus & auto task

CE certified

Accessories

1. Indian motorized table
2. Dust cover
3. CVT of adequate rating

Note: These Specifications are general in nature not tailor made

(24) Technical Specification of ND YAG LASER

- Should be ND YAG Long pulsed Peak Powered Laser.
- It should be available to treat vascular lesions wrinkles and unwanted hairs for all skin types skin tightening, Leg veins and facial veins and pseudofolliculitis Barbage (PFB).
- Should have dynamic cooling Device Technology provides protection of melanin-rich darker skin types including tanned skin and capability of treating all skin types. (Skin type 1 to 6).
- It should reduce treatment time with the help of larger spot size of 12mm, 15mm, 18mm. multiple spot size. The longer spot also help to increase the life of machine and repetition rate upto 10Hz for skin tightening. It should treat all skin types including tanned skin.
- Should be 26000 wattage or more work on larger spot sizes like 18 mm.
- Should have 1064 nm wavelength for goof penetration up the hair follicle depth.
- Should have 8 spot sizes from 1.5mm to 18mm help various precious treatments.
- Should have pulse duration from 0.250 -300 ms for fine hairs & skin tightening.
- Should have been delivery through lens –coupled optical fiber with hand piece.
- Should have foot switch and finger switch for controlling laser pulses.
- Should have 230V ,50/60 Hz, single phase power supply.
- Should be CE and USFDA Approved.

Note: These Specifications are general in nature not tailor made

(25) Technical Specification of CTG Machine

Work station Specification

1. The unit should be suitable for use in labour rooms for the continuous monitoring of fetal heart and urine activity for singleton and twins both.
2. The unit should operate on AC mains supply of 230V+/- 10%, 50 Hz.
3. It should be suitable for printing on unprinted plain thermal paper to ensure perfect alignment of the trace of the graph.
4. The unit should comprise of a inbuilt high resolution thermal printer, which is capable of recording fetal heart rate and uterine activity and paper speed should be available with options of 1cm, 2cm, or 3cm per minute.
5. Unit should be supplied with the following sensors/transducer to sense the activities mentioned above:
 - a) Doppler ultrasound fetal heart detector (ultrasound transducer-2no.)
 - b) External technology input (Toco transducer-1no)
 - c) Patient event marker-1 no.
6. The fetal movement should be recordable automatically and by mother through a separate hand held device.
7. The unit should have an audible and visual fetal heart rate signal facility with adjustable volume control.
8. The unit should have the following features
 - A Power On/Off switch
 - B Digital display of fetal heart rate
 - C controls for recorder
 - D contractions baseline to be set at 20 or as FIGO guidelines
 - E Trace annotation controls.
9. It should have bradycardia, Tachycardia and loss of contact display alarms. The alarms should have three settings – audio, silent and off
10. The unit should be capable of being upgraded to an intrapartum and uterine pressure monitoring mode.
11. Integral trace annotation facility with user customizable messages
12. Optional interface facility for intrapartum monitoring for optimum FHR performance.

13. Unique twin solutions with wide no- compromise trace presentations.
14. It should have color coding system for transducers and matching sockets.
15. The unit should have paper out sensor.
16. The unit should have compact water resistant transducers with soft stretchable belt.
17. 17 The Unit should have facility of upgrading for attaching to Central nursing station, which should have telephonic data transfer facility.
18. The unit should be portable with weight less than 5 Kg and capable of being used on table top, trolley or wall mounted.

Note: These Specifications are general in nature not tailor made

(26) Specification of Oto Acoustics Emission (OAE) Screening Unit

1. Should be hand held unit including probe, cord and cradle.
2. Should have a thermal printer including power supply and power cable.
3. Display of acquired data including frequency, signal, noise, response and testing parameters which should be printable.
4. Probe cord should be at least 50 cm.
5. Reusable ear tips of various sizes starting from 3 mm to 12 mm (atleast 20 for each size).
6. Rechargeable Battery
7. TEOAE
 - 1 to 4 khz
 - Stimulus Level – 90 db SPL peak
 - Stimulus Type – Nonlinear click
 - Statistical stop criterion (TE Quick) or user defined stop criterion (SNR: 3,6 or 9 db) in 3,4 or 5 out of 5 frequency bands (11.5, 2,3,4,khz) (TE Diag)
 - Window of Analysis – 5-13 ms post stimulus
8. DPOAE
 - DP 2 to 5 khz
 - Frequency Ratio $f2/f1-1.2$
 - Measurement Interval - 512 samples
 - Frequencies $f2-1.5,2,3,4,6,8$ khz
(single & multiple selections possible)
 - Stimulus levels L2-35 to 65 db HL (in steps of 5db)
 - It should be battery operated
 - Multiple test methods
 - Database for at least 1000 tests
 - Data transfer to PC via USB or wireless
 - PC with printer
 - Stimulus intensity: 50 to 70 db SPL (DPOAE), 83 db
9. SPL (TEOAE)
 - Maximum output (Protection): 80-90 db SPL
 - Microphone system noise:
20 db SPL @ 2khz (1 Hz bandwidth)
13 db SPL @ 1khz (1 Hz bandwidth)
 - Power Supply:
(4) Rechargeable Battery
AA/UM-3/R6 – alkaline (6V total)
Battery Life: Approximately 300 tests
 - Display: LCD – display 4 line x 10 character

(27) Specifications for Ophthalmic Chair and Instruments for Refraction Unit

1. Ophthalmic refraction Unit

- One fully upholstered comfortable ophthalmic chair with facility of full motorized recline and up & down movements for 300 mm \pm 15 mm
- One stand and console with illuminating light for examination.
- The stand should have adequate space for placing Keratometer or autorefractometer, NCT, Lensometer, Direct Ophthalmoscope and streak retinoscope, Chart projector & Trial lens set.

2. Refraction set

- Spheres from \pm 0.12 to \pm 20.0
- Cylinders from \pm 0.12 to \pm 6.0
- Loose Prisms from 0.5 prism diopter to 12 prism diopter trial frame with occluder, pin hole, Maddox rod, stenopic slit, red and green glasses, cross cylinders (0.25, 0.50 & 1.0),

AUTO CHART PROJECTOR

- Refracting Distance- 2.9 to 6.1m
- Variable Focus Projection distance- 2.9 to 7.1m
- Projection Magnification- 30x (in 5m refraction)
- Projection size- 330x270mm, \varnothing 300mm
- Tilt range of projector: \pm 15 degrees
- Number of charts- minimum of 30
- Chart change over- 1 frame/0.03 sec.
- Number of masks- Horizontal Line 3, Vertical Line 3, Single letters 21, R & G 1
- Mask change over- 1 frame/0.02 sec.
- Projection lamp- 12V 50w (Halogen Lamp/LED)
- Automatic Shut-off
- Electricity- AC 120, 220, 230 or 240V, 50/60Hz

• Comprehensive Guarantee/Warranty for 2 years and there after CMC (including all spares and labour) for 5 years

Note: These Specifications are general in nature not tailor made

(28) Technical Specification of A- Scan

Probe:A scan solid tip probe. Frequency 10 MHz built in fixation LED with fixation cable

Display: Large LCD Measurement. Axial length measurement range from 15mm to 38 mm. simultaneously shows the axial length, anterior chamber depth, lens thickness and A-scan waveforms in real time.

Measurement Accuracy: + or -0.1mm.

Measurement: auto or manual. An audible signal to the operator indicates a valid measurement has been completed and stored in memory. Cursor to measure the user desired wave form positions.

Velocities used: Aqueous /vitreous 1532m/sec

Normal lens velocity 1640m/sec

Cataractous Lens velocity 1629m/sec

PMMA lens velocity 2760m/sec

Silicone lens velocity 1000m/sec

IOL power calculation formulas : SRK T, SRK II, Binkhost I, Holladay and Hoffer Q.

Printer: High speed thermal printer for generating a permanent record of all A scan measurements and IOL calculations, various user programmable [printout format

Electrical requirement 230 V AC/50 Hz

Should have CE certification/USFDA Approved.

Accessories

Carrying Case

Dust Cover

Printer Paper 2 Rolls

Note: These Specifications are general in nature not tailor made

(29) Technical Specification INDIRECT OPHTHALMOSCOPE (Wireless with LED)

1. Weight of Head band with Light weight with soft cushioning and non slip contoured ophthalmoscope head band.
2. Illumination LED
3. Rechargeable battery integrated into headband.
4. Illumination control from head band
5. Filters
 - a) Diffuse
 - b) Blue /Red Free
6. Barriers UV & IR barriers
7. Integrated flip up adjustment optics which can be flipped and locked.
8. Apertures Adjustable for large, intermediate & small pupil
9. Rechargeable Li-Ion battery transformer with LED indicator.
10. Transformer compatible with voltage system of AC 220-240 volts
11. Desk top or wall transformer
12. Original case
13. Teaching Mirror
14. Scleral Indentor Large & Small
15. Good quality double aspheric 20D lens
16. Fundus Chart Pad and coloured marking pencils

Note: These Specifications are general in nature not tailor made

(30) Technical Specification DIRECT OPHTHALMOSCOPE

1. Battery operated
2. Light source - xenon halogen bulb 3.5 V.
3. Red-free filter should be available.
4. Should have more than 6 apertures for use: small and large spot sizes, fixation target, slit aperture, hemi spot and cobalt blue/Red Free.
5. Wheel control, with lens powers ranging from +40D to -40D in single diopter steps up to 10D and 5D steps above that.
6. Illuminated lens dial.
7. Rubber brow rest.
8. Dust free sealed optics and a spherical optical system in metal chasis.
9. Good quality carrying box.
10. Handle with rechargeable battery, with rheostat adjustment.
11. Standard accessories: spare halogen bulbs {1 Nos}.

Note: These Specifications are general in nature not tailor made

(31) Technical Specification Phacoemulsification System

Display : Color LCD and touch screen

Voice feedback for function selection in English

Footswitch Dual linear

Irrigation Aspiration

Vaccum level programmable from 5-500 mmHg , autoclavable and reusable tubing

Irrigating pressure should be regulated by height of I V pole

Panel or linear vaccum control by the foot pedal

Ultrasound

Frequency 40 Khz

Handpiece 4 crystal ,piezoelectric ,titanium

Operating Modes Continuous, Pulsed, Single Burst, Multiple Burst

MICS fully functional

Vitrectomy Pneumatic vitrectomy with built in compressor , reusable gullitone cutters,with cut rate upto 700 cut/min. Panel or linear vaccum control by the foot pedal

Diathermy Bipolar, Panel or linear vaccum control by the foot pedal. Reusable diathermy forceps, reusable diathermy pencil and diathermy bipolar cable.

Machine should be CE/ USFDA approved.

Standard Accessories

- | | |
|--|----------|
| 1) Ultrasonic Handpiece | - 2 No |
| 2) Reusable US Tip 30 Deg | - 3 No |
| 3) Reusable Sleeves, | 6 No |
| 4) Reusable Wrench, Test Chamber | - 2 Sets |
| 5) High Vacuum Tubings | - 2 No |
| 6) Pneumatic Vitrectors reusable | - 2Nos |
| 7) reusable Bipolar Forceps, pencil, cable | - 1 set |

- 8) Coaxial I/A Hand piece (Straight) - 1 No
- 9) Sterilisation Tray - 1 No
- 10) Bimanual I/A Hand piece - 1 No
- 11) Instrument trolley with bottle height adjustable hanger - 1 No
- 12) Suitable online UPS

Note: These Specifications are general in nature not tailor made

(32) Specifications of Dental Chairs/ Units

Dental chair is required for dental examination and surgery

Operational Requirement

Complete Dental Unit with Dental Chair and Hand pieces along with micro motor, airtor, ultrasonic scalar, suction, light cure, compressor etc. Chair should be CE/ ISO approved.

A. Technical Specifications

1. DENTAL CHAIR

- i. It should be electrically operated microprocessor based multi programmable chair with erasable programmes, touch button control panel, physiologically contoured and suited for sit down dentistry.
- ii. Adjustable back rest for patient comfort and with provision for reverse Trendleberg's position.
- iii. Dental chair should have molded PU foam for seat, both hardest and backrest with seamless upholstery made from polyurethane material and be fully laminated from good quality plastic sheet for better hygiene and easy cleaning.
- iv. Body of the chair and unit should be painted and non-rustable and the non-painted parts should be electroplated of good quality.
- v. Chair should have smooth up and down movements.
- vi. Double articulating headrest for comfortable support.
- vii. Right hand rest of dental chair should be movable for easy access and exit.
- viii. High density stable steel base with minimum 15 mm thickness protected by an anti-slip rubberized sleeve to avoid Electrical Hazards to patients & the doctors.

2. DENTAL UNIT

Chair Mount should have the following:-

Microprocessor based hanging delivery unit with:-

- a) **Airtor:** Control box fitted with one airtor point (foot controlled) and supplied with one push button airtor autoclavable hand piece (NSK/W&H/Kavo/Sirona) having speed of 3.5 lakh r.p.m. to 4 lakh r.p.m. & supplied with one bottle of lubricant oil.
- b) **Micro motor:** High torque motor(foot controlled) with minimum speed of 30,000 r.p.m. & above should have reverse and forward speed along with auto cut system for over load & supplied with one contra & one straight autoclavable Hand Piece. The hand piece should be of NSK/W&H/Kavo/Sirona make. These should be of low noise and vibration free.
- c) Inbuilt piezo scaler: (Satelec/EMS/Sirona/NSK) with atleast 3 scaling tips as provided in the original pack of the company, one autoclavable hand piece & tip replacement wrench.
- d) One three way syringes with one extra tip.

- e) One movable instrument tray connected to articulator arm with autoclavable steel tray.
- f) Inbuilt LED X-Ray viewer.
- g) Multifunctional foot control unit for operating all accessories.
- h) Light Cure Unit: LED based light cure unit with provision of light intensity not less than 1000 mw/cm², of Apoza/Rolence/Gnatus/Satelac with eye protection glass.

COMPRESSOR

Oil free, medical grade, monobloc, min.0.75 HP. It should have:-

- a) Air moisture filter.
- b) Epoxy coating to prevent rusting.
- c) Pressure gauge and auto cut off switch.
- d) Tank should have a capacity of minimum 35 litres.
- e) Auto head air release valve/ drain valve.
- f) The provision for drainage of water from the base tank of compressor.
- g) Safety release valve.
- h) Cover to be provided for compressor.

CHAIR MOUNTED FITTED WITH

Operating Light

- a) Sensor controlled white & cool LED dental light with intensity of minimum 20,000 Lux.
- b) Basin attachments should be fabricated out of any such material which is non rusting, non corrosive and non staining.
- c) Top of basin spittoon should be of ceramic, single piece, white colored, smooth curvature for spotless cleaning.
- d) Spittoon and tumbler should have built in collector system where heavy particle should store.
- e) Water system for tumbler and spittoon should have timer and should have provision to increase or decrease the time from touch button panel.
- f) Transparent water bottle.
- g) High/Low motorized suction with auto drain & auto flush system with minimum 0.5 HP power motor. Should be supplied with disposable suction tips – 10 each of high and low suction.

DENTAL STOOL

- a) Dental stool should have rising and lowering, with pneumatic cylinder, should be stable with 5 castor base with metal legs.
- b) Backrest should be PU moulded.

DENTAL CHAIR

Should be supplied along with constant voltage transformer (CVT) of 5 KVA capacity, input voltage range 120V-290V, ISO-9001:2008/14001 certified dully automatic compatible with dental chair unit.

COMPLETE INSTALLATION

Complete installation of the system including water input and drainage system (from water tap source to chair and drainage) will be provided by the supplier, for which no extra cost will be given.

POWER SUPPLY

Power input to be 220-240V AC 50 Hz

STANDARD SAFETY TRAINING

- a) The accessories of the unit should be of specified makes.
- b) Bidders should provide the test compliance certificate from original manufacturer of the equipment and accessories (mocromotor, airtor handpieces, scaler tips, compressor etc.) on the letter head of original manufacturer or their authorized distributor, clearly specifying that the equipment/ accessories, fully complies with the specifications mentioned in the NIT.

The above specifications are generalized.

DOCUMENTATION

- a) User/ technical maintenance manual catalog should be supplied in English along with operational CD.
- b) Certificate of inspection & calibrations.
- c) List of important spare parts with accessories with their part no. and costing.
- d) Job description of Dental technician and company service engineer should clearly spell out.
- e) Training of 21 Dental Mechanics from health department 2 days should be provided free of cost along with food and accommodation.
- f) All dental chairs/ units will be inspected at factory site in pre delivery stage, in satisfactory working condition, by an inspection team.
- g) Successful bidder should supply certificate from the original manufacturer of the accessories, clearly specifying that the accessories for the tender in question have been supplied by him i.e. material receipt report substantiating the proof and the date of delivery materials, before supplying goods to the department.

IMPORTANT CONDITIONS

- a) Turnover of the manufacturer of dental chair should be of minimum 3 crores in the preceding three financial years. In case of Indian firms turnover certificates should be issued by some state or centre Govt. agency/ CA certification along with audited balance sheet of the manufacturer, for these items & in case of imported firms, it should be issued by Govt. agency of the country of origin and same should be written & signed in English language only.
- b) In case, firm does not give the demonstration on this stipulated date, the offer will be straight away rejected and no further opportunity will be given.
- c) All documents submitted by firms should be in English. Original catalogues of dental chair/ unit and of accessories is must.
- d) The bidder will supply the list of service centres situated in North India along with the offer.
- e) The bidders are required to submit certificates in respect to the quoted items. In respect of all the accessories, the bidders are required to submit the performance certificate from reputed institutions. The bidders are also required to submit performance certificate in respect of Dental Chair from reputed institutions.
- f) In case of imported equipments, the equipments will have to be got cleared from the custom authority by the supplier himself at his own expenses, custom duty (counter veiling duty/ special additional custom duty) etc., if any, levied by Govt. departments, CDEC & NMIC will be provided by the department. No demurrage charges will be paid for delayed clearance. All the relevant documents will be provided well in time.
- g) The bidders will send list of the institutions where such types of equipments have been supplied by them along with their offer, for the last three financial years.
- h) Warranty: 5years of dental chair/unit and all accessories. During warranty a technician of the firm will visit all the destinations, every three months, where the equipment has been installed and will submit their report to the department duly certified by concerned doctor.
- i) CMC for 5 years @2% of the total value of the equipment after the expiry of warranty/guarantee period of 2 years with an escalation of 0.5% every subsequent year.
- j) The offer must be in two covers i.e. Technical Bid & Financial Bid**
- k) The technical committee reserves the right to accept or reject any offer.

Note: These Specifications are general in nature not tailor made

(33) Technical Specifications – Dielectric Tube Sealer (Bench Top)

1. Should be fully automatic system of sealing PVC tubing, especially all standard blood bag tubings available in the market.
2. Should have sophisticated sensing system to adapt to sealing time depending on different types & size of the tube.
3. Should have more than two meters long cable attached with hand unit to allow flexibility of taking sealing handle to the bag for sealing.
4. Sealing should start pressing button on hand unit & should have visual indication, when the sealing process is on.
5. Sealing process should be fully automatic and audio-visual indications for uniform and quality sealing.
6. Should have CE marking or quality standards like U.S.FDA or ISI/equivalent.
7. Sealing should be radiofrequency based.
8. Warranty: Two years
9. CMC: Five years

Note: These Specifications are general in nature not tailor made

(34) Technical Specification of ARTERIAL BLOOD GAS ANALYZER

1. It should measure Blood Gas (full parameters) in its addition to measure Electrolytes like Na⁺, Cl⁻, pH, pO₂, pCO₂ and Haematocrit.
2. Calculated parameters: TCO₂, HCO₃, Base Excess A-aDO₂, Buffer Base etc
3. Should display all results in print out.
4. Should have input parameters of patients Temperature, Haemoglobin FIO₂, patient ID etc.
5. Should have a sample temperature control of 37o C.
6. It should have inbuilt printer.
7. Analysis time should not be more than 90 seconds.
8. System should be based on liquid/gas calibration technology
9. System should not be a cartridge based system i.e. electrodes should not be in the cartridge system.
10. Should work on whole blood and should have syringe and capillary sampling.
11. Should be with numeric keypad, graphic /LCD display and inbuilt printer and RS 232 port.
12. Analyzer with memory of storing patient data/result minimum 250 or more.
13. System should be supplied complete with all standard accessories, electrodes & start up kits.
14. Onboard life of reagents should not be less than one month.
15. Power input: 220 VAC ± 10%, 50 Hz and a suitable one hr. back up UPS should be supplied along with analyzer. There should be storage facility of data in case of power failure.
16. Maintenance free electrode and the unit should be upgradeability for auto quality control.
17. System should be ISI/CE marked or US FDA approved.
18. Should submit certificate of relevant of IEC safety standards.
19. Any other parts except reagents to be replaced free of costs during warranty period.

Note: These Specifications are general in nature not tailor made

