

1. The technical Specification of Schedule 1 item no. 19, “Medical mobile x-ray machine ” should be read as follows:-

The mobile x ray equipment would be required to perform x ray studies in emergency and trauma center and at the bedside in wards and ICU. The unit should be compact, lightweight and easily transportable. It should have following specifications:

Generator: A high frequency generator with the following features:

- a. Power : 4 kW or more
- b. kVp Range : 40 – 100 kVp or more
- c. mAS Range : 250 m As or more.
- d. m A range : 10 mA to 100 mA or more
- e. Exposure Time: 10 ms to 5 sec.

Digital display

kV and mAs parameters, System ON, System OFF, status and fault messages on the kV and mAs area

X-ray Tube

Stationary/Rotating Anode tube with focal spot 1.8 X 1.8 mm or better.

Tube stand

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

Collimator

Collimator rotation should be +90 to -90 degrees with auto shut off lamp facility.

Cassette storage box

The equipment should have cassette storage box for minimum of 2 cassettes.

Electrical requirement: The unit should be operational on main voltage from single phase 180-260 v AC with automatic main compensation.

Ergonomics:

The unit should have small foot print. The height of the column stand should not be more than 150 cm for easy transportation in the lift etc. and areas with small height doors. The equipment should be light weight, not more than 160 kg.

Breaking system

The unit should have effective breaking system for parking.

Certification

System shall have valid AERB certificate of the quoted model. The bidder to provide any other certificate required for importing the equipment in case of imported models.

Product Data Sheet

All technical specification should be supported with original data sheet highlighting the page number in the compliance sheet. Photocopy/computer print will not be acceptable.

Spare parts availability

The principal should give undertaking regarding the availability of spare parts for next 10 years.

2. The Technical Specification of Schedule 3 item no. 9 of ENT Dept. "Heavy duty shadow less operating light for ENT OT similar make major + minor (O.T.)" should be read as follows :-

Heavy duty shadow less operating light for ENT OT

- (a) The double dome operating light must be designed for the use in high demanding surgical procedures. State-of-the-art LED bulbs should be used to ensure a low energy consumption and a long service life.
- (b) The LED OT Light unit should be European CE/ US FDA approved product. Product should meet relevant IEC standards. Please attach certificates.
- (c) Outer handles at the light head should be provided to allow for non-sterile positioning.
- (d) Light head must be designed with smooth transitions and surfaces, without slots, gaps or exposed screwing to ensure fast and effective cleaning.
- (e) The light head with streamlined shape is favourable within laminar flow. The light head must be resistant to disinfectant.
- (f) For sterile positioning an ergonomic, exchangeable and centrally positioned sterile handle within the light head should be provided.
- (g) All main joints of surgical light must be provided with unlimited rotation (360°). Light head and suspension must be sealed dustproof.
- (h) The surgical light should be complete with all components for ceiling mount and electrical feed-in, incl. finalised installation.
- (i) Technical data for main dome: - 1 nos.
 - i. Central illumination intensity Ec 160000 lux
 - ii. Light field diameter at a distance of 1 m 200 mm
 - iii. Depth of illumination L1+L2 1200 mm
 - iv. Average Color rendering index Ra 95
 - v. Color rendering index R9 (red) 93
 - vi. Color temperature 5000K
 - vii. Central irradiance Ee 580 W/ m² ± 50 W/ m²
 - viii. Ee/Ec ratio - 3.5 W/m² x Lux
 - ix. Adjusting the illumination intensity 40000 to 160000 Lux
 - x. Number of LED 66 units
 - xi. Number of LED stripes 11 units
 - xii. Service life LED bulbs approx. 30000 hours

- xiii. Replacement of LED bulbs possible
- xiv. Ambient light mode (Endolight) 300 Lux
- xv. Diameter of light head 620 mm

- (j) Technical data for satellite dome - 1nos.
 - i. Central illumination intensity E_c 120000 lux
 - ii. Light field diameter 200mm
 - iii. Depth of illumination L1+L2 1300 mm
 - iv. Average Color rendering index R_a 95
 - v. Color rendering index R9 (red) 93
 - vi. Color temperature 5000K
 - vii. Central irradiance E_e 430 W/m² ± 50 W/m²
 - viii. E_e/E_c ratio 3.5 W/m² x Lux
 - ix. Adjusting the illumination intensity 40000 to 120000 Lux
 - x. Number of LED 48 units
 - xi. Number of LED stripes 8 units
 - xii. Replacement of LED bulbs possible
 - xiii. Service life LED bulbs approx. 30000 hours
 - xiv. Ambient light mode (Endolight) 300 Lux
 - xv. Diameter of light head 620 mm

3. The specification of Schedule no. 3 Item no. 19 “BERA – audiometer” quoted in the tender should be replaced as follows:-

BERA Audiometer :-Modes Required- ABR,MLR,LLR,P300,E-ABR,ECochG,VEMP,ASSR. 2 Channel , Acquisition Mode 16 bit ADC Bone , Gain 80dB , CMMR Ratio >118dB ,Typical<100Hz , Frequency Response 8KHz.

Max Input Offset Voltage 2.5V. Windows Operating System Compatible, Amplifier Gain 1 to 50 Programmable , Analysis Time 1 to 999ms. Input Mode -Headphone, Bone Vibrator and Free Field Stimulus -Type Click ,Tone Burst ,Masking Noise. Measurement Frequency 33Hz. Waveform Rectangular. Stimulus Rate 93Hz. Noise Filter Settings User Definable. Stimulus Polarity Rare Traction, Condensation and Alternating. Analysis Time 120 Seconds. A/D Resolution 16 Bit. USB Connectivity- Should have PC & Printer Connectivity.

Accessories :-

Paired TDH-40 Super –Aural Phones.

AEP 2 Channel Preamplifier -01 No.

ASSR- 01 Set.

ECochG Kit- 01 Set.

VEMP Kit- 01 Set.

Abrasive Paste- 01 No.

Conductive Paste -01 No.

All Software CD'S- 01 No Each.

USB Cable- 01 No.

Power Cable -01 No.

Universal Grounding Cable- 01 No

The item should be USFDA/ European CE Certification Approved

4.The technical specification of item 12 schedule no. 1 "Anaesthesia Workstation" should be read as given below :-

1. General Requirement

- a) Compact and modular, three gas Anesthesia workstation with an integrated ventilator for adult to infants and integrated airway monitor for airway pressures and volume.
- b) The machine should be suitable for low and minimal flow anesthesia application with compliance compensation of breathing circuit, fresh gas flow compensation/ decoupling.

- c) The machine should have at least 3 drawers
- d) The anesthesia machine, inbuilt ventilator, vaporizer and patient monitor should be manufactured by same company to maintain uniformity of part and efficient after sale service.
- e) Should have precise digital fresh gas settings of Air, N₂O and O₂, with a total fresh gas flowmeter for indication.
- f) Should display virtual flow tubes.
- g) The system should have up to 2 Hrs. battery backup
- h) System should be US FDA and European CE approved and confirms to EN 60601-2-13 (Requirement for safety and essential performance of anaesthesia system)
- i) Should have integrated anesthesia gas monitoring module with automatic identification of agent with values display on patient monitor.

2. Gas delivery system

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

3. Vaporizer

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

4. Breathing System

- a) Should have fresh gas de-coupled semi closed circle absorber system.
- b) Should have adjustable pressure relief valve from 5 to 75 mbar.
- c) Should have change over from Spontaneous to Bag ventilation with single step.
- d) The system should have leak and compliance test (including patient hoses upto the Y piece).
- e) Should have compact breathing system with approx. 1.7 Ltr. Volume capacity.
- f) Should have an external fresh gas outlet for connecting Magill or Bain's circuit
- g) The system should have integrated breathing system warmer to prevent condensation in breathing system and patient comfort (to prevent delivery of dry fresh gases to lungs or mucocilliary transport of fresh gas)
- h) The device should have port for anesthesia gas scavenging system.

5. Anesthesia Ventilator

- a) The system should have inbuilt ventilator with electronically controlled and pneumatic or Piston driven technology.
- b) Should not require changing of bellows for adult & infants.
- c) Should have minimum color TFT screen.
- d) Modes: Manual/Spontaneous Volume controlled, Pressure controlled, SIMV/PS,
- e) The same ventilator should be capable to be upgrade to pressure support.

- f) Tidal Volume : 20 ~ 1400 ml
- g) PEEP : 0 ~ 20 mbar
- h) Breathing Frequency : 4 to 60 BPM
- i) I:E Ratio : 4:1 to 1:4
- j) Inspiratory pause : 0 – 50% of Ti
- k) Should have Desflurane compensation.
- l) Should be able to ventilate with atmospheric air, in case of total gas supply failure.

6. Integrated Airway monitoring and display of following parameters:

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

7. Adjustable high/low alarm limits with audio and visual alarms for the following:

1. Minute volume,
2. Airway pressure (including stenosis and disconnect),
3. Inspiratory oxygen concentration,
4. Audio power supply fail alarm,
5. Fail to cycle warning.

8. Machine should have RS 232 connectivity port

9. Scope of supply

a) 3 gas Anesthesia machine

b) Trolley with at least 2 drawers

c) Writing surface

d) Pin Index yokes for O₂ & N₂O

e) Pipeline connections for all three gases

f) Anesthesia ventilator

g) Patient monitor- specification as below

h) Semi-closed breathing system

i) Adult & Pediatric auto cleavable patient tubing

j) Anesthetic mask size – Adult & child

k) Vaporizers for Isoflurane & Sevoflurane

l) Central gas supply hoses (Color coded)

m) Instruction for use

10. Anesthesia Patient Monitor

a) Should be suitable for adult, paediatric neonatal patients monitoring in fixed environment.

b) Should have minimum 17" and color TFT display with large fonts and provide access to minimum 8 or above waveforms with ergonomic representation of multi-functionality

- c) Should have event recall minimum up to 150 events, graphical and tabular trends, drug dose calculations, alarm logs, OxyCRG, Oxygen/ventilation & Hemodynamic calculations as standard.
- d) Should have minimum ECG, NIBP, SpO2, 2 IBPs, 2 Temperature as standard . All other parameters should be through upgrades as pods/modules and software.
- e) Should have Arrhythmia detection including life threatening arrhythmias such as VTACH , ASYST, VFIB as standard feature
- f) Should have non-volatile graphic and tabular trending of all monitored parameters as standard for minimum 24 hrs.
- g) Should have manual as well as automatic setting of screen format with selectable parameter priority & colour selection for parameter on screen.
- h) Should have excellent cable management with as minimum as possible cables at monitor & patient end for maximum comfort to patient as well as user.
- i) The quoted model should be US FDA approve.
- j) Ready for wired networking.
- k) The monitor should have minimum 30 minutes battery back up.

Should have following parameters

m) ECG

☑ 5 / 6 lead ECG monitoring with three leads of ECG waveform simultaneously monitoring.

☑ Pulse rate Range 15 to 300bpm

n) RESPIRATION

☑ Through impedance pneumography/ Capnography method

o) SpO2

☑ Should be supplied with Masimo SET technology with respective sensors

☑ Should display digital value and Plethysmograph

p) NIBP

☒ Suitable for adult, pediatric , neonatal patients

☒ Should display Systolic, diastolic, mean pressure in large easy to read display

☒ Should have manual/ stat mode or automatic mode with adjustable time intervals from 2 – 240 minutes and adjustable alarm limits

q) IBPs - Simultaneous monitoring of 2 IBP's should be standard

☒ Range: -50 to 400mmHg

r) Temperature - two temperature one core and second skin simultaneous monitoring.

☒ Range: -5 to 50Deg C

s) Anesthetic Gas Monitoring - The monitor should display complete anesthesia gas monitoring including agent identification and inspiratory & expiratory concentrations along with EtCO2 monitoring with waveforms.

t) Monitor should have facility to interface with quoted anesthesia workstation displaying ventilation parameters, trends, waveforms & loops on monitor screen.

u) Neuro Muscular Monitoring (NMT) module.

v) Simultaneously monitoring of Two IBP & two Temperature should be standard

w) Demonstration of quoted model with all required capabilities if required by Tender Inviting Authority

x) Should be provided with appropriate mounting system to mount on anaesthesia system

y) The bidder should provide point by point compliance, substantiate it with data sheet, clearly spelling out the deviations if any.

z) Standard Scope of supply must include:

☒ Main unit – 1 no

☒ 10 lead ECG Cable – 1 no

☒ SpO2 Masimo/Nellcor or equivalent set finger sensor with extension cable – 1 no

☒ Skin temperature Probe – 1 no

☒ Rectal / Esophageal temperature probe – 1 no

☒ NIBP Hose – 1 no

☒ Adult & Paediatric Cuff – 2 Each of different sizes

☒ IBP reusable cable for 2 IBP and 10 pcs disposable transducers

☒ NMT Module with standard accessories

☒ AGM Module with standard accessories

☒ Instruction for Use