Annexure-A

DETAILED TECHNICAL SPECIFICATIONS

1. CRYO UNIT

1. Front panel gauze indicates incoming cylinder gas pressure
2. Temp. Selection - 25deg, -55deg,-85deg, tolerance +/-5deg.
3. Front panel On/off switch turns console on/off
4. Foot switch controls freezing operation (Depress to freeze & release to defrost)
5. Power source run on CO2 & N 2O gas
6. Tip should have protective cover
7. Cryo tube enhanced flexibility, 9 ft long, reduced coil memory
8. Probes
    a) curved retinal probe 2.8 mm dia X17.3mm length
    b) Curved glaucoma probe 3.4 mm dia*X19 mm length
    c) Vitreous probe 1.5 mm dia X27 mmLength

2. WET FIELD BIPOLAR COAGULATOR

1. It should incorporate with Solid State Circuitry.
2. It should have LED indicator for power output
3. It should be supplied with Disposable / Auto cleavable cords.
4. It must be Footswitch operated
5. It should be supplied with A wide selection of bipolar forceps and haemostatic erasers to facilitate most ophthalmic surgical procedures
6. Power supply should be AC 220-240 Volts;50Hz.

3. O.T .TABLE

It should satisfy following Specifications

1. Suitable for ophthalmic surgery
2. Motorized
3. It should have Head rest and wrist support.
4. Maximum height : 900 mm approx.

5. Minimum Height : 580 mm approx.
6. It should have height adjustment facility. The approximate range for Height adjustment should be 300 mm.
7. Length : 1900 mm approx.
8. Width : 700 mm approx.
9. Trendelenberg : 28 degree approx.
10. Reverse Trendelenberg : 15 degree approx.
11. It should have facility for instrument tray.

4. BOYLE'S APPARATUS

1. Boyle's Apparatus should have rigid steel structure with four antistatic castors wheels having front with brakes.
2. It should have Appro. (10") long rotating bobbin flow meters, (rotameters) with colour coded control knobs, calibrated in multiple scales for accurate reading.
3. It should have Oxygen (1st tube)-10 cc/mm to 3.5 liter/min
4. It should have Oxygen (2nd tube)- 3.5 liter/min to 10 liter/min
5. It should have Nitrous oxide (1st tube)- 200 cc/ min to 5 liter/min
6. It should have Nitrous oxide (2nd tube)- 5 liter / min to 12 liter/min
7. It should have Air-100 cc/min to 12 liter/min
8. It should have It should be Gas specific, gas blocks pin indexed yokes, two each for oxygen & nitrous oxide & one for air suitable for pin- indexed cylinder. The equipment shall also have attachment for connection of compressed air.
9. It should be Fitted with pressure gauges 100 mm diameter mounted on O2 and N2O cylinder (2 each) for clear visibility.
10. It should have Vaporizer for ether, penlon type with graduated jar with mounted selectatec. There should be Temperature compensated vaporizer for halothane/isoflourine {optional}
11. It should be Fitted with regulators and non return cum pressure release valves for gases.
12. It should have Two Numbers oxygen pneumatic power outlets operating at 50 psi to operate ventilator.
13. It should have Extended rear platform for mounting two nos additional 10 litre water capacity cylinders.
14. It should have Patient circuit to include elephantine tubing reservoirs bag, connections for changeover from open to closed circuit and vice versa.
15. It should have Top tray for monitoring equipment

16. It should have Drawer for keeping instruments.
17. In other respects the equipment shall comply with IS-11378-1985.
18. It should have adjustable pressure limiting valve, breathing circuit pressure measuring device.
19. It should have a bag/ventilator selecting valve integrated onto the absorber.
20. It should be suitable to use low flow techniques - Facility to attach oxygen sensor.
21. It should have CO2 absorbent Dual chamber canister
22. It should have Automatic cutoff of nitrous oxide in case of oxygen supply {nitro lock system}falls.
23. It should have Pneumatic device with audible alarm mechanical (not electrical) when oxygen supply falls to 10-15 psi.
24. It should have Hypoxic safety device to ensure that the patient is never subjected to pure N2O in flow out doses (shall ensure protection against singular flow of N2O) until a minimum flow of 1 liter-1.5 liter oxygen released.
25. Unit shall incorporate optional oxygen analyzer (oxygen concentration level indicator).
26. The Regulator and Yoke should force with S.S fittings.
27. The machine should have 3 inlets for O2 and N2O
28. It should have 2 oxygen outlets{optional}
29. There should at least one operating pressure gauge for O2 and N2O separately.
30. The operating pressure should be 4.22 kgf/sq.cm +/-0.5%
31. There shall be provision of adequate supply of oxygen to the patient even if the flow meter knobs are fully turned off.
32. Unit shall conform to relevant safety standards and general safety standards as per IS-8607.

5. MULTIPARA MONITOR

1. Compact portable, suitable for all patient categories, i.e. adults,paediatric and infants.
2. Parameters monitored: ECG, HR, Respiration rate, SpO2, NIBP and temperature.
3. Display: colour TFT, approx 10.1 inch and above, 4-channel.
4. Soft touch keys, durable and easy to clean .
5. Measurements, ranges:
6. ECG: I, II, III
7. HR: approx 30 to 250 bpm <3 bpm>
8. NIBP: approx 20 to 290 mmHg (systolic) <1 mmHg>

9. SpO2: approx 40 to 100 % <1%>
10. ECG div. respiration: approx 6 to 180 bpm <1 bpm>
11. Temperature: approx 10 to 45 degree Celsius< 0.1 degree Celsius>
12. NIBP oscillometric step deflation, manual/automatic, initial inflation pressure user selectable
13. Sweep, adjustable: 12.5, 25 or 50 mm/s
14. Sensitivity (amplitude) of all signals user adjustable
15. Standardising voltage marker, 1 mV
16. User preset of high/low alarms on all monitored parameters
17. Audio visual alarm in case measurements are outside preset range
18. Silencing feature for audio alarms
19. Trend display from 2 to 24 hours
20. RS232 serial data output provision (peripheral printer or network), analogue output for ECG
21. Defibrillator sync and protection
22. Pacemaker detection/rejection
23. Display reports system errors, leads and sensors failure and built-in battery status
24. Unit can be mounted on standard bed/wall rail or mobile pole/stand.
25. Automatic switch from mains to batteries in case of power failure
26. Monitor: constructed of durable shock proof plastic
27. Power requirements: 220 V / 50 Hz (with adapter) or internal re-chargeable batteries (autonomy approx 3 hrs, automatic recharge)
28. Battery backup minimum 2 hrs.

It should Supplied with following accessories:

1. 3 x cuff hose infant
2. 2 x sets of 5 neonate BP cuffs (No 1 (3.1-5.7 cm), No 2 (4.3-8 cm), No 3 (5.8-10.9), No 4 (7.1-13.1cm), No 5 (9.6-14.3 cm)
3. 1 x patient cable
4. 1 x box neonatal ECG-electrodes (200 sets of 3 electrodes, chest and/or extremities, diameter approx 22mm, ultra soft gel, self adhesive)
5. 2 x skin temperature transducers
6. 2 x reusable SpO2 sensors neonate, clip-on type (including connection cable)
7. 10 x reusable SpO2 sensors neonate, wrap around type (including connection cable)
8. 1 x spare rechargeable battery
9. 1 x spare set of fuse

6. DEFIBRILLATOR (Bi-Phasic)

1. Should be a Low Energy Biphasic defibrillator monitor with Recorder, having capability to arrest all arrhythmia within a maximum energy of 360 Joules.

2. Should work on Manual and Automated mode.
3. Should monitor ECG through paddles, pads and monitoring electrodes and Defibrillate through pads and paddles.
4. Should compensate for body impedance for a range of 25 to 1500hms. 4
5. Should be capable of doing synchronized cardioversion.
6. Should have a built in 50mm strip printer.
7. Should have charging time of less than 5 seconds for maximum energy.
8. Should have bright electroluminescent display for viewing messages and ECG waveform of 4 seconds.
9. Should have external paddles with paddles contact indicator – for good paddle contact. Both Adult and pediatric paddles should be available.
10. Should have event summary facility for recording and printing at least 250 events and 50 waveforms.
11. Should have facility to store patient data in internal memory and on data card typically more than 90 minutes of patient ECG &events.
12. Should have a battery capable of usage for at least 90minutes or 40 discharges.
13. Should be capable of printing Reports on Event summary, configuration, self test, battery capacity etc.
14. Should have facility for self test/check before usage and set up function.
15. Should have SP02 and non invasive pacing facility.
16. Should be capable of delivering energy in increments of 1-2 joules up to 30J and increments of maximum 50J thereafter.

Vital Sign Monitor

17. Monitor should be able to monitor ECG (5 leads). NIBP, Pulse Oximeter, Body Temperature and Respiration.
18. Monitor should preferably have colour display and should display at least two traces of different Colours.
19. Should have trend and listing facility for all parameters.
20. Alarms should be audio-visual and should have automatic and manual alarm setting for all parameters. Should display alphanumeric alarm messages.
21. Monitor should have inbuilt battery and inbuilt 1 channel thermal recorder.
22. Should have 5 leads ECG (I, II, III, AVR, AVL, AVF and V)
23. Should measure NIBP from Neonates to adults. Should be supplied with cuffs for neonates, pediatrics and adults.
24. Should have the facility to record BP when there are rapid circulation changes between the cuff interval measurements.
25. Should also display the trend of circulation changes over a period of time.
26. Should have an indicator displaying on screen the increase / decrease in circulation status and also the normal /Alarming range.
27. Should be capable of Measuring Oxygen Saturation even in case of Motion Artifact.
28. Should have selectable cuff interval from 1min. up to 3 hours.
29. Should have cuff measurements ending time.
30. Monitor should automatically measure the BP on any alarm condition.
31. Should display the waveform graph and pulse bar graph.
32. SpO2 should be ECG synchronized.
33. Should have change in pulse tone with rate.
34. Should be user friendly.

7. ECG MACHINE

1. Digital recorder of rest Electro Cardio Gram (ECG)
2. Records 12 standard leads simultaneous: aVR, aVL and aVF, I, II, III and V1-6 pre-cordials.
3. Automatic and manual printout mode
4. Internal memory for data storage
5. Splash-resistant alphanumeric keyboard and direct function keys
6. Reset zeroing, auto-base-line correction (0.5 Hz) and 1mV test
7. Electrode connection quality check
8. Filter setting for line-frequency (50 or 60 Hz) and tremor
9. Large back-lit LCD displays recorded data and failure announcements: ECG-curves, leads, heart rate, patient name and ID, electrode control, clock, leads, speed and filter setting
10. Integrated high-resolution 300 dpi thermal printer, width 210 mm
11. Print-out, folded thermo-reactive paper, format A4
12. Number of channels, selectable: 3, 6 or 12
13. Standard combination of channels or manually selectable
14. Paper speed, selectable: 5, 25 and 50 mm/sec
15. Sensitivity, automatic or selectable: 5, 10 and 20 mm/mV
16. Copy function
17. Built-in batteries and charging unit
18. When fully charged, the battery gives approx. 50 readings
19. Power requirements: 220 V / 50 Hz (with adapter) or internal re-chargeable batteries (autonomy approx 6 hrs, automatic recharge)
20. Supplied with:
    i. 1 x patient cable
    ii. 6 x suction ball-type chest electrodes, reusable
    iii. 4 x extremity clamp electrodes, reusable
    iv. 1 x bottle of gel for electrodes
    v. 1 x box of recording paper
    vi. 1 x box ECG-electrodes (200 sets of 3 electrodes, chest and/or extremities, diameter approx 22mm, ultra soft gel, self adhesive)
    vii. 1 x spare set of fuses

8 PULSE OXI-METER

1. Oximeter must have the provision for all 3 types of probes connection i.e. finger, toe or ear for both adult as well as pediatric and neonates.
2. It must have provision to use both disposable and reusable probes.

3. The display must indicate the oxygen saturation, heart rate, alarm limits for oxygen saturation and pulse rate, bar graph indicating the pulse amplitude, the plethysmograms and various system messages and error messages.

4. Alarms should be present to indicate the violation of the set pulse limits or set oxygen saturation limits.
5. Unit must also indicate the disconnection of the probe or the poor contact of the probe and the patient, low perfusion, and low battery.

6. It must be compatible with the other equipments like patient monitors, printers etc. for interfacing with them.

7. Unit must be light weight and portable, with a battery back-up of minimum 6 hours.

8. The system should supplied with following

   i. System as specified- 01
   ii. Reusable SPO2: Adult SPO2 sensor with cable- two nos. per monitor, Paediatric and Neonate SPO2 sensors - one no. per monitor.

9. AUTOMATIC STEAM STERILISER

1. Rectangular, horizontal, double door, high pressure, high vacuum fully automatic and microprocessor based autoclave for sterilizing hospital materials.
2. Double, Jacket Autoclave with latest Product Specific Quality Certification- IS 1/1 nternational.
3. Electrically operated in built compatible electric steam generator with the unit.
4. Temperature adjustable from 121° to 134°C
5. Working pressure range from 15 to 32 psi
6. Sterilization cycles: The autoclave residence time should not be les than 60 minutes if the autoclave operates at the working temperature (inner chamber) of 121°C at a pressure of 15 pounds per square inch (psi) and should be adjustable as per standards at different temperature and pressure.
7. Capacity: Sterilization capacity should be 30-36 cu ft/cycle.
8. Autoclave should be properly equipped with door safety locks, steam traps, pressure gauges and safety valves for chamber and jacket.
9. Autoclave should have insulation jacket with glass wool, covered with aluminum foil.
10. The unit should have integral alarms that ring, flash, or otherwise display information when temperature set-points are exceeded or fall below.
11. Pressure safety valve, over-temperature limiter, anti-scorch limiter, door (lid) interlock, overpressure limiter, current fuse.

12. The unit includes a data logger or chart recorder for monitoring operational history.
13. Integral controls, keypad, and/or display on the panel of the unit. The control panel must document all cycle information including key transition points in the cycle, alarms and deviations that may jeopardize the sterilization process, resulting in inadequate sterilization.

14. The Sterilizer should be supported on a steel stand, appropriately, coated for corrosion protection.
15. Boiler 36 KW (Certified by competent authority in case required), fitted with appropriate safety features and having protective cover should be provided.
16. Electric vacuum pump of appropriate power should be provided.
17. Carriage trolley with at least three SS trays and roller shelves.
18. The firm should provide all piping connections made up of SS required in the installation and should install the machine at the identified site in the Hospital.

10. FLASH STERILIZER

1. It shall guarantee express sterilization of instruments for Operation Theatre at 140 degree centigrade for 7 minutes.
2. Chamber capacity shall be 40 Litres.
3. Chamber temperature shall be 140 Degree Centigrade
4. Chamber shall be fabricated from stainless steel 304 with high quality argon welding.
5. It will have stainless steel 316L racks for easy loading & unloading
6. It will have high vacuum ejector to ensure effective air removal for excellent steam penetration & efficient post sterilization drying.
7. It shall have inbuilt steam generator fabricated from high quality stainless steel with water feeding & pressure control
8. Process Interlock as a safety feature to avoid opening of the door when the process is on
9. Provision of alarm if the door is open during the process.
10. There should be alarm when the water in the chamber is low & there should be process cut off facility when this happens.
11. Equipment shall be microprocessor based automatic system from add water to sterilization & dry cycle.
12. Material of construction shall be Stainless steel S.S 304.
13. System shall have attached thermal printer

14. It will have safety features like temperature control, Overheat protection, Safety valve, Electronic Circuit safety system, Low water indicator, Sterilization complete indicator, Emergency Exhaust Switch, Automatic preheating programme.

11. ETO STERILISER

1. The ETO sterilizer should be of 8 Cubic Feet Capacity.
2. The system should work with 100% ETO .
3. ETO Gas should be provided in Cartridges clearly marked “100% ETO” and should be approved by ‘EPA’, ‘FDA’ and OSHA for safety and quality.
4. Shall be Microprocessor controlled with Digital Printer.
5. Microcomputer shall monitor & control system operations & functions.
6. Sterilizer Should Have A Built In Aerator.
7. Machine should operate at a negative Pressure (of At least Upto 200mm Of Hg) during Operation.
8. Machine Should Operate at Dual Temperature at $37^{o}C$ and $55^{o}C$.
9. Should Operate In 3 Phase: Pre-Conditioning, Exposure, and Aeration.
10. Total Sterilization Cycle Time Not To Exceed 5.75 Hrs for Warm Cycle And 7.75 Hrs for A Cool Cycle.
11. Should Be Provided With An alphanumeric display and Graphical Printer.
12. The system should have a soft touch buttons for operations and programming, flushed to the surface of the system and not rotating knobs.
13. Video Screen Display to Check Cycle Status.
14. Continuous RH Display on Screen for Humidity level inside the chamber.
15. Built In Local Exhaust For Removal Of Residual ETO.
16. System should have a self-diagnosis for errors.
17. Compressor should be included in case there is no provision for Compressed Air Line for the equipment.
18. Standard international safety measure such as locking of door (cannot be opened during operation either by accident or intend by un-authorized personnel) for occupational and Fire hazards.
19. An independent body should certify system for compliance with OSHA Regulation for Safety.
20. Installation to include complete Copper Ducting from the CSSD to the Hospital Building Terrance and to be left 10 Feet beyond in Atmosphere.
21. The tender has to guarantee supply of GAS at least for a period of 10years. Certificate from at least 20 existing users required for satisfactory usage and supply of gas.

22. Detailed cost of consumables, such as gas, indicators, sterilization bags, or any other such items required need to specify clearly.

12. SEALING MACHINE: PLAIN SEALER

1. Smooth easy cleaning surfaces
2. Ergonomic handling with anti fatigue movement 3.
3. Should have automatic sealing indicator
4. Quick sealing time with sealing width of 12mm
5. Should be microprocessor controlled and with constant temperature 6.
6. Should be provided with roll stand
7. It should be a table top system
8. Should work on 230V, 50 Hz electric power supply.
9. Compact system with app 50cm x 20cm x 40cm (±2cm)