

**SOP/ITB-23-002 ANNEX B-SPECIFICATIONS**

S #	Nomenclature	Specifications	Quantity
1	<b>Cardiac Monitor</b>	<p><b>Multi Parameter Patient Monitor</b></p> <ul style="list-style-type: none"> <li>• (5ch ECG, SpO2, NIBP, Dual IBP, TEMP, Resp., ETCO2)</li> <li>• Display for easy Viewing 15   or better color TFT/LCD/ LED for easy set-up User selective 10 or better traces/ wave form display.</li> <li>• ECG, SpO2, NIBP, 2-IBP, 2-TEMP, and Respiration</li> <li>• EtCO2 (Side stream type with basic accessories)</li> <li>• 18 or more Arrhythmias analysis should be detected and alarmed</li> <li>• Multi-lead ECG algorithm</li> <li>• S-T and QT Analysis</li> <li>• Pacemaker detection.</li> <li>• Support heart rate analysis and dynamic NIBP analysis</li> <li>• Save up to 500 Event management and 48 hours waveforms</li> <li>• IBP cable and sensor kit</li> <li>• Up to 72 hours of graphic and tabular trend of all parameters, PERFORMANCE: Heart rate: 30 ~ 300 bpm or better on either sides And Ped/Neo:15-350bpm or better A Page 072 of 207</li> </ul> <p><b>Respiration rate:</b></p> <ul style="list-style-type: none"> <li>• 2~150bpm or better on either side.</li> </ul> <p><b>SPO2:</b></p> <ul style="list-style-type: none"> <li>• Range: 0 ~ 100% or better on either side</li> <li>• Neonate and adult probe.</li> </ul> <p><b>Temperature: Range; 0 -50C(32 - 122F)</b></p> <p><b>NIBP:</b></p> <ul style="list-style-type: none"> <li>• Range: Adult: SYS 25-290mmHg DIA 10-250mmHg Average: 15-260mmHg</li> <li>• Pediatric: SYS:25-240mmHg DIA: 10-200mmHg Average:15-215mmHg</li> <li>• Neonatal: SYS:25-140mmHg DIA:10-115mmHg Average :15-125mmHg</li> </ul> <p><b>GENERAL:</b></p> <ul style="list-style-type: none"> <li>• Display: 15   or better Color TFT/ LCD/ LED or better(with all parameters display)</li> <li>• Alarm: All parameters on/off selective independently</li> <li>• Power: input 220Vac,50Hz • With Battery Backup time:</li> <li>• 05 hours or better</li> </ul> <p><b>ACCESSORIES:</b></p> <ul style="list-style-type: none"> <li>• ECG 5 Lead cable. 1</li> <li>• Disposable Electrodes Adult, Neonate &amp; Paeds. 20each</li> <li>• SPO2 Finger sensor with fixed or detachable extension (each for adult, Paeds and neonate) Cable of minimum 3-meter length. 1</li> <li>• NIBP Reusable Neonate, Paeds &amp; Adult Cuff 1</li> <li>• NIBP Hose 1</li> <li>• AC power cord 1</li> <li>• IBP Cable 1</li> <li>• Temperature sensor with cable 1</li> </ul>	10
2	<b>Hematology Analyzer with Stabilizer and Online UPS</b>	<p>Consisting of:</p> <ul style="list-style-type: none"> <li>• Hematology Counter with 3 Parts differential automated. Throughout 60 Samples / Hour or better.</li> <li>• Minimum 18 or better parameters including Hb, WBC, RBC, MCV, Plt, and Derived values.</li> <li>• Flagging of results outside user defined limits.</li> <li>• Micro sampling capability.</li> <li>• Auto Calibration Program.</li> </ul>	02



		<ul style="list-style-type: none"> <li>• Reagent level alert.</li> <li>• System monitoring</li> <li>• Automated start up and shutdown</li> <li>• Result storage: up to minimum 500 results.</li> <li>• Patient data entry and specimen recognition by Keyboard.</li> <li>• RS 232 Interface.</li> <li>• Built in Printer.</li> <li>• With inbuilt auto-sampler or external specimen mixer.</li> </ul> <p>Consumables, Reagents, Calibrators, Controls for startup.</p> <p><b>Stabilizer:</b> Compatible Servo motor stabilizer.</p> <p><b>UPS:</b> Compatible Online UPS for at least 30 minutes backup.</p>	
3	<b>Semiautomated Chemistry Analyzer with Stabilizer and Online UPS</b>	<ul style="list-style-type: none"> <li>• Easy keypad operation with LCD Display / touch screen. Wavelengths range is 340-670nm, 08 filters position. Supports flow cell and cuvette mode.</li> <li>• Analytical models include kinetic, fixed time. Bi-chromatic end point with or without reagent blank or sample blank, linear or non-linear calibration curves.</li> <li>• Up to 1000 test results can be stored.</li> <li>• Excellent QC function, 02 controls per test.</li> </ul> <p><b>Specification:</b></p> <ul style="list-style-type: none"> <li>• A Page 092 of 207</li> <li>• Absorbance Range: 0.500-3.00 Abs.</li> <li>• Resolution: 0.001 Abs (displayed)</li> <li>• Light sources: Halogen lamp.</li> <li>• Wavelengths: 340-670, 8 filter positions.</li> <li>• Wavelength Accuracy: <math>\pm 1\text{nm}</math> to <math>\pm 3\text{nm}</math></li> <li>• Band Width: <math>&lt; 8\text{nm}</math>.</li> <li>• Flow Cell: Metal – quartz flow cell.</li> <li>• Temperature Control: 370 C, <math>\pm 0.1^\circ\text{C}</math> and ambient</li> <li>• Output: Internal Printer.</li> <li>• Two extra Lamp.</li> </ul> <p><b>Stabilizer:</b></p> <ul style="list-style-type: none"> <li>• Compatible Servo motor stabilizer</li> </ul> <p><b>UPS:</b></p> <ul style="list-style-type: none"> <li>• Compatible online UPS for at least 30 minutes backup.</li> </ul>	02
4	<b>ICU Ventilator for Neonatal &amp; Paediatric</b>	<p>Ventilator, electrically operated microprocessor controlled, suitable for Paeds and Neonate use.</p> <ul style="list-style-type: none"> <li>• Tidal Volume: 25 ~ 2000 ml or better on either side. Frequency: 1 ~ 120b/min or better on either side.</li> <li>• I:E ratio: 1:7- 4:1 or better</li> <li>• Inspiratory Time: 0.2-8s or better</li> <li>• Inspiratory Pressure: 1-100cmH<sub>2</sub>O or better</li> <li>• Support Pressure: 0-90cmH<sub>2</sub>O or better</li> <li>• Pressure Trigger: -20- -0.5cmH<sub>2</sub>O, OFF</li> <li>• Flow Trigger: 0.5-20 L/min (neonatal 0.1-5.0L/min), OFF</li> <li>• PEEP: 0-30 cmH<sub>2</sub>O</li> <li>• FiO<sub>2</sub>: 21-100%</li> <li>• Patient Circuit: Autoclavable/ disinfectable (Paeds &amp; Neonate) Supplied with pole clamp</li> <li>• O<sub>2</sub> and Air input hoses.</li> </ul> <p><b>Modes:</b></p> <ul style="list-style-type: none"> <li>• Invasive and non-invasive ventilation which could be used inside ICU or outside ICU.</li> <li>• Volume control: CMV/AC, SIMV, PRVC</li> <li>• Pressure Control: CMV/AC, SIMV, CPAP, PS</li> <li>• Adaptive ventilation mode, APRV, Duo lev (Bilevel)</li> </ul> <p><b>Monitoring:</b></p>	10



		<ul style="list-style-type: none"> <li>• Standard parameters</li> <li>• One Hour or more Built-in Battery Backup</li> <li>• TFT / LCD Monitor Size: 12   or more</li> <li>• Display Loops including Pressure-Volume, Flow-Volume, Flow-Pressure, show up to 2 loops simultaneously</li> <li>• Should operate on O2, Air/ or both</li> <li>• Alarms for Gas failure, RR, Pressure, Apnea, Volume, Low Battery</li> <li>• With built-in Turbine/compressor</li> <li>• (03 Hrs or more backup UPS)</li> </ul>	
5	<b>Ultrasound machine (General purpose) With inbuilt trolley</b>	<p>Heavy duty U/S machine (inbuilt trolley mounted) with</p> <ul style="list-style-type: none"> <li>• Imaging Mode: B,B/B,B/M,M</li> <li>• Gray Scale: 256 or better</li> <li>• Display: 15" TFT or better</li> <li>• Scanning Depth: From 20 To 248 mm or better on either side</li> <li>• Pre-Processing: Signal Processing, Dynamic Range, Frame Correlation, Line Correlation.</li> <li>• Image Enhancement, Scanning Angle Selection, Harmonic Imaging.</li> <li>• Post-Processing Gray Map Y- Correction, Rejection Left- A Page 094 of 207 Right</li> <li>• Reverse, Up-Down Reverse</li> <li>• Hard Disk: 500 GB or better</li> <li>• Cine Loop: 256 Frame or better Cine loop Memory In</li> <li>• B/B, M and B/M Mode.</li> <li>• Zoom: Pan Zoom In Real-Time &amp; Frozen Condition</li> <li>• Measurement &amp; Calculation:</li> <li>• B-Mode: Distance, Circumference, Area, Volume, Angle, Ratio. Built-In Imaging Archive— Storage: Over 100,000 still Images.</li> <li>• Histogram, Profile,</li> <li>• M-Mode, Distance, Time, Velocity, Heart Rate (2 Cycles)</li> <li>• Software Packages.</li> <li>• Abdomen, Urology, Gynecology, Obstetrics, Cardiology, Vascular, Small Parts, Orthopedics.</li> <li>• Power Supply: 220 VAC, 50Hz</li> <li>• Standard Configurations: Main Unit</li> <li>• 2 active Probe Connector.</li> <li>• Tissue Harmonic Imaging. 256-Frame Cine Loop In B, B/B, M &amp; B/M Mood</li> <li>• USB Ports minimum 2 and CD-RW.</li> <li>• Measurement And Calculation Software Packages</li> <li>• Electronic Convex Array Transducer. (Model must be mentioned).2.5/3.5/5.0 MHz</li> <li>• Electronic Linear Array Transducer: (Model must be mentioned) 5.0/7.5/10MHz</li> <li>• Thermal Printer (Branded, model and make must be mentioned)</li> <li>• 50 Roles Thermal Paper.</li> <li>• With compatible online UPS for minimum 1-hour backup.</li> <li>• With built in mounted trolley.</li> </ul>	02
6	<b>Baby Incubator Double Wall</b>	<ul style="list-style-type: none"> <li>• Microprocessor controlled</li> <li>• Incubator to have a large double Plexiglas hood with excellent dual viewing panels mobile on lockable castors.</li> <li>• Temperature range: 34-to-37-degree C.</li> <li>• To have an integrated sensor module to collect air and skin temperatures Spo2, oxygen, humidity and pass this information to the display.</li> <li>• 7 inch or more LCD/TFT screen should available to display relevant information.</li> </ul>	10



		<ul style="list-style-type: none"> <li>The sensor module to have a visual alarm facility to complement the audible alarm.</li> <li>The mattress base to be contoured, x-ray translucent.</li> <li>To be able to tilt <math>\pm 12</math> degrees or more.</li> <li>Trend data for 48 hours or more. The hood to have four doors, two on either side'. Openings with 4 tubing access ports.</li> <li>The unit to have the temperature, oxygen level and humidity to preset levels.</li> <li>To have an alarm for all of these parameters with a low initial alarm intensity to avoid undue disturbance.</li> <li>Oxygen to be able to be calibrated from 21% to 100%.</li> <li>The humidity module to be front loading and to need filling daily.</li> <li>The mattress base tilts control to be knobs on the base. Noise should be <math>\leq 45</math>dbi.</li> </ul> <p><b>Accessories:</b></p> <ul style="list-style-type: none"> <li>Telescopic IV stand.</li> <li>Monitoring shelf,</li> <li>Cylinder holder</li> <li>Ventilator tube support.</li> <li>Spo2 sensor for neonatal</li> </ul>	
7	<b>Suction Low Pressure Machine</b>	<ul style="list-style-type: none"> <li>Performance: suction controlled 0-650mmHg (Adjustable)</li> <li>Capacity: 30l/min or more</li> <li>Controls: On/Off switch</li> <li>Safety: positive pressure restricted</li> <li>With filter.</li> <li>Complete with autoclave able receiver jar 2x1000 ml (Autoclavable)</li> <li>Suction tip: 1 No</li> <li>Suction pipe length 2m, with hose.</li> <li>Mobile on four antistatic castors with the over flow safety.</li> </ul>	04
8	<b>Suction High Pressure /Heavy Duty Machine</b>	<ul style="list-style-type: none"> <li>Mobile suction pump Oil free along with 4 anti- static wheels with lock.</li> <li>Convenient for operation, with following performance features:</li> <li>Built-in Vacuum gauge with a range from: 0-650 mm Hg or better adjustable.</li> <li>Flow capacity: Not less than 40 l/min or better</li> <li>Explosion proof footswitch.</li> <li>Capacity of two graduated suction bottle: 2000cc each (Autoclavable)</li> <li>Heat resistant and disinfect able rubber tube for suction. Over flow safety device.</li> <li>Power requirement: 100-240VAC, 50Hz. Complete with suction nozzle and other standard accessories</li> </ul>	04
9	<b>ECG Machine 3 channels</b>	<ul style="list-style-type: none"> <li>03 channels ECG Machine</li> <li>Should be portable and lightweight</li> <li>ADC:12bits, resolution:1uV/LSB</li> <li>Voltage 100-240 VAC, 50Hz</li> <li>Display 3" or more</li> <li>Simultaneous 12 leads acquisition</li> <li>Must have continuous display of patient heart and rate</li> <li>Must have integrated pediatric analysis.</li> <li>Support the 12-lead ECG analysis program for complete ECG Analysis reports with measurement data table should be provided.</li> <li>Must be able to indicate at least four critical values that require immediate clinical attention.</li> <li>Printer: High Resolution and in-built thermal array printer.</li> <li>Battery Capacity: Must be 4 hours without printing.</li> </ul>	02

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		<ul style="list-style-type: none"> <li>• Can save up to 200 ECGs in internal memory or more</li> <li>• Complete with Patient Cable.</li> <li>• Reusable Electrodes Set.</li> <li>• ECG Rolls 20 Nos.</li> <li>• Gel 5 liters and Standard Accessories with each unit.</li> </ul>	
10	<b>ABG Machine</b>	<p>Specifications of Blood Gas Analyzer (ABG Machine)</p> <ul style="list-style-type: none"> <li>• Fully automatic, upgradeable, fast electrolyte &amp; blood gas analyzer.</li> <li>• Essential Measured parameters; pH, pCO<sub>2</sub>, pO<sub>2</sub>, Hematocrit Lactate, glucose, Na<sup>+</sup>, K<sup>+</sup>, Ca<sup>++</sup>. All these parameters should be measured simultaneously</li> <li>• Calculated parameters should include Hemoglobin –cHgb, actual bicarbonate – cHCO<sub>2</sub>, total Carbon Dioxide – cTCO<sub>3</sub>, base excess of extra cellular fluid.- BE(ecf), base excess in Blood -- BE(b), Oxygen Saturation – cSO<sub>2</sub>.</li> <li>• Sample volume - less than 100 micro litre.</li> <li>• Fast analysis time – less than 60 sec.</li> <li>• Fully automatic test card technology – rectangular shape with built-in gold-plated electrodes and concealed calibrated fluids lines with micro technology for fluid movement.</li> <li>• Data display should be on well-illuminated, adequate size screen display.</li> <li>• Power Supply Using Rechargeable battery (lithium ion battery)</li> <li>• Back up of 6 hours with Rechargeable battery.</li> <li>• Connectivity – Via Blue tooth and WiFi for HIS and LIS .</li> <li>• Data Storage for atleast 1000 patients.</li> <li>• Calibration – Auto Calibration before every sample is inserted.</li> <li>• Operating the machine- User Friendly Touch Screen.</li> <li>• Ambient working temperature – 15 to 30 Degrees.</li> <li>• Test cards Storage – At Room Temperature</li> <li>• Upgradeable to future parameters like Cl<sup>-</sup>, Creatinine on the same card.</li> <li>• System should come along with a Windows based Personal Digital Assistant to control the entire system &amp; printer.</li> <li>• Stand by blood gas cum electrolyte analyzer in case of breakdown.</li> <li>• Should have local service facility</li> <li>• Should supply test cards for 3 years (1000 cards/year) in a staggered manner as per expiry date of test card.</li> <li>• Warranty of 3 years and 5 years CMC after completion of three years</li> <li>• It must be UF-FDA /CE (Conformité Européenne) approved.</li> <li>• Must submit User list and Performance report</li> <li>• Demonstration is compulsory.</li> <li>• Training of hospital engineers &amp; staff.</li> <li>• Operating and detailed service manual should be supplied.</li> </ul>	01



11	<b>Biological Refrigerator</b>	<ul style="list-style-type: none"> <li>• Adjustable shelves, the slot design be clear, store items are easy to distinguish</li> <li>• Better cabinet temperature uniformity, Auto defrost</li> <li>• High-accuracy Temperature Control</li> <li>• Accurate Temperature, Safe Storage</li> <li>• High accurate controller and high sensitivity sensor, keep the temperature within 2~8°C.</li> <li>• Condensation Free Design</li> <li>• Door without condensation under ambient temp. 32°C and 80% humidity</li> <li>• Electrical heating glass door, condensation free under humidity 75%.</li> <li>• Lockable Design</li> <li>• Door with Lock, Safety Control</li> <li>• Door with lock or accommodate a padlock, safeguard the storage.</li> <li>• Intelligent Alarm</li> <li>• Human Technology, Safe Service</li> <li>• Three alarm types keep storage safe</li> <li>• High efficiency specialty compressor with known field reliability</li> <li>• Permanently lubricated cooling fan for safety and longevity</li> <li>• Forced-air cooling with optimized air distribution system designed to achieve maximum temperature uniformity and stability</li> <li>• Optimized refrigeration system design for more effective cooling and speedy recovery</li> <li>• Temperature variation within <math>\pm 3^{\circ}\text{C}</math></li> <li>• Temperature range 2~8°C</li> <li>• Microprocessor control, digital display, and temperature adjustment with an increment of 0.1°C</li> <li>• Large digital display screen</li> <li>• Wide voltage tolerance suitable for unstable voltage supply</li> <li>• Designed for ambient temperature 10~32°C with humidity below 75%</li> <li>• Equipped with a complete temperature alarm system featuring audible buzzer and visible flashing light</li> <li>• Capable of alerting failures due to High/low temperature, Power failure, Door ajar, Sensor error, Low battery</li> <li>• Temperature Range (<math>^{\circ}\text{C}</math>)2~8</li> </ul> <p><b>Controller</b> Microprocessor <b>Display</b> LED</p> <ul style="list-style-type: none"> <li>• Power Supply 100-240VAC 50/60Hz</li> <li>• With compatible online UPS for minimum 03-hour backup.</li> </ul>	01
12	<b>Radiant Warmer/ Infant Warmer</b>	<p>Mobile infant warmer with integrated baby bassinet unit that Accommodates use of resuscitation equipment for intensive care of neonate.</p> <p><b>Technical Specification:</b></p> <ul style="list-style-type: none"> <li>• Infant warmer system to provide controlled source of radiant heat for infant.</li> <li>• Temperature Control (Skin).</li> </ul> <p><b>Temperature Adjustment:</b></p> <ul style="list-style-type: none"> <li>• Skin Temperature adjustment: 34°C ~ 37°C,</li> <li>• Microprocessor controlled skin servo mode operation with digital display</li> <li>• Digital display for Infant Temperature</li> <li>• Audible and visual alarms and automatic switch off if temperature reaches at 38°C.</li> <li>• Built-in examination light</li> <li>• Built-in air/gas driven venture suction system</li> <li>• Tilting large bed platform suitable for x-ray cassettes, with</li> </ul>	10



		<p>cassette holder.</p> <ul style="list-style-type: none"> <li>To be able to tilt <math>\pm 10</math> degrees or more.</li> <li>Bed with mattress that is tiltable and having Trendelenburg and reverse Trendelenburg position.</li> <li>Accessible from all sides with acrylic collapsible side panels. Trolley with 2 Lockable castors or more.</li> <li>Power Requirement: 220~V, 50Hz</li> </ul> <p><b>Accessories:</b></p> <ul style="list-style-type: none"> <li>Complete infant resuscitation package with mounting bracket (resuscitation module, flow meter, infant suction unit, suction regulator, suction bottle/400ml, positive pressure resuscitation, air hose, and oxygen cylinder medium size).</li> <li>Skin probe reusable.</li> <li>Infant face masks (Large, Medium, Small)</li> </ul>	
13	<b>Infusion pump with Docking System</b>	<ul style="list-style-type: none"> <li>Infusion pump with Docking System, visible handle, With Stand.</li> <li>Power requirements: AC: 100-240V; 50Hz</li> <li>Delivery / Flow rate: 0.1-999.9ml/h</li> <li>Volume range 1-9999</li> <li>Occlusion Limit low, Normal, High Facility with keep vein open Rate</li> <li>Anti-Bolus function, Titration function should be available Volume infused display and Dynamic cannula pressure displayed on screen.</li> <li>Full alarm system.</li> <li>Air in line detection.</li> <li>Occlusion detection capability.</li> <li>Vertical stand mobile type</li> <li>Built in battery backup: 2 hours or better</li> <li>Water-Proof Grade: IP34 or Equivalent</li> <li>With all accessories</li> </ul> <p><b>General technical requirements:</b></p> <ul style="list-style-type: none"> <li>One channel (at least). Capable of accepting any kind of fluids (solutions and medications preferable).</li> <li>Pump capabilities: <ul style="list-style-type: none"> <li>flow range 0.1 to <math>\geq 999</math> mL/hr</li> <li>increments 0.1–100 mL/hr</li> <li>keep vein open (KVO) rate 1–5 mL/hr</li> <li>volume to be infused selector (VTBI) 1–9999 mL</li> <li>flow rate accuracy of <math>\pm 5\%</math> or better</li> <li>when multiple channel automatic piggybacking.</li> </ul> </li> <li>Ingress protection not less than IPX2. Front panel lockout. Self-check carried out on powering on. Events stored system – log book. Pause infusion facility required. Anti-bolus system to reduce pressure on sudden release of occlusion.</li> </ul> <p><b>IV set:</b></p> <ul style="list-style-type: none"> <li>free-flow protection</li> <li>air trapping capability</li> <li>Needleless IV connection. “Dose error” reduction system (preferable).</li> <li>Air bubble detector with single and cumulative functions (preferable). Clearly visible optical alarms. Acoustic alarms not less than 45dB. Easy set up and operation. Large easy to read display. Real-time display.</li> <li>Compatibility with standard infusion sets commonly distributed in the market . Continuous operation within specification in ambient temperature of at least 5–40 °C, relative humidity of at least 10–90% non-condensing.</li> </ul> <p><b>Display:</b> Flow. Pressure. Dose. Availability of software to monitor the delivery of drugs (preferable).</p>	20



		<p><b>Alarms:</b></p> <ul style="list-style-type: none"> <li>• Audible alarm with volume control.</li> <li>• Momentary silence less than 2 min.</li> <li>• Occlusion upstream.</li> <li>• Occlusion downstream.</li> <li>• Air in line.</li> <li>• System malfunction.</li> <li>• Set loaded improperly.</li> <li>• Door open.</li> <li>• Infusion complete.</li> <li>• Loss of mains power.</li> <li>• Low battery.</li> </ul> <p><b>Power supply:</b></p> <ul style="list-style-type: none"> <li>• Operates from AC mains power: 100–240 V~/50–60 Hz.</li> <li>• Battery with operating time at least 4 hours at 25 mL/hr.</li> </ul>	
14	<b>Syringe Pump</b>	<p><b>General technical requirement:</b> Capable of accepting any kind of fluids (as solutions and medicines). Capable of working with the commonly available 20,50- and 60-mL syringes (with at least the leading brands of syringes). Volumetric flow rate accuracy with dedicated syringes better than +/- 2%, and +/- 5% with common syringes. Maximum pressure generated <math>\leq</math> 20 psi. Automatic detection of syringe size and proper fixing. Must provide alarm for incorrect loading of syringe. Clearly visible optical alarms. Acoustic alarms not less than 45dB. Anti-bolus system to reduce pressure on sudden release of occlusion. Pause infusion facility required. Self-check carried out on powering on. Event logging system. Capability of recording of dose units, default values, bolus settings, technical values. KVO rate configurable; deactivation possible. Pump based priming feature available to reduce lag time (preferable). “Dose error” reduction system. Allow the user to enter dose rate rather than volume rate. Availability of a medications database with at least 250 medications selectable for download to pump. Easy to clean equipment. Large and easy to read display. Ingress protection not less than IPX2. Nurse call: connectable to a staff alerting system, 24 V/0.2 A. Continuous operation within specification in ambient temperature of at least 5–40 °C, relative humidity of at least 10–85% non-condensing. 90% RH relative humidity (is preferable). Equipment provided “ready to use”. Any accessory or dedicated device necessary to the proper functioning and utilization of the equipment is included. Shock-fall protection.</p> <p><b>Control panel:</b> Flow rate programmable range at least from 0.1–200 mL/hr, in steps of 0.1 mL/hr; and at least from 100–1200 mL/hr in steps of 1 mL/hr.</p> <p><b>Display:</b> Flow rate or volume limit to administer at least from 0.1–999.9 mL. Saves last infusion rate even when the AC power is switched off. Bolus rate should be programmable at least in the range from 0.1–1000 mL/hr, with infused volume display. Selectable occlusion pressure trigger levels selectable at least from 300, 500 and 900 mmHg.</p> <p><b>Alarms:</b> Comprehensive alarm package, including at least:</p> <ul style="list-style-type: none"> <li>• occlusion alarm</li> <li>• plunger disengaged</li> <li>• syringe loading error</li> <li>• flow error</li> <li>• syringe unlocked</li> <li>• infusion complete</li> <li>• near/end of infusion pre-alarm/alarm</li> <li>• volume limit pre-alarm and alarm</li> <li>• low battery pre-alarm and alarm \</li> <li>• AC power failure.</li> </ul>	08




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		<b>Power supply:</b> Operates from AC mains power: 100–240 V~/50–60 Hz. Internal rechargeable battery having at least 5 hours backup for 10 mL/hr flow rate with 50 mL syringe.	
15	<b>LED Phototherapy Unit</b>	<ul style="list-style-type: none"> <li>• Flexible positioning LED type</li> <li>• Intensity: 35uW/cm2/nm at 40cm or better</li> <li>• Interface. USB with the control unit or direct. cable connection to the device.</li> <li>• Irradiation timer: 0 to 99 hr. or better</li> <li>• Inclination angle: Freely adjustable from horizontal to vertical</li> <li>• Placement: Directly on the incubator /beds.</li> <li>• Power requirements: 100-240 VAC, 50Hz;</li> <li>• Accessories: Eye Cover (100 Pieces)</li> </ul>	20
16	<b>Vein Detector/ Finder</b>	<ul style="list-style-type: none"> <li>• Advance DLP (digital light processing) technology-based vein detector with the following specifications:</li> <li>• Handheld portable Vein finder / showing system.</li> <li>• Positive projection distance: 25cm~35cm or better. Projection color control / adjustment available.</li> <li>• Projection size control / adjustment available.</li> <li>• Brightness control / adjustment available.</li> <li>• Rechargeable built-in battery.</li> <li>• The machine should be supplied with the Enhancer / intensifier</li> <li>• Tabletop stand from the same manufacture should be providing with the machine.</li> </ul>	04
17	<b>Baby Cart (Baby Bassinet)</b>	<ul style="list-style-type: none"> <li>• Powder coated mild steel 18 SWG tubular frames.</li> <li>• Lying area made of rectangular hollow pipe frame with wire mesh.</li> <li>• Mobile on 50 mm dia. Rubber castors.</li> <li>• Safety sides can be adjustable up &amp; down easily.</li> <li>• Standard cushioned Rexene foam mattress with 2inch thickness.</li> <li>• Laying area 55 cm x 100cm</li> </ul>	50
18	<b>Bed side Locker</b>	<ul style="list-style-type: none"> <li>• Overall size of locker 40cm width, 40cm depth, 80 cm height. Made up of SS 18 SWG.</li> <li>• One drawer. One cabinet with space between the drawer and cabinet.</li> <li>• Base made of 1" round/square pipe.</li> <li>• FINISH: Polyester powder coated finishing</li> </ul>	20
19	<b>Steel Amirah for Medicines</b>	<ul style="list-style-type: none"> <li>• 18-gauge steel, powder coated</li> <li>• With 4 shelves (Five Compartment).</li> <li>• Size 4ft x 6ft x 1.5ft (WxHxD)</li> </ul>	04
20	<b>Refrigerator with Stabilizer (copper)</b>	Branded Double door,12 Cft Refrigerator with compatible Stabilizer (Copper)	02
21	<b>Portable X-Ray</b>	<p>Battery operated general purpose mobile x-ray unit for radiography.</p> <p><b>X-Ray Generator</b></p> <ul style="list-style-type: none"> <li>• KV Range: 40kv to 125 kV in 01 kV Steps.</li> <li>• mA Range: Max. 300mA or better</li> <li>• mAs range: 1 mAs to 300mAs or better</li> <li>• 30KW or better.</li> <li>• Preset anatomical programs (APR) should available for different parts of body.</li> <li>• Number of exposures which should be done on fully charged battery should be greater than 80.</li> </ul> <p><b>X-Ray Tube Unit</b></p> <ul style="list-style-type: none"> <li>• Rotating anode: Single / Double focus</li> <li>• Focus Size: 0.7&amp;1.3 mm or better on either side</li> <li>• Anode heat storage capacity: 100 KHU or better</li> </ul>	01

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		<p><b>X-Ray Beam Limiting Device Projector Lamp: Halogen/LED</b></p> <ul style="list-style-type: none"> <li>• Filtration: 1.2mm Aluminum or better.</li> <li>• Colum adjustment facility available</li> <li>• Collimator rotation available</li> <li>• Independent battery system for exposure</li> <li>• Examination mode</li> <li>• Big wheel for easy movement</li> <li>• Brakes for control of movement</li> <li>• Input voltage 100-220VAC, 50Hz</li> <li>• Cassette Box: For Storage of at least 3 Cassettes</li> <li>• 2 No's lead Apron thickness 0.5mm</li> </ul>	
22	<b>Multidirectional Intensive Phototherapy</b>	<p>Multidirectional Intensive Phototherapy for Newborns and premature babies 360°.</p> <p>Technical Specifications: Size 65x80x145cm or better Hammock Mattress with sliding tray 58 cm x 38 cm</p> <p><b>Environmental Requirements</b> Operating Temperature Range +20°C to +30°C Storage Temperature Range -20°C to +60°C Operating Humidity Range 5 % to 99 % RH, non-condensing Storage Humidity Range 0 % to 99 % RH, non-condensing</p> <p><b>Characteristics</b> Air Temperature Display 0°C-51°C Skin Temp. Display 0°C – 51°C Noise Level &lt;55 dBA Screen 5 inches or better mono color LCD touch screen Lamp Life Time 20,000 hours Number of LED Tubes 16 pcs Blue Light LED Tubes Spectral Irradiance &gt;100 μW/cm<sup>2</sup>/nm Wavelength Interval 440 nm – 460 nm IV Pole Weight Limit 2 kg Monitor Tray Weight Limit 6 kg Supply Voltage 100-240 VAC,50–60 HZ</p> <p><b>Alarms</b> High Skin Temp. Alarm Set between 33–39°C with 1°C increments Low Skin Temp. Alarm Set between 31–37°C with 1°C increments High Air Temperature &gt;37°C Low Air Temperature &lt;30°C Skin Probe Disconnection Therapy Ended Alarm Lamp Usage Time</p> <p><b>Accessories:</b> Additional Hammock Eye Protection Mask Small Eye Protection Mask Medium Eye Protection Mask Large</p>	10

S. No	Nomenclature	Specifications	Quantity
1	 <b>Air Mattress</b>	<b>Technical Specification</b> <b>Mattress</b> Size after inflation: 90 x 200 x 6.5 cm Approximately Max capacity: 110 kg Pressure range: 40-100 mmHg Cycle time: 12 min Arrangement 2.5" bubble pad Material Medical grade PVC  <b>PUMP</b> Electrical AC220-240V/50HZ Air output ≥4L/min Pressure range ≥12kPa(90mmHG) Pressure range ≥12kPa(90mmHG) Cycle time ≤5-6mins	08
2	<b>Cardiac Table/ Wall Mounting Shelf for Cardiac Monitor</b>	Wall Mounted shelf with accessories container, Compatible with supplied Cardiac Monitor	10
3	<b>Nasal CPAP</b>	<b>Nasal CPAP machine</b> CPAP generator with pressure range from 3 to 10 cm of water. <ul style="list-style-type: none"> <li>• Capable of giving nasal/nasopharyngeal CPAP.</li> <li>• Integrated pneumatic Air and oxygen blender calibrated with flow from 0-15 lit/min.</li> <li>• Safety mechanism for relief of excessive pressure through pressure relief valve/regulator.</li> <li>• Soft nasal prongs.</li> </ul> <b>Alarms for the device –</b> <ul style="list-style-type: none"> <li>• Low/high Temperature</li> <li>• Flow increase/decrease alarm</li> <li>• O2 pressure low alarm</li> <li>• Air pressure low alarm</li> </ul> <ul style="list-style-type: none"> <li>• Flow meters: O2 with each piece.</li> <li>• Power 220-230 volts 50 Hz.</li> <li>• Power pack (UPS with battery back of minimum 1 hour).</li> <li>• System should be quoted with pole assembly to incorporate the whole CPAP machine.</li> </ul> <b>Standard accessories with each equipment</b> <ul style="list-style-type: none"> <li>• Heated wire servo-controlled humidifier 01</li> <li>• 5 ml test lung 01</li> <li>• Disposable patient circuits 30</li> <li>• Disposable nasal prongs 30</li> </ul> (10 each of different neonatal sizes)	04
4	<b>X-Ray Illuminator</b>	Outer size 912*498*25 mm Size of reading area 744*426 mm Light source LED illumination (Up to 100,000 hours service life) Color temperature 9500 k Power 100-240 VAC, 50/60 Hz Installation method Wall-mounted	02
5	<b>Laryngoscope</b>	Product Name Fiber Optic Laryngoscope set Packed within Case Autoclavable at 134 °C Resistant to disinfection solutions Type Laryngoscope set Package Contents 01 sets contains 0,1,2 & 3 size blades Material Stainless Steel/ Fiber Optic Reuseable	05
6	<b>High Flow Nasal Cannula</b>	High Flow Nasal Cannula for Infants and Neonatal Babies Well reputed brands	15
7	<b>Exchange</b>	A Wooden Table cushion on top with Rexene cover along with side rails	04

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	<b>Transfusion Table</b>	Size 4' x 2' x 2.5'	
8	<b>Chairs</b>	Wooden office Chairs with Arms Seat and Back Canning Seat Size 18" x 18" Seat Height from ground 18" Over all height 33"	50
9	<b>Attended Bench</b>	Iron Pipe Frame with wooden top Size 16" x 48" Height 18" Frame Pipe 16 SWG ¾ Inch Square (02 coat black paint) Top ¾" Luminated Lasani	50
10	<b>Dry Incubator Bath</b>	<b>Technical Specification of Dry Bath Incubator</b> Temperature range RT. 5°C ~ 120°C Temperature accuracy ± 0.5 °C at 40 °C ; ± 1 °C at 120°C Temperature uniformity ± 0.5 °C Block quantity 1 or 2 Heating time ≤ 15 min (25 °C ~ 160 °C) Display accuracy ± 0.1 °C Time range 1 min - 99 hr. Voltage AC 220 V	02
11	<b>CBC Kit/ Regent for Hematology Analyzer</b>	As per Supplied Hematology Analyzer	02
12	<b>Bilirubin Total + D Kits</b>	Photometric Test for direct (D) and Total (T) bilirubin Contents 1x 1000 ml total bilirubin regent 1x 9 ml T- Nitrite regent 1x100 ml direct bilirubin regents 1x 9 ml D-Nitrite regents	02 Kits
13	<b>Centralized Medical Gas Pipe Lining for NICU</b>	Centralized Medical Gas Pipe Lining for 10 Bedded NICU Consisting of the following: 1. Oxygen Gas Pipe Line 2. Compress Air Pipe Line Details of System Manifold for Oxygen Gas Manual Manifold with the capacity of 10 oxygen cylinder of 240 Cft, control with Oxygen regulator and pressure gauge Bed Head Unit • Each unit consists of: 1500 mm and above • Horizontal type • Built in over bed Light with ON/OFF switch. • Provision for Nurse Call/ Alert Button • Gas outlets (2x Air, 2x Oxygen complete fitted) • Electrical provisions; • Electrical sockets: 3 Nos. All wiring conforms to standards, ground/earth • Separate ducts for Electrical & Gas Pipes. ALARM AREA WITH REMOTE SENSORS FOR TWO GASES Supply and installation of Alarm System for different gases with both Visual as well as Audible alerts are available in system, which indicate normal and low pressure of Medical Gases. Hold & press for Mute / Silence. MULTIPLE ZONE VALVE BOX FOR TWO GASES Supply & installation of Medical Gases Zone Valve Service Unit including shut-off valve with complete box & fittings.	01



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		<p><b>OXYGEN &amp; AIR FLOW METER</b> Oxygen flow meter with humidifier and probes Oxygen Flow meter complete set from 0 to 15 lpm or better with autoclave able and unbreakable humidifier bottle for neonate / Paeds (0-6 lpm)</p> <p><b>COPPER PIPING AND FITTING</b> Supply and installation of seamless medical graded 18-gauge copper pipe deoxidized and degreased along with required fitting etc., various sizes /diameter as per Drawing of the project and Design standard of the bidder with matching color indications of out lets. The sizes will vary as per design. Oxygen White Air Black/ B&amp;W Stripes</p> <p><b>VENTURI SUCTION PEADS/ Neonate</b> Regulation range 0-200 mbar Vacuum Flow &gt; 2.5 L / min</p> <p><b>MEDICAL COMPRESSED AIR STATION</b> Medical Air Plant with Breathable Air. Elimination of Toxic Gases such as carbon dioxide, Nitrogen dioxide, Nitrogen monoxide, Carbon monoxide; and other pollutants. Air compressors with following capacities are required.</p> <ul style="list-style-type: none"><li>• Compatible medical grade.</li><li>• Air receiving tank as per actual requirement according to manufacturer.</li><li>• Vertical type.</li><li>• Air receiving tank 500 L or as per actual requirement.</li><li>• Galvanized internally with auto drain.</li><li>• Minimum 10 bars output pressure of tank.</li></ul>	
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**Delivery Location: DHQ Teaching Hospital, MTI D.I. Khan, KpK.**