



UHWI Equipment Needs List 2016

University Hospital of the West
Indies

Document Contents

ECG Machine – 3 Channel	5
Multipara Monitor – Spo2, NIBP and ECG (3 Para)	5
Multipara Patient Monitor (5 Para).....	5
Multiparameter Monitor	6
Defibrillator with external Pacer	6
Monophasic Defibrillator.....	7
Syringe Pump.....	7
Volumetric Infusion Pump.....	8
Advanced ICU Ventilator – with built in Compressor.....	8
Anaesthesia Apparatus With Circle Absorber And Fluotec Vaporizers (with provision for Selecta Tec Back Bar)	10
Anaesthesia Ventilator	10
Vaporizer Isoflurane	11
ANAESTHESIA WORK STATION	11
Suction Apparatus	13
OT Table Manual Hydraulic	14
OT Table Orthopedics--Manual Hydraulic.....	15
Mobile Spot Light	16
Ceiling suspended O.T. Lights.....	16
Power Drill and Reamer for Orthopedics	16
Diathermy Surgical	17
DIGITAL LAPROSCOPIC CAMERA SYSTEM.....	18
Steriliser Large	21
12 Channel Stress Test Equipment with Tread Mill.....	22
EchoCardiography System.....	23
Mobile – Ultrasonogram – Low Frequency – Black & White –.....	24
Real Time	24
ENT Light Source.....	25
Otoscope	25
Pure Tone Digital Clinical Speech Audiometer	25

UHWI Equipment Needs List 2016

ENT OPD Unit.....	25
ENT Operation Microscope With Observer Piece With Spare Lens & Bulbs.....	26
MICROMOTOR FOR ENT SURGERIES.....	26
FLEXIBLE NASO- PHARYNGO LARYNGOSCOPE.....	27
Nasal Endoscope 0 degree.....	27
Nasal Endoscope 30 degree.....	27
Nasal Endoscope 70 degree.....	27
Colposcope.....	30
PhotoTherapy Unit Single Surface.....	31
PhotoTherapy Unit Double Surface.....	31
Neo-natal Resuscitation Unit.....	32
Warmer Baby.....	33
NEONATAL Ventilator.....	34
Suction Machine Low Pressure.....	36
Heamodialysis Machine.....	36
RO Water Treatment Plant.....	37
Mobile X-Ray.....	40
X-Ray Machine With Table 300mA.....	41
CT Scanner.....	42
Computed Radiography System.....	48
C-Arm Image Intensifier.....	52
Hematology Analyser.....	53
Colorimeter.....	53
Electrolyte Analyzer.....	54
Semi Auto Analyser.....	54
Blood Gas Analyzer.....	55
Laminar airflow workstation - Horizontal Laminar airflow table top model with accessories.....	55
Autoref Keratometer.....	55
Bipolar Cautery Ophthal.....	56
Direct Ophthalmoscope.....	56
Indirect Ophthalmoscope.....	56
Operating Microscope Ophthalmic.....	57

UHWI Equipment Needs List 2016

Phaco machine	57
Ophthalmic Operation Table Motorized	58
Surgeon’s Chair Hydraulic Operating	58
Streak Retinoscope.....	58
Slit Lamp	59
Plain Hospital Beds	59
Bed side lockers.....	60
Adjustable Bed Side Tables.....	60
Instrument Cabinets.....	60
Crash Cart for ICU	60
Instrument trolley.....	60
Dressing Trolley	61
Stretcher Trolley	61
Emergency and recovery trolley.....	61
Examination Couch.....	62
Soiled Linen Trolley.....	62
Wash Basin stand two tier.....	63
Saline stand with SS Rod	63
Revolving Stool	63
Birthing Bed (Non Motorized)	63
Wheel Chair	64
Three Fold Bedside Screen	64
Cylinder Trolley.....	64
Neurosurgery Items.....	64
Spinal Jackson Table	64
Neurosurgery Diathermy Machine.....	64
Neurosurgical Drills to perform Spine and other Emergencies.....	65
Ultrasonic with Cold Plasma aspirated to resect tumour	65
Radio Surgery Unit Gamma or Cyber knife	65
C-Arm Cray Unit.....	65

For more information, please visit

<http://www.uhwi.gov.jm>





Sl. No.	Name	Quantity	Specification
	ECG Machine – 3 Channel	15	<ul style="list-style-type: none">• Simultaneous 3 Channel ECG recording with 12 lead simultaneous• Acquisition• ECG Machine should have 3 modes of operation – Automatic, Manual & Rhythm.• Should have a maintenance free digital thermal array printer• Printer should work with standard thermal paper(should be available in Local Market)• Printer should be able to print ECG report and should have on/off selection• Equipment should have battery backup.• Should have a digital filter for AC and EMG.
	Multipara Monitor – Spo2, NIBP and ECG (3 Para)	25	<ul style="list-style-type: none">• Should display ECG, Spo2 and NIBP.• Should have Spo2 plethysmograph wave form.• Should display Systolic, Diastolic and Blood Pressure.• Should have alarm limits for HR/Spo2/NIBP with alarm silence facility• Application mode for adult, Paediatric and neonate patients• - Equipment should have battery backup.
	Multipara Patient Monitor (5 Para)	30	<ul style="list-style-type: none">• Should be capable to monitor 3 leads ECG, NIBP, SpO2, RR, and Temperature.• Should have Spo2 plethysmograph wave form.• Should display Systolic, Diastolic and Blood Pressure.• Monitor should provide categorized alarms with visual alarm indication with auto set alarm limits



Sl. No.	Name	Quantity	Specification
			<ul style="list-style-type: none"> • Application mode for adult, Paediatric and neonate patients • Equipment should have battery backup.
	<p>Multiparameter Monitor</p>	<p>10</p>	<ul style="list-style-type: none"> • The monitor should have the capability to provide 3 leads ECG, • NIBP, SpO2, RR, microstream ETCO2 ,TEMP and two IBP • Should have the capability to display atleast 5 real-time waveforms along with related numerical parameters on a single screen • Monitor should provide categorized alarms with visual alarm indication with auto set alarm limits • -Application mode for adult, Paediatric and neonate patients • -Monitor should be complete with all cables and accessories • Should be capable to provide Numerical and Graphical vital signs trends. • Monitor should provide Leads off detection and Pacemaker • -Equipment should have battery backup.
	<p>Defibrillator with external Pacer</p>	<p>14</p>	<p>Specifications for defibrillator:</p> <ul style="list-style-type: none"> • Should be a Biphasic defibrillator, monitor with Recorder • Energy level should be selected in manual mode. • Should work on Manual and Automatic external defibrillation (AED) mode • Should defibrillate though Pads and Paddles • Should have a built in printer • Should have bright display for viewing waveforms and messages



Sl. No.	Name	Quantity	Specification
			<ul style="list-style-type: none"> • Should have external paddles with paddles contact indicator for good • paddle contact • Should have voice prompts on AED mode • Equipment should have battery backup. • Should have Optional SPO2 facility • Should have optional Transcutaneous Demand and fixed mode • pacing • Should be capable of doing synchronized cardio version • Should be capable of printing Reports on Event summary, configuration etc. • Should have facility for adult and Paediatric Internal paddles • Should be supplied with Main unit with one set of Adult and Paediatric external and internal paddles and standard accessories
	Monophasic Defibrillator	8	<p>Specifications for defibrillator:</p> <ul style="list-style-type: none"> • Should be a Monophasic defibrillator, monitor with Recorder • Energy level should be selected in manual mode. • Should defibrillate though Pads and Paddles • Should have a built in printer • Should have bright display for viewing waveforms and messages • Equipment should have battery backup. • Should have facility for Internal paddles • Should be supplied with Main unit with one set of Adult external paddle and standard accessories.
	Syringe Pump	40	<ul style="list-style-type: none"> • Should operate in A.C. Mains and Battery independently. • Should display actual battery running time available at specific volume settings • Should have wide range of acceptability of syringes. • Should have programmable bolus with infused volume display



Sl. No.	Name	Quantity	Specification
			<ul style="list-style-type: none">• Should have adjustable occlusion pressure alarm limits for in line• Should have KVO facility• Key board locking facility to protect against change of settings• Should have safety alarms for occlusion pressure, end of infusion prealarm and alarm, volume limit pre alarm, low battery pre alarm and technical malfunction alarm• Auto syringe volume detection facility• Should have protected against free flow and high flows after occlusion release.
	Volumetric Infusion Pump	40	<ul style="list-style-type: none">• Should operate in A.C. Mains and Battery independently.• Should have horizontal peristaltic movement to prevent leaked fluids entering the pump• Should have a flow rate of 1 – 1000ml/hour increment in normal mode and 0.1 - 100ml/hour with 0.1ml increment in micro infusion mode• Infusion time should be adjustable.• Should have KVO facility.• Should have adjustable PAUSE function• Facility to display and enter drug name• Should have empty bottle detection facility• Bolus delivery facility• Should have alarms for low battery, Occlusion, air bubble, end of infusion, line disconnection, free flow etc.• Should display actual battery running time available at specific volume settings• Should have automatic occlusion pressure release provision to prevent high flows on release of occlusion.
	Advanced ICU Ventilator – with built in Compressor	30	<ul style="list-style-type: none">• Should supply medical grade air compressor compact in size, vibration and noise free integrated with ventilator trolley.• Leakage and compliance compensated.



Sl. No.	Name	Quantity	Specification
			<ul style="list-style-type: none">• Should provide the following modes of ventilation: Volume cycled• (VC), Pressure cycled (PC), Synchronised Intermittent Mandatory• Ventilation (SIMV) in both VC and PC modes, SIMV with pressure support (SIMV-PS), Pressure Support (PS), Continuous Positive• Airway Pressure (CPAP), Bi Level Positive Airway Pressure(BIPAP),• Pressure regulated Volume control(PRVC), Positive End Expiratory• Pressure (PEEP) ranging from 0 to 40 cm of H₂O, Inverse ratio ventilation, and apnoea back-up ventilation.• Should provide pressure- and flow-triggering options with a response time less than 10 msec and bias flow not more than 5 lpm.• Should have the following audio-visual alarms: mains failure, ventilator failure, high/low airway pressure, low minute volume,apnoea, high respiratory rate, etc. Default alarm settings should be amenable for change by user.• Should be supplied with Inspiratory synchronized medicament• Nebulizer for nebulization of drugs• Access through touch screen & rotary dial and direct access knobs for vital settings such as PEEP, O₂ concentration, Respiratory rate &• Volume or Pressure.• Should be able to deliver non-invasive ventilation in Pressure Control & Pressure support using an appropriate interface.• Should have easily autoclavable patient tubing, humidifier with reusable chamber, expiratory valve, water traps, etc.• Should have pre-programmed facility to ventilate with 100% oxygen for 3 min and manual breaths during airway suctioning.• Battery backup for Ventilator.



Sl. No.	Name	Quantity	Specification
	Anaesthesia Apparatus With Circle Absorber And Fluotec Vaporizers (with provision for Selecta Tec Back Bar)	12	<ul style="list-style-type: none">• Should have provision for spare Cylinder with Bourdon pressure gauge.• Must have oxygen failure alarm.• Must have provision for Anaesthesia ventilator.• Must have circle absorber.• Must have antistatic corrugated tubing.• Table Top for arranging drugs and syringes.• Should have provision for two inlets for two oxygen and two inlets for two nitrous oxide cylinders with pin index system. A Type.• High pressure relief value in the back bar system.• High pressure tubing colour coded for oxygen and Nitrous oxide.• The soda lime canister should be double chambered single piece with Metal bar on the top with provision for APL valve. Gas inlet and outlet change over knob to isolate the canister.• Table top for keeping the monitor and Anaesthesia Ventilator.• Should have visible inspiratory and expiratory valves• Should have adjustable pressure relief valve• Should have single switch change over from spontaneous to bag ventilation
	Anaesthesia Ventilator	10	<ul style="list-style-type: none">• Ventilator should be pneumatically operated and electronically controlled with detachable ascending bellows.• Ventilator Modes – IMV, SIMV and PCV• Fresh Gas flow compensation• Compliance compensation• Equipment should have battery backup.• Frequency 4-60 breaths per minute• I:E Ratio 3:1 to 1:9.9• Insp. Flow 2-80 L/Min• Pressure limit 10-65hPa• PEEP 3-20 hPa



Sl. No.	Name	Quantity	Specification
			<ul style="list-style-type: none"> • It should have Audible/Visual alarms for Disconnection, system Pressure, Overpressure, Fresh Gas High, SIMV FLOW sensor, • Bellows drive, Pressure Limit, Battery overload, Battery discharged, Mains failure, etc. • Self test for ventilator which includes-Battery, Mains supply, Solenoid valves, Over pressure valve (drive gas), Leakage, Compliance, Circuit volume, APL valve, Fresh Gas flow and switches/displays.
	Vaporizer Isoflurane	4	<ul style="list-style-type: none"> • Should be compatible with any Anesthesia machine. • Should use Isoflurane as anesthetic agent. • Should have a flow range from 200mL/min to 15mL/min. • Should have a large diameter control dial with fine graduations of • 0.2% between 0 and 1%, and 0.5% from 1% to 8%. • Should have clear agent level indication. • Should have a simple and efficient agent filling mechanism to minimize agent leaks while filling. Specify the filling mechanism. • Should have capacity to store at least 200mL of anesthetic agent. • Should have tools free design for mounting and removing from the manifold. • Should have non-spill system.
	ANAESTHESIA WORK STATION	14	<p>The Anaesthesia work station system should consist of:</p> <ol style="list-style-type: none"> A. Anaesthesia machine with vaporizers. B. Close Circuit. <p>Anesthesia machine with vaporizers:</p> <ul style="list-style-type: none"> • Integrated suction, auxiliary Oxygen flowmeter for mask O2 delivery without going through the main rotamerter. • Provision to connect oxygen, air & nitrous oxide



Sl. No.	Name	Quantity	Specification
			<p>directly to system with pipeline supply for each gas. (suitable connectors and Pipes to be Provided)</p> <ul style="list-style-type: none"> • The system should have battery backup. • The machine should have pressure gauges for cylinders and central supply lines mounted on front of Anaesthesia machine for better visibility. The gas connections should be non-interchangeable. • Automatic cutoff on N2O by Oxygen pressure failure. • Hypoxic guard for linear regulation of minimum oxygen concentration at 21% volume and must ensure a minimum Oxygen flow of 200 ml at low fresh gas flow setting even below total 500 ml fresh gas flow. • Audible & visual oxygen failure alarm. • Emergency Oxygen flush at 20 –75 L/min bypassing the vaporizer. • Oxygen flush option should be available. • Fully integrated Circle absorber system for adult as well as pediatric patient category. It should have an auto clavable base block and should have canister appr. 1.5 ltr. • Anaesthesia ventilator with latest attachment for pediatric and adult latest version. • Adjustable high / low limits with audio and visual alarms for following parameters. <ul style="list-style-type: none"> - Minute volume - Airway pressure - Insp oxygen concentration, - Audio power supply fail alarm • Fail to cycle warning • It should have a spirometry sensor position able at Y or at the distal end, for measurement of I /E Tidal volume, minimum volume, loops and scalars etc. • It should have an integrated colour screen monitor for display of ventilation parameters etc.+ Et CO2 /Airway Pr/RR/FiO2 Vaporizer:- <ul style="list-style-type: none"> - provision to connect two vaporizers at a time with interlocking facility. Flow should



Sl. No.	Name	Quantity	Specification
			<p>be temperature, and pressure compensated.</p> <ul style="list-style-type: none"> - Should be provided with a Temperature / pressure compensated and flow independent Vaporizer for Isoflourance and Halothane. - Vaporizer should have extended delivery range from 0 to 6 Vol. % - The vaporizer design should be maintenance free. <ul style="list-style-type: none"> • Mention <ul style="list-style-type: none"> - Safety standards - Battery backup - Pediatric / adult - Standard Accessories - Optional Accessories <p>Scope of supply</p> <ul style="list-style-type: none"> • 3 gas Anaesthesia machine • Pin Index yokes for O2 & N2O + Air • -Pipeline connections for all three gases • Ventilator & monitor • Semiclosed breathing system • Adult & Peadiatric autoclavable patient tubings • Anaesthetic mask size <ul style="list-style-type: none"> ○ Adult & Child • Vaporizers for Isoflourane & Halothene • Central gas supply hoses (color coded) • Instructed for use <p>Facility to attach any compatible multiparameter monitor to the anaesthesia work station(for this, on top platform).</p>
	Suction Apparatus	20	<ul style="list-style-type: none"> • Guage - 0 to 760 mm Hg • Vacuum Maximum - 660 mm Hg. • Should have a noiseless Operation • Should provide filter to absorb moisture and water particles entering into the rotor. • Should have a safety valve to prevent entry of fluids into machine in case the suction jar fills up.



Sl. No.	Name	Quantity	Specification
	OT Table Manual Hydraulic	3	<ul style="list-style-type: none">• The table should have easily detachable split leg and easily detachable head section• The table top should have a minimum height of 765mm or lesser.• The table top should have a minimum vertical stroke of 250mm• Should have sealed hydraulic mechanism to avoid oil spillage.• Should have at least 25° trendelenburg and reverse trendelenburg• Should have at least 20° lateral tilt movement• Should have at least 80° back up movement with gas spring mechanism.• The head section should have up and down movement.• The leg section should have 90° down movement and should move side wards to a minimum of 90 degree.• The table should have a single lever foot operated brake pedal• Base should be made of cast iron and all other parts and accessories should be completely made of Stainless Steel 304 grade except the cushion, gas spring and hydraulic system which should be made of any non-resting metals like brass etc.• The table should be supplied with the following accessories.<ul style="list-style-type: none">a) Mattress for the complete table top in sections-1 setb) A pair of arm boards with pad and fixing clamp -1c) A pair of padded shoulder support with clamps -1d) A pair of padded lateral support with clamps -1e) A pair of leg crutches with clamps -1f) Anesthetic screen frame with clamp -1g) Patient restraint strap -1



Sl. No.	Name	Quantity	Specification
	OT Table Orthopedics-- Manual Hydraulic	2	<ul style="list-style-type: none">• The table should have a detachable split leg and detachable head section.• The table top should be completely radiolucent.• The table top should have a minimum height of 765mm.• The table top should have a minimum vertical stroke of 300mm• Should have at least 25° trendelenburg or reverse trendelenburg• Should have at least 20° lateral tilt movement• Should have at least 80° back up movement• The head section should have up and down movement.• The table should have a single lever foot operated brake pedal• The size of the main central column should be smaller to offer higher c-arm access.• The table should be compatible for spine surgeries with C-arm or separate accessory should be provided for doing spine surgery with Carm.• The pelvic support should be movable to the edges and completely radiolucent.• The perennial post should be completely radiolucent• The table should be supplied with the following accessories.• Mattress for the complete table top in sections - 1 set• A pair of arm boards with pad and fixing clamp -1• A pair of padded shoulder support with clamps - 1• A pair of padded lateral support with clamps -1• A pair of leg crutches with clamps -1• Anesthetic screen frame with clamp - 1• Adjustable traction device.• Should have accessories for tibia interlocking.



Sl. No.	Name	Quantity	Specification
	Mobile Spot Light	4	<ul style="list-style-type: none"> • Single dome mobile type with shadow reduction technology • Diameter of the dome should be less than 280mm • Minimum light output should be 30,000 lux • Minimum field size should be 200 mm • Should have built in transformer • Should be mounted on caster for free movement • Should have easy lamp replacement • Color temperature should be between 4000°K and 5000°K • Input supply – 230Vac, 50Hz.
	Ceiling suspended O.T. Lights	8	<ul style="list-style-type: none"> • The light output should be minimum of 1,20,000 lux for the main dome while the other dome should have lux output of 70,000 lux at a distance of 1 meter • The field size should be variable between 250 & 300 mm diameter for the respective domes • The unit should be supplied with two numbers of low voltage unit with CVT to take care of the voltage fluctuations • The input supply voltage should be 230V with normal variations and the CVT range is to be indicated • The colour temperature should be in the range of 4000 to 4300 K • Sterilizable handle to be provided for focusing as well as for positioning the light.
	Power Drill and Reamer for Orthopedics	6	<ul style="list-style-type: none"> • Should be supplied with a driving unit including motor, stand, foot control, flexible shaft, tool kit and container. • Should have a cannulated drill hand piece of maximum speed 1200rpm with Non-corrosive Jacob chuck (0-1/4”). Autoclavable. • Should have a cannulated reaming hand piece with maximum speed 400rpm with AO type quick coupling. Autoclavable.



Sl. No.	Name	Quantity	Specification
			<ul style="list-style-type: none"> • Should have a pistol grip sagittal saw with a set of 5 blades. • Autoclavable. • Should have a flexible reamer shaft 8mm diameter fixed head. • Should have a flexible reamer shaft for detachable heads up to 12mm. • Should have reamer heads from 8mm to 12 mm (set of 9). • Should have reamer heads from 12.5mm to 15mm (set of 6). • Should have flexible reamer shaft for detachable heads up to 15mm. • Autoclavable. • Should have an extra flexible shaft for driving unit. Autoclavable. • Should work with input 200 to 240Vac 50 Hz supply.
	<p>Diathermy Surgical</p>	<p>10</p>	<ul style="list-style-type: none"> • The unit should have mono-polar and bi-polar modes. • The unit should have separate generator for mono-polar and bipolar. • Should be compatible for both open and laparoscopic surgery. • Should have facility to connect two mono-polar electrodes. • Should have return electrode contact safety. • Should have different audible alarm for cut and coagulation modes. • Should have maximum range mono-polar cut power from 300 to 400 Watts variable in steps of 2 watts in lower power and 5 watts in high power. • Should have mono-polar coagulation power 120 Watts variable in steps. • Should have maximum bipolar coagulation power 50 to 80 Watts variable in steps. • Should be supplied with reusable flexible silicon rubber patient return plate with return electrode



Sl. No.	Name	Quantity	Specification
			<p>safety 1 No.</p> <ul style="list-style-type: none"> • The performance of the unit should not be affected by electromagnetic interference radiated or conducted through power lines from another device. • The working of the equipment should not interfere with the functions of other devices. • Standard accessories. <ul style="list-style-type: none"> ○ Should be supplied with reusable mono-polar active handle with cable compatible for foot operation. (with complete set of electrodes) ○ Should be supplied with reusable insulated bayonet shaped bipolar hand piece with cable compatible for foot operation. ○ Should be supplied with color coded pedals water proof foot switch for mono polar and bipolar.
	<p>DIGITAL LAPROSCOPIC CAMERA SYSTEM</p>	<p>3</p>	<ul style="list-style-type: none"> • Should be a single chip camera technology. • Should have one composite video outputs and one S-video output. • Should have anti-moister filter for fiber scopes. • Should have fully automatic exposure control. • Should have automatic white balance with memory function. • Should have horizontal resolution of more than 450 lines. • Should work with input 200 to 240Vac 50 Hz supply. • TELESCOPE <ul style="list-style-type: none"> ○ Should be a rigid telescope with 10mm diameter ○ Should have a minimum working length of 30 cm. ○ Should be supplied with telescope with viewing direction of 0° and 30°. ○ Should have incorporated fiber optic light transmission.



Sl. No.	Name	Quantity	Specification
			<ul style="list-style-type: none"> ○ Should have scratch resistant tip. ● LIGHT SOURCE AND FIBER OPTIC LIGHT CABLE <ul style="list-style-type: none"> ○ Should be a halogen light source/Xenon light source with minimum ○ 250W light output. ○ Should have manual light intensity control. ○ Should have dual fan cooling system. ○ Should be supplied with flexible fiber optic light cable with minimum diameter of 4.8 mm and minimum working length of 230cm. ○ Should work with input 200 to 240Vac 50 Hz supply. ● INSUFFLATOR <ul style="list-style-type: none"> ○ Should have a maximum flow rate of 20L/minute. ○ Should have automatic pressure and flow cut off when the set values are reached. ○ Should have digital displays for set, actual pressure and flow. ○ Should have Co2 cylinder level indicator. ○ Should be supplied with in-let and out-let gas tubings and tools required. ○ Should work with input 200 to 240Vac 50 Hz supply. ● LAPROSCOPIC INSTRUMENTS <ul style="list-style-type: none"> ○ Trocars and cannula inner diameter 5.5 mm, should be Stainless ○ Steel and autoclavable. Should have stopcock for insufflations and anti-reflex surface – 4 nos. ○ Trocars and cannula inner diameter 10.5 mm, should be Stainless ○ Steel and autoclavable. Should have stopcock for insufflations and anti-reflex surface - 2 nos. ○ Maryland dissecting and grasping forceps, size 5mm, shall be dismantled to three pieces for better cleaning and disinfection. ○ Should be fully rotational 360 degree and autoclavable.



Sl. No.	Name	Quantity	Specification
			<ul style="list-style-type: none">○ Should have insulated outer tube, plastic handle, luer-lock connector and connector pin for unipolar coagulation and cord. – 2 nos.○ Manhes grasping forceps, size 5mm can be dismantled to three pieces for better cleaning and disinfection. Should be fully rotational○ 360 degree and autoclavable. Should have insulated outer tube, plastic handle, luer-lock connector and connector pin for unipolar coagulation and cord.○ Reddick-Olsen grasping forceps, size 5mm, can be dismantled to three pieces for better cleaning and disinfection.○ Should be fully rotational 360 degree and autoclavable. Should have insulated outer tube, plastic handle, luer-lock connector and connector pin for unipolar coagulation and cord.○ Rotating bipolar grasping forceps, size 5mm. can be dismantled to three pieces for better cleaning and disinfection, autoclavable.○ Length should be minimum 33 cm with connector pin for bipolar coagulation and cord should be supplied. And one bipolar scissors working insert should be supplied.○ Needle holder, ergonomic handle with ratchet, curved jaw size should be 5mm, and minimum length 33 cm.○ Should be suitable for suture material 0/0 to 7/0.○ Suction irrigation cannula, size should be 10mm with lateral holes and two-way stop cock for single hand control. Minimum working length should be 36 cm.○ Coagulating electrode L-shaped and spatula with connector pin for coagulation and cord.○ Veress pneumoperitoneum needle, with spring action blunt stylet, length should be atleast 10 cm and 15 cm, should have a luer



Sl. No.	Name	Quantity	Specification
			<ul style="list-style-type: none"> ○ –lock connector for insufflation. ○ Curved monopolar scissor. • GENERAL SURGERY <ul style="list-style-type: none"> • Single clip applicator, should be dismantling and rotating, should have a ratchet to lock the jaw holding the clip. Size 10mm and minimum length 33mm. • Bowel grasper, size 5mm and 10 mm can be dismantled to three pieces for better cleaning and disinfection. Should be fully rotational 360 degree and autoclavable. • Should have insulated outer tube, plastic • handle, luer-lock connector and connector pin for unipolar coagulation. • Metzenbaum scissors, size 5mm can be dismantled to three pieces for better cleaning and disinfection. Should be fully rotational 360 degree and autoclavable. Should have insulated outer tube, plastic • handle, luer-lock connector and connector pin for unipolar coagulation. • GYNAECOLOGY <ul style="list-style-type: none"> ○ Trocars and cannula diameter 5mm, 7mm, 10 mm should be ○ Stainless Steel and autoclavable. ○ Should have stopcock for insufflation and anti-reflux surface. ○ Ring applicator, may be fitted with 2 silastic rings. For use with trocar size 7mm. ○ High frequency needle for splitting and coagulation size 5mm and minimum working length 31 cm. should be insulated outer tube with connector pin for unipolar coagulation and cord.
	Steriliser Large	4	<ul style="list-style-type: none"> • Should have 510mm length, 200mm breadth, 150mm height and • 2KW heater coil.



Sl. No.	Name	Quantity	Specification
			<ul style="list-style-type: none"> • Should be made up of seamless Stainless Steel sheet of grade 304. • Should have indicators and power cord. • Should operate on 220/230Vac, 50Hz single phase supply.
	<p>12 Channel Stress Test Equipment with Tread Mill</p>	<p>4</p>	<ul style="list-style-type: none"> • Treadmill System – Should be computerized and noiseless and not dependent on any other company for spares support • Display Technology – should be advanced & user – friendly • No. of leads display – 12 lead • System – Dedicated Microcomputer with Dedicated incremental updating • ECG Scanning Technique – Incremental updating Template matching or equivalent technology • Auto / Manual ST analysis • Post ‘j’ adjustments – all three E,J, & Post ‘j’ and point adjustments are possible with auto / manual control of base line • Arrhythmia documentation in stress mode –Y • ST segment monitoring – 12 leads • No. of leads displayed – 12 leads (real time) and should be displayed on the screen simultaneously • Signal in Acquisition Module – signal must be immune to the environmental noise. • Filtering Techniques – for advances correction of artifacts • Printer - Real time Thermal printer. • Protocols – Standard & minimum 10 numbers of user defined protocols. • Storage Media – data storage may be possible on HD,as well as CD archive. • Windows based OS • Facility for advanced networking Vectorcardiography • Facility for SAECG /T wave alternans • Should support standard protocols like Bruce, Modified Bruce, etc.



Sl. No.	Name	Quantity	Specification
	EchoCardiography System	8	<ul style="list-style-type: none">• Should be a stand alone system integrated on a light weight mobile cart.• The system should be a color Doppler Echocardiography all digital beam former system to study the anatomical abnormalities and blood flow in the heart and associated vessels.• Should be a stand alone system integrated on a light weight mobile cart.• Should be a latest generation Electronic Phased array Color Doppler system with minimum 512 Electronic independent channels.• Measurement function for all application like Abdomen, Obstetrics,• Gynecology, Cardiology, Urology and Small Parts should available.• Should be supplied with adult and pediatric cardiac and vascular probes of wide band transducers without frequency selection for higher sensitivity of response over a broad frequency range of operation.• Should have 2D, M-mode, Anatomical M-mode, Color M-mode,• PW and CW doppler, Steerable CW Doppler, Trapezoid imaging.• The system should have a very high dynamic range of at least 200dB to pick up subtle echoes.• Should have three active ports.• Should have 2- 4 Mhz broadband phased array sector probe for adult cardiac imaging.• Should have 2.5 – 5.0 Mhz broadband convex probe for clinical application like Gynecology, Abdomen imaging.• Should have 3-12 Mhz broadband Linear Array probe for vascular imaging and other application.• Should have advanced tissue Harmonic Imaging.• Should have color flow imaging.• Should have color Tissue Doppler Imaging.• Should have gain control in Axial Plane.• Should have triple imaging possibility on the system.



Sl. No.	Name	Quantity	Specification
			<ul style="list-style-type: none"> • Should have PW/CW Doppler facility in all imaging phased array sector probes. • Should have 15" or more high resolution TFT monitor with tilt and swivel facility and should be able to view in all angles and all light conditions. • Should have greater than 5000 images in the system hard disk drive • Should have in built CD/DVD writer. • Should have patient reporting page with embedded images. • Should have full functional measurement facility and calculation should be possible. • Should be supplied with thermal printer and 6 packs of thermal paper and the unit should have option to connect external printer. • Unit should function with 200 - 240Vac, 50/60 Hz input power supply.
	<p>Mobile - Ultrasonogram - Low Frequency - Black & White - Real Time</p>		<ul style="list-style-type: none"> • Monitor 12" Antiglare monitor • Tissue Harmonic Imaging in convex probe • Image Mode : Tissue Harmonic Imaging B,B+B,B+M,M,4B • Gray scale : 256 • 8 Step TGC Adjustment • Transducer connector - 2 Standard • Scanning Angel : 80 Deg or More • Scanning Depth : 24 Cm • Backlit projected Key boards • Adjustment of brightness and contrast possible in monitor • Transducer frequency:(2-6Mhz)-Linear probe(5-11Mhz) • Convex Transducer (2.5- 5 Mhz) • Frame rate 60 F/s-S-zoom facility in real time • Cine memory image memory should be available • Standard 1 GB image storage should be available • Should have the facility to select colour chroma • Measurement function for all application like



Sl. No.	Name	Quantity	Specification
			<p>Abdomen, Obstetrics,</p> <ul style="list-style-type: none">• Gynecology, Cardiology, Urology and Small Parts should be available• Peripheral Ports - Video, VGA, Two USB ports, LAN port to USB, Dicom<ul style="list-style-type: none">• Biopsy facility for all transducers (optional)• Built in storage and review for images for later review
	ENT Light Source	5	<ul style="list-style-type: none">• Should be a light source with minimum 250W light output.• Should have manual light intensity control.• Should have inbuilt cooling system.• Should have two lamps of 250W and should have provision to change over in the event of failure from one lamp to another.• Should work with input 200 to 240Vac 50 Hz supply• Should be supplied with light guide cable.
	Otoscope	5	<ol style="list-style-type: none">1. Should be a convenient pocket type otoscope.2. Should be provided with a halogen light source.3. Should be able to detach the otoscope head.4. Should provide no reflections and obstructions.5. Should provide detachable accessories of various sizes.
	Pure Tone Digital Clinical Speech Audiometer	6	
	ENT OPD Unit		<ul style="list-style-type: none">• Suction Machine• Warmer• Spotlamp with headmove or Fibre optic headlight with fibre optic cable with electronic light source



Sl. No.	Name	Quantity	Specification
			<ul style="list-style-type: none"> with twin bulb with reflector over fuse flow • X-ray lobby • Removable tray with Lid - 2 nos • Converting Pad • Instrument draw • Compartment with lock • Fibre optic photo otoscope • Eartag • Adjustable waste dust possible bin with level bin • Surgeons Chair
	<p>ENT Operation Microscope With Observer Piece With Spare Lens & Bulbs</p>	<p>1</p>	<ul style="list-style-type: none"> • Operating Microscope for Various Micro-Ear, Endo-Nasal and Micro-Laryngeal Surgeries • Floor Stand 188Cm rollable • Power Supply 220 - 250Volts • Light Source - Halogen illumination with fibreoptic Light Carrier with Variable Illumination Control, Objective (Working Length) • F=200mm, 300mm, 400mm Lenses, Variable Magnification 6x, 9x,12x, 15x, 25x with Observer Piece Attachment and Voltage Stabilizer for the above use. Integrated with CCd Camera and Monitor - Imported
	<p>MICROMOTOR FOR ENT SURGERIES</p>	<p>1</p>	<ul style="list-style-type: none"> • Should have a micro motor with variable speed from 10,000 to 35,000rpm. • Should have at least four speed control modes. • Should have an automatic cooling fan for continuous high speed performance. • Should have an on/off foot control. • Should have provision for irrigation. • Should be supplied with straight hand piece for micro motor and contra angle hand piece for micro motor. • Should be supplied with the following Burs set.



Sl. No.	Name	Quantity	Specification
			<ul style="list-style-type: none"> ○ Tungsten Carbide burs - 3 nos. (Assorted sizes) ○ Diamond burs - 3 nos. (Assorted sizes) ○ Steel cutting burs - 5 nos. (Assorted sizes) ● Should work with input 200 to 240Vac 50 Hz supply
	FLEXIBLE NASO-PHARYNGO LARYNGOSCOPE	20	<p>TECHNICAL SPECIFICATIONS</p> <ul style="list-style-type: none"> ● Should have a field of view of at least 75°. ● Should have a depth of field from 5 to 50 mm ● The insertion tube should have maximum 3.5mm diameter or less. ● Should have at least 130° upwards and 130° downwards angulations. ● Should have a working length of at least 300 mm. ● Should have a light guide illuminating system. ● Should provide suitable light source. ● Should be supplied with all standard accessories including storage box and list of standard accessories should be specified in the quotation ● LIGHT SOURCE <ul style="list-style-type: none"> ○ Should be a halogen light source with minimum 150W light output. ○ Should have manual light intensity control. ○ Should have cooling system. ○ Should work with input 200 to 240Vac 50 Hz supply.
	Nasal Endoscope 0 degree	5	
	Nasal Endoscope 30 degree	10	
	Nasal Endoscope 70 degree	5	



Sl. No.	Name	Quantity	Specification
	VIDEO GASTROSCOPE COLONOSCOPE WITH VIDEO PROCESSOR AND LIGHT SOURCE	6	<ul style="list-style-type: none">• VIDEO GASTROSCOPE<ul style="list-style-type: none">○ Should have a minimum field of view of 140°.○ Should have a depth of field from 5 to 100mm.○ The insertion tube should have maximum 9.8mm diameter.○ Should have an instrument channel of at least 2.8mm inner diameter.○ Should have a minimum working length of 1015mm.○ Should have minimum 210/90 degrees up/down angulations.○ Should have minimum 100/90 degrees right/left angulations.○ Independent channels for delivering air and water will be preferred.○ Should be supplied with all standard accessories including different types of biopsy forceps each 2 nos., cleaning brushes each 2 nos. • II VIDEO COLONOSCOPE<ul style="list-style-type: none">○ Should have a minimum field of view of 140°.○ Should have a depth of field from 5 to 100mm.○ The insertion tube should have maximum 12.8mm diameter.○ Should have an instrument channel of at least 3.2mm inner diameter.○ Should have a minimum working length of 1600mm.○ Should have minimum 180/180 degrees up/down angulations.○ Should have minimum 100/90 degrees right/left angulations.○ Independent channels for delivering air and water will be preferred.○ Should be supplied with all standard accessories including different types of



Sl. No.	Name	Quantity	Specification
			<p>biopsy forceps each 2 nos., cleaning brushes each 2 nos.</p> <ul style="list-style-type: none">• III VIDEO PROCESSOR AND LIGHT SOURCE<ul style="list-style-type: none">○ Should be a single chip camera.○ Should have RGB, S-video, composite video output and all these types of video cables should be provided.○ Should have white balance function.○ Should have in-built 150W halogen light source or xenon or metal halide.○ Should have a stand-by lamp and should glow in the event of failure of the primary lamp.○ Should have provision for air pump.○ Should be compatible for both gastroscope and colonoscope.○ Should work with input 200 to 240Vac 50 Hz supply. • IV MONITOR<ul style="list-style-type: none">○ Should be a 14 inches LCD /TFT monitor.○ Should have provision for accepting RGB, S-video and composite video signal.○ Should have minimum 1Kx1K resolution.○ Should have wide viewing angle.○ Should work with input 200 to 240Vac 50 Hz supply. • VI ADDITIONAL AND STANDARD ACCESSORIES OFFERED<ul style="list-style-type: none">○ Electronic Water Leakage Tester- 1 No○ Standard Accessories of Video Gastroscope including<ul style="list-style-type: none">▪ Biopsy Standard type Fenestrated- 1 No.▪ Biopsy Forceps-Alligator Type with RAT Tooth- 1 no▪ Channel Cleaning Brush-2 no▪ Air Water Channel cleaning adapter- 1 no



Sl. No.	Name	Quantity	Specification
			<ul style="list-style-type: none"> ▪ Biopsy Valve-2 no ▪ Channel Plug-1 no ▪ Channel Opening Cleaning Brush- 2 no ▪ Injection Tube- 1 no ▪ mouth piece- 1 no ▪ Suction cleaning adapter-1 no ▪ Water resistant cap- 1no ○ Standard Accessories of Video Colonoscope including <ul style="list-style-type: none"> ▪ Biopsy Forceps elongated cups with needle fenestrated-1 no ▪ Biopsy Forceps-Alligator type with RAT Tooth-1no ▪ Air Water Channel Cleaning Adapter- 1 no ▪ Biopsy Valve-2 no ▪ Channel plug-1 no ▪ Channel Cleaning Brush-2 no ▪ Channel Opening cleaning brush-2 no ▪ Injection Tube-1 no ▪ Suction Cleaning tube- 1no ▪ Water resistant cap-1 no.
	Colposcope	4	<ul style="list-style-type: none"> • Should be a basic model with binocular tubes with inter papillary adjustment and vertical stand. • Should have a working range with fine focus of minimum 40mm. • Should have a 12.5x or 13.5x or 15x eye piece. • Should have a standard objective of working distance between 250 to 300mm. • The vertical stand should have at least 4 wheels and at least 2 of them should have breaking facility. • The vertical joint should be rotatable and should have vertical height adjustment. • The head should be tiltable and should have positioning handle. • Should use a halogen light source with coaxial illumination.



Sl. No.	Name	Quantity	Specification
			<ul style="list-style-type: none">• Should work with input 200 to 240Vac 50 Hz supply.
	PhotoTherapy Unit Single Surface	2	<ul style="list-style-type: none">• Phototherapy should be based on advanced CFL tube/LED technology• Should have a height adjustable mechanism, treatment distance to the range of 25 to 45 cms should be possible.• CFL technology should have minimum 4 nos. of medical grade Blue• CFL lamps on source module. For LED technology the irradiance should cover the entire treatment area.• Wave length of CFL lamps should be in the range of 420 – 470 nm and irradiance level should be higher than normal blue tube lights• Lamp source should be continuous tiltable to ± 90 degree angle to cover the entire treatment area.• System should be height adjustable with built -in non resettable Timer• It should be compatible with any trolley• Should work with input 200 to 240Vac 50 Hz supply.
	PhotoTherapy Unit Double Surface	2	<ul style="list-style-type: none">• Phototherapy should be based on advanced CFL tube/LED technology• Should have a height adjustable mechanism, treatment distance to the range of 25 to 45 cms should be possible.• Wave length of CFL lamps should be in the range of 420 – 470 nm and irradiance level should be higher than normal blue tube lights.• The unit should provide a minimum of irradiance 10Watts/m².• Lamp source should be continuous tiltable to ± 90 degree angle to cover the entire treatment area.• System should be height adjustable with built-in non resettable timer



Sl. No.	Name	Quantity	Specification
			<ul style="list-style-type: none"> • Baby bed should be transparent with up / down tilt able facility • Should work with input 200 to 240Vac 50 Hz supply.
	<p>Neo-natal Resuscitation Unit</p>	<p>12</p>	<ul style="list-style-type: none"> • Should have microprocessor based heater control and manual modes of operation. • Should have both skin and air modes of operation. • Should have user friendly touch sensitive control panel with large easy to read LED displays for air and skin temperatures. • Should have Quartz Infrared Heater with parabolic reflector for uniform heat radiation • The unit should contain an in -built double surface phototherapyunit with acceptable distance for effective treatment. • The heater unit should be protected by a suitable grill • The heater unit should be swiveling type and should be swiveled effortlessly. • The probes should be detachable type and should be interchangeable. • Should have memory back up to retrieve set data against power failure • Should have calibration free temperature sensors. • The heater should automatically cut off at 38 degree Celsius irrespective of the set parameters. . • Should have a monitor stand and IV drip pole. • Should have alarms with visual indicator for the following <ul style="list-style-type: none"> ○ Temp high ○ Temp low ○ Probe failure ○ Power failure ○ Heater failure • Should have an examination light with ON/OFF switch. • Should be provided with integrated baby bed system with cassette tray compatible for taking X-



Sl. No.	Name	Quantity	Specification
			<p>ray.</p> <ul style="list-style-type: none"> • Should be provided with withdraw able bed with head raising facility on both end. • Should have an in built suction unit with pressure control. • Should have an in built humidified oxygen outlet with flow meter control. • Should be supplied with suitable filled oxygen cylinder with cylinder holding facility at the rear side. • Should have manual resuscitation unit with PEEP and airway pressure
	<p>Warmer Baby</p>	<p>25</p>	<ul style="list-style-type: none"> • Should have user friendly touch sensitive control panel with large easy to read LED displays for actual and set temperatures. • The probes should be detachable type. • Should have memory back up to retrieve set data against power failure • Should have calibration free temperature sensors. • The heater should automatically cut off at 38 degree Celsius irrespective of the set parameters. • Should have a monitor stand and IV drip pole. • Should have alarms with visual indicators for the following <ul style="list-style-type: none"> ○ Temp high ○ Temp low ○ Probe failure ○ Power failure ○ Heater failure • Should have an examination light with ON/OFF switch. • Should be provided with integrated baby bed system with cassette tray compatible for taking X-ray. • Should be provided with withdraw able bed with head raising facility on both end. • Should be supported with easily removable side flaps. • Should work with input 200 to 240Vac 50 Hz sup



Sl. No.	Name	Quantity	Specification
	NEONATAL Ventilator	15	<ul style="list-style-type: none"> • Advanced microprocessor based continuous flow – pressure limited time cycled ventilator for very low body weight infants (premature, newborn). • The neonatal ventilator should have the following ventilation modes: CMV, Assist Control, SIMV, CPAP, and PSV. Volume • Guarantee should be possible in Assist Control and SIMV or equivalent mode. • Should have settings for <ul style="list-style-type: none"> ○ Peak Inspiratory Pressure : 0 – 50 cmH₂O ○ PEEP : 0 – 20 cmH₂O ○ Fraction of inspired oxygen : 21 – 100% ○ Inspiratory Time : 0.1 – 3 sec ○ Expiratory Time : 0.2 – 25 sec ○ Inspiratory flow : 1 – 30Lpm ○ Base flow : 1 – 20 lpm ○ Volume guarantee : 2 - 100ml ○ Respiratory Rate : 0 -200 bpm ○ Tidal volume range : 2 - 100 ml ○ Should have real time monitoring for: <ul style="list-style-type: none"> ○ Pressure – Peak, Plateau, Mean, PEEP ○ Expired Tidal Volume (Monitored), Expired Minute Volume, leakage in %. ○ Frequency/Rate – Set (Inspiratory), Spontaneous MV in %, total, I:E ratio ○ FiO₂, Pressure and Flow wave forms and loops • Lung Mechanics – Resistance, Compliance, Lung Over distension index (C₂₀/C) to avoid lung over distension, Time constant T_c, RVR • Should have an internal battery (maintenance free) / supplied with online pure sine wave UPS of sufficient capacity with minimum one hour operating time for ventilator. • Should have automatic compliance and leak compensation for circuits and ET tubes. • Should have backup ventilation / apnea alarm in CPAP/PSV. • Should have expiratory valve for easy sterilisation. • Should have automatic alarm settings.



Sl. No.	Name	Quantity	Specification
			<ul style="list-style-type: none">• MV alarm can be manually adjusted along with audio and visual alarms for:<ul style="list-style-type: none">○ High/low pressure○ High/low Minute Volume/Tidal Volume○ Apnoea alarm○ d.Compressor failure○ Failure of Sensor's○ Tube obstruction○ Power failure○ Ventilator failure• Standard accessories (for each equipment)• Modular corrosion free Original Trolley• Silicon patient circuit with Y piece sensor for neonates - 2 Set• Servo controlled humidifier with heated wire type and reusable chamber.• Temperature probe & adaptor - 2 nos• Flow sensor - 2 no's• Inbuilt Nebuliser• Original Hinged arm for rail (support for patient circuit)• Test lung for each patient circuit. - 1 no• Servo heated Humidifier with Temp Display- 1no• Hose for O2 connection• Hose for compressed air• Hose plug for O2 and air - 2 on each• Oxygen conversion kit with 5m Hose - 1no• Nasal mask and prongs(three different size) -3 each• Expiratory Valve per ventilator - 2 nos• Should have a Gas delivery system by soundless inbuilt• compressor /external integrated compressor with the unit. In case of compressor failure it should also be operable with compressed air/oxygen supply of 45 to 60 psi.



Sl. No.	Name	Quantity	Specification
	Suction Machine Low Pressure	18	<ul style="list-style-type: none"> • Should operate on 50Hz 230 V mains. • The bottle capacity should be between 100-120ml. • Should have a vacuum meter and regulation valve. • Should have a maximum vacuum of 120m bar and should be adjustable. • Bottle should have air tight lid. • 6. Should have an on/off switch.
	Heamodialysis Machine	12	<ul style="list-style-type: none"> • Facility for both Acetate and Bicarbonate Dialysis • Facility for sodium profiling, ultra filtration profiling, online clearance monitoring or equivalent technology and Bicarbonate profiling. • Facility for bicarbonate dry concentrate. • Automated disinfection and cleaning programs. • Twin Microprocessors for safety monitoring and operation of machine. • Facility for Rinse, Hot Rinse and Hot disinfection. • Facility for upgradation in future. • Facility for different dialysate flow range 0-300-500-800 ml/min. • Dialysate temperature 35-39 centigrade. • Dialysate mixing ratio (default) 1:34 • Volumetric Ultra filtration • Ultra filtration rate 0-4 litre /h with accuracy $\pm 1\%$ • Parameter display – ultra filtration goal, UF time, UF rate and UF volume. • Facility for arterial, venous, trans memberane pressure monitoring. • Arterial pressure monitoring range (-300) to +300 mm Hg, • Accuracy ± 10mm of Hg. • Facility for Arterial blood pump flow range 50-600 ml / min, • Accuracy $\pm 10\%$ • Heparin pump delivery range 0-10 ml/hr with syringe size 20-50ml. • Facility for Air and blood leak detector. • Blood leak detector sensitivity less than or equal to



Sl. No.	Name	Quantity	Specification
			<p>0.5 ml / min.</p> <ul style="list-style-type: none"> • Facility for dialysis fluid conductivity range 12.8 – 15.7 mS /cm. • Heat disinfection 85% chemical disinfection at 85 degree centigrade. • Water inlet pressure 1.5-6 Bar • Water inlet temperature 5-30 degree centigrade. • Networking of patient data, dialysis prescription and adequacy to central data base. • Should have battery backup for safety monitors and blood pump. • Should operate on mains 220-240Vac, 50 Hz single phase
	<p>RO Water Treatment Plant</p>	<p>1</p>	<ul style="list-style-type: none"> • RO Plant– 1000 ltrs. • Sand Filter- Capacity – 2000 lph, Media – Sand / Pebbles, MOC – • FRP / Composite, • Backwash : Automatic, Multiport valve : Timer based with 3 cycle backwash sequence, • Pressure gauge and fittings – 1 set. • Activated Carbon Filter- Capacity : 2000 lph, Media : Carbon ID 900, MOC : FRP/ Composite, Make: Pentair / equal, Backwash : Automatic, Multiport valve : Timer based with 3 cycle backwash sequence, Pressure gauge and settings : 1 set • Water softner -- Capacity : 2000 lph, Media : Ion exchange resins (ion exchange / thermax or equivalent), Regeneration: Automatic, • Multiport valve : Timer based with 3 cycle backwash/regeneration sequence, Pressure gauge and settings : 1 set • MEMBRANE ELEMENTS – Sufficient quantity and arrays to satisfy the output condition of 1000 LPH at 50-75% rejection for the given water quality. • Antiscalent dosing system : • Antiscalent dosing system : Capacity : 3 lph, MOC : PP, Dosing tank : • 50 ltrs, Level switch and fittings – 1 set. • UV Lamp with SS 304 Housing with quartz



Sl. No.	Name	Quantity	Specification
			<p>reflectors. Flow rate 1000 LPH</p> <ul style="list-style-type: none"> • WATER STORAGE TANK <ul style="list-style-type: none"> ○ Raw water storage tank capacity 2000 Litres. ○ Softened water tank capacity 1000 Litres. ○ RO Water storage tank – 2000 Litres. • PUMP. <ul style="list-style-type: none"> ○ Raw water pump – 1 HP (1+1) – Crompton / Grundfos or equivalent. ○ Softened water booster pump – 1 HP (1+1) – Crompton / Grundfos or equivalent. ○ SS RO Distribution Pump – 1 HP (1+1) – Crompton / Grundfos or equivalent. • OTHERS <ul style="list-style-type: none"> ○ Should have 1 Micron pre-filter, 20 inch height and 4” diameter. ○ Should have automatic inlet shut-off valve ○ Should have Permeate and Concentrate flow meters. ○ Should have Digital display of critical parameters through range of sensors. ○ Should have User friendly RO controller and ensure automatic trouble free operations. ○ RO controller should have automatic and manual mode. ○ Should have automated pre treatment for RO. ○ Should have Salt rejection around 96 – 98%. ○ i.RO recovery range shall be 50-75% ○ Permeate Rate : 1.0(4.5) m³/h (gpm), Concentrate Rate : 1-0.3 (4.5- 1.5) m³/h (gpm) ○ Should have P.E flexible tubing used to collect permeate into RO tank. ○ Should have Thermal motor protection. ○ Should have Pre-filter, post filter, primary and final pressure gauges. ○ Should have Flow control centre including concentrate and recycle valves. ○ Should have Auto flush valve in reject line. ○ Should have Low inlet pressure switch before HPP ○ 3 way Solenoid valve in feed before HPP



Sl. No.	Name	Quantity	Specification
			<ul style="list-style-type: none"> ○ Inlet shutoff solenoid valve in smaller system 250 to 1000lph. ○ Glycerin filled SS pressure gauges at feed / high pressure / reject lines. ○ Panel mounted Rotameter in reject / re-circulate and permeate lines. ○ Ball check valve in recirculation line, Spring check valve in permeate line & Conductivity meter in permeate line & Globe / needle valves in re-circulate and reject lines. ○ Should have 5 micron cartridge filters big blue in feed line. ○ Should have Digital conductivity meter with programmable relay ○ Should have Alarms for Low Inlet pressure & Motor starter overload. ○ Frame shall be made of Stainless Steel. ○ Membrane housing shall be made of Stainless Steel. ○ Inlet plumbing shall be Sch 80 PVC. ○ High pressure plumbing shall be Reinforced rubber hose. ○ Permeate / concentrate tubing shall be Polyethylen / NSF approved wet parts. ○ PEX Piping with SS push pull connectors. ○ Should operate on mains 400-420Vac, 50 Hz three phase power supply. ○ All wetted parts should be INERT, SS or compatible to ○ Haemodialysis procedure. ○ Control enclosures should be NEMA 1 & Motor starters should be ○ NEMA 4 X ○ The outlet of the RO system must conform to AAMI standards both in terms of chemical contamination and bacterial contamination. ○ The endotoxin limit for the RO water is 1 Eu/ml and the limit of bacterial growth shall be not more than 200 CFU/ml. Copy of Certificate / test report should be produced along with the quotation.



Sl. No.	Name	Quantity	Specification
	Mobile X-Ray	4	<ul style="list-style-type: none"> • X-RAY GENERATOR <ul style="list-style-type: none"> ○ Type : High frequency 2.5 KW ○ Max KV : 100 ○ Max mA : 60 ○ X-RAY TUBE <ul style="list-style-type: none"> ○ Type : Stationary anode ○ Focal spot : 1.4 x 1.4 mm • RADIOGRAPHY <ul style="list-style-type: none"> ○ KV range : 40 – 100 ○ mA range : 20 to 60 • CONTROL PANEL <ul style="list-style-type: none"> ○ Digital display of all radiographic parameters ○ Electronic timer with range of 0.02 to 5 sec / ○ Automatic tube over load protection. • MECHANICAL SPECIFICATIONS <ul style="list-style-type: none"> ○ Counter balanced ○ Articulated tube arm ○ Easy to move and handle ○ Light beam diaphragm collimator. ○ Extendable hand switch with cable for x-ray exposure. ○ Integrated cassette box • FEATURES <ul style="list-style-type: none"> ○ The quoted model and tube should be AERB type approved for usage up to ○ 60mA. ○ Relevant copies of the certificate should be attached with the quotation. ○ Should be mounted on heavy duty casters. • STANDARD ACCESSORIES <ul style="list-style-type: none"> ○ Light weight lead apron 0.5mm lead equivalence with thyroid guard – 1no. ○ Light weight latest model cassettes with high speed ○ screen 15x12 –1 no, 12x10 –1 no, 10x8 – 1 no. ○ Channel type hanger each size 3 nos. ○ Lead markers R, L, 0-9 and A-Z each 2 sets. ○ Cassette storage box.



Sl. No.	Name	Quantity	Specification
	X-Ray Machine With Table 300mA	3	<ul style="list-style-type: none">• I XRAY GENERATOR<ul style="list-style-type: none">○ Type : Full wave rectified○ Max KVp : 125○ Max mA: 300○ Should have 300 mA at 100KVp.• II X-RAY TUBE<ul style="list-style-type: none">○ Type : Rotating anode○ Focal spot: Dual 1.2x1.2mm and 2 x 2mm○ Anode heat capacity : 115KHU○ Anode speed: 2800 RPM at 50 Hz.• III RADIOGRAPHY<ul style="list-style-type: none">○ KV range : 40 – 125○ mA range : Small focus - 80 to 160 mA○ Large focus- 160 to 300 mA• IV CONTROL PANEL<ul style="list-style-type: none">○ Digital display of all radiographic parameters○ Major and minor KVp control.○ Electronic timer with range of 0.02 to 5 sec in at least 24 steps.○ Automatic tube over load protection.○ Line voltage compensator for coarse and fine adjustment.• V. MECHANICAL SPECIFICATIONS<ul style="list-style-type: none">○ Floor to ceiling tube stand○ Fully counter balanced○ Easy to move and handle○ Light beam diaphragm collimator.○ One pair of high voltage cables at least 6 meters long.○ Tube head should be rotated 360 deg.○ Extendable hand switch with cable for x-ray exposure.• VI TABLE SPECIFICATION<ul style="list-style-type: none">○ The table should be horizontal type○ Table top should be radiolucent with negligible x-ray absorption,○ stain free, break resistant and water proof.○ Bucky should be movable grid type.○ Grid should be aluminum interspaced with minimum ratio of 6:1



Sl. No.	Name	Quantity	Specification
			<ul style="list-style-type: none"> ○ and 60 lines/inches. ○ Bucky should travel the entire length of the table. ○ Cassette tray should be of Stainless Steel, auto centering of cassette ○ with cassette lock and should be capable to accommodate 14"x17" ○ Compression band, hand grip, foot rest and foot step should be ○ provided. ● VII FEATURES <ul style="list-style-type: none"> ○ The quoted model and tube should be AERB type approved for ○ usage up to 300mA. Relevant copies of the certificate should be attached with the bid. ● VIII. STANDARD ACCESSORIES <ul style="list-style-type: none"> ○ Three fold X-ray protection barrier. ○ Lead apron 0.5mm lead equivalence with thyroid guard – 1 no. ○ Should be supplied with chest stand and cone for skull x-rays. ● IX. POWER SUPPLY REQUIREMENTS <ul style="list-style-type: none"> ○ 380 to 440Vac, Three phase, 50/60 Hz. ● X. SPECIFICATION OF LEAD APRON. <ul style="list-style-type: none"> ○ Should be AERB approved. ○ Should be light weight 1mm lead equivalent. ○ Should be hook and loop type (Velcro). ○ Should be supplied along with thyroid guard.
	CT Scanner	4	<ul style="list-style-type: none"> ● I OPERATIONAL REQUIREMENTS <ul style="list-style-type: none"> ○ The system must have 16 rows of detectors, capable of acquiring 16 slices per rotation. DICOM Ready with true isotropic volume acquisition and sub millimeter resolution. ● II GANTRY <ul style="list-style-type: none"> ○ Aperture: 70 cms or more ○ FOV: 50 cms or more ○ Tilt: +/- 27 degree. ● III X -RAY GENERATOR:



Sl. No.	Name	Quantity	Specification
			<ul style="list-style-type: none"> ○ High Frequency type ○ Power output: 50 kW or higher ● IV X - RAY TUBE <ul style="list-style-type: none"> ○ Tube Voltage: 80 -140 kV or more. ○ Anode Heat Storage Capacity- 5 MHU ○ Anode Heat Dissipation: minimum 800 KHU/minute or with latest ○ technology ● V PATIENT TABLE <ul style="list-style-type: none"> ○ Load carrying capacity 180Kg with 1 mm positioning accuracy ○ Horizontal Table speed at least 100 mm/sec ○ Metal free scannable range of 150 cm or more ○ Facility of positioning aid for horizontal Isocentric positioning of the patient. ○ Carbon Fibre Table Top ● VI SPIRAL CT <ul style="list-style-type: none"> ○ Scan Time should be less than 0.5 seconds for full 360 degree rotation ○ Min slice thickness should be less than 0.625mm ○ Slice increment.- specify scan and selectable slice thickness ○ Pitch Factor (volume pitch): variable between 0.5 or more and should be user selectable or automated. Specify all possible pitch selections. ○ Single Continuous spiral scan time should be at least 60 sec or more. ○ Bolus Triggered or bolus chase Spiral acquisition should be possible. ● VII REAL TIME CT FLUOROSCOPY: <ul style="list-style-type: none"> ○ REAL TIME CT FLUOROSCOPY is converted as an option At 6 to 8 frames per second with foot switch control in the gantry and 19" color TFT/LCD monitor. ● VIII IMAGE QUALITY: <ul style="list-style-type: none"> ○ Low contrast resolution -specify low contrast resolution with 20cm ○ CATPHAN phantom. Specify surface dose,



Sl. No.	Name	Quantity	Specification
			<ul style="list-style-type: none"> ○ mAs, slice thickness and ○ HU used. ○ High contrast resolution should be at least 15 lp/cm for axial and spiral scan at 0% MTF with full FOV ● IX DATA ACQUISITION SYSTEM: <ul style="list-style-type: none"> ○ Detector - Capable of acquiring 16 slices per 360 degree of rotation ○ Minimum 16 rows of solid state or rare earth detectors are required ○ Inbuilt paediatric protocols ● X IMAGE RECONSTRUCTION: <ul style="list-style-type: none"> ○ Real Time reconstruction speed: specify. ○ Reconstruction Matrix:512X512 ○ Scan Time and length: Specify ○ Reconstructed slice thickness up to 10mm freely selectable ● XI MONITORS: <ul style="list-style-type: none"> ○ 2 nos of high resolution, TFT/LCD monitors of 19" or more ● XII OPERATOR CONSOLE: <ul style="list-style-type: none"> ○ Should perform Registration, scheduling, protocol selection , volume rendering, Volume measurements, Multiplanar ○ Reconstruction, and standard evaluation application and all available post processing functions without the help of the satellite workstation. ○ Raw data storage with at least 250 GB Hard disc having image storing capacity of 2,00,000 or more in 512x512 format ● XIII WORKSTATION <ul style="list-style-type: none"> ○ Shall be a latest processor and with an independent Hard disc storage capacity of 1 TB or more, capable of simultaneous viewing of all post processing functions and filming independently without the help of main console. Memory of the workstation should be independent of the console. ○ Two way data transfer between the operator console & the satellite workstation



Sl. No.	Name	Quantity	Specification
			<p>should be standard.</p> <ul style="list-style-type: none"> • XIV WORKSTATION FEATURES: <ul style="list-style-type: none"> ○ Post processing software: Software for Perfusion CT for brain and body applications, CT Angio, VRT, Max IP & Min IP, SSD, Image ○ Fusion, Vessel Segmentation & Virtual Endoscopy to be provided in the workstation ○ Interactive & Automatic Cine display should be available. • XV IMAGE EVALUATION TOOLS: <ul style="list-style-type: none"> ○ Parallel evaluation of multiple ROI in circle, irregular and polygonal forms. ○ Statistical Evaluation for area/ volume, S.D, Mean/Max and Histograms. ○ Distance & angle measurement, freely selectable positioning of Coordinate system, grid and image annotation. • XVI POST PROCESSING TOOLS <ul style="list-style-type: none"> ○ 2-D, including image zoom and pan, image manipulations, including averaging, reversal of grey-scale values, and mirroring; image filter functions, including advanced smoothing algorithm and advanced bone correction ○ Real-time multi-planar reconstruction (MPR) of secondary views, with viewing perspectives in all planes including curved & orthogonal ○ MPR. ○ CT angiography, MIP, Min IP, SSD, VRT and other advanced 3D applications and color coding for different tissues. ○ Spatial alignment and visualization of two different data sets of one patient generated on different modalities or with different acquisition times should be displayed on the workstation ○ Volume measurements. ○ Fusion of morphological data obtained on



Sl. No.	Name	Quantity	Specification
			<p>CT and MR</p> <ul style="list-style-type: none"> • XVII PATIENT COMMUNICATION SYSTEM: <ul style="list-style-type: none"> ○ An integrated intercom and Automated Patient Instruction System (API) should be provided • XVIII DRY IMAGER <ul style="list-style-type: none"> ○ Resolution: 16 bits/ 500 dpi or more with minimum three ports. ○ Support Multiple Film Sizes: one of which must be 17"x14" ○ DICOM Compatible (Attach conformance statement). • XIX ARCHIVAL <ul style="list-style-type: none"> ○ Filming parallel to other activities, including independent scanning, documentation and post-processing and configurable image text. ○ Archiving: CD/DVD/ blueray writer should be provided for archival. ○ Option of viewing these discs on any PC without DICOM viewer should be available. ○ Software for Remote Diagnostics Service over a telephone line ○ System must be PACS interface ready without any new hardware or software. • XX DUAL HEAD PRESSURE INJECTOR <ul style="list-style-type: none"> ○ Dual head pressure injector of reputed make with 200 Nos. of 200 ml disposable sterile syringes sets should be provided. • XXI SYSTEM CONFIGURATION ACCESSORIES, SPARES AND • CONSUMABLES <ul style="list-style-type: none"> ○ Standard Patient positioning accessories and restraining devices – 02 sets ○ Light weight vinyl Lead Aprons of 0.5 mm lead equivalence- 5 Nos ○ Lead Glass 100cm X 150 cm of 2mm Lead equivalence ○ Full system UPS of suitable capacity for 30 minutes backup ○ Warranty should be inclusive of all spares including X-ray tube.



Sl. No.	Name	Quantity	Specification
			<ul style="list-style-type: none">○ One Personal Computer with laser printer of latest configuration.○ View boxes - LED type of 14"X17" 3 film type - 3 sets● XXII OTHERS<ul style="list-style-type: none">○ The offer should be accompanied by original product data sheet/brochure of the product and AERB type approval certificate or valid No Objection○ Certificate (NOC) for the model offered should be submitted along with the quotation. In case of NOC valid type approval certificate has<ul style="list-style-type: none">○ to be submitted prior to submission of invoice for payments.● XXIII SCOPE FOR TURNKEY WORK FOR MODEL A & B<ul style="list-style-type: none">○ Minor civil works to remodel the existing room.○ Fixing of the lead glass on the wall.○ Tile / Vinyl flooring on the gantry and console room.○ Interior finishing works with false ceiling.○ 5.Dadoing work till false ceiling in the console and gantry room○ Supply and Installation of the Air Conditioning units of suitable tonnage on the gantry and console room.○ Necessary cabling work, lightings, switches and various sockets and electrical distribution paneling works inside the CT Room○ Lead lining on the doors and frames as per AERB requirements.○ Obtaining DRS approval (necessary drawing by the supplier) by liasioning with hospital authorities.○ Obtaining electrical inspectorates approval (necessary drawing by<ul style="list-style-type: none">○ the supplier) by liasioning with hospital authorities



Sl. No.	Name	Quantity	Specification
			<ul style="list-style-type: none"> • OTHERS <ul style="list-style-type: none"> ○ The cost of turnkey work should be specified separately as optional. ○ The rates offered will not be considered for price evaluation.
	<p>Computed Radiography System</p>	<p>2</p>	<p>CR system configuration shall include: Imaging plates (IP) Image reader system CR workstations Remote ID and Preview stations Accessories and consumables</p> <p>Laser Imager CR Compatible imaging plates Following sizes are required – 35cm x 43 cm - 4 35cm x 35 cm - 2 24cm x 30 cm - 2 18cm x 24 cm - 1 15cm x 30 cm</p> <p>Image reader shall meet the Functional requirements : Various image – processing protocols available for the respective regions of body IP processing rate should be 60 plates / hour. Mechanism for Re-routing the newly acquired images to the preconfigured CR work station. Capability of retrieving (Service Intervention) at least last 10 scanned images, as part of contingency plan. Capability for quick check of the image and exam data of at least the last 4 Imaging Plates scanned at the X-ray room. Protocol for verifying the connectivity status of configured image destinations. Spatial resolution of the digital image shall preferably be 2k x 2k x 12 bits for optional resolution.</p>



Sl. No.	Name	Quantity	Specification
			<p>Identification and Preview System Functional Requirements: a) Capability of interfacing to HL7, Proprietary, DICOM Work list or user defined Windows/Linux based interface protocols to HIS/RIS. b) Please specify whether you have tested interfacing with HL7 – DICOM Bridge. c) Mechanism for retrieving Demographics of at least last 10 patients identified on a particular Identification Terminal. d) Customizable Graphic User Interface (GUI) in Identification station with facility of selecting DICOM print & storage destination. e) Indication of Over Exposure on the preview module. f) Mechanism for User release from Preview terminal in case of Autorouting Images to Pre-defined DICOM Destinations. g) Customizable Graphic User Interface (GUI) for Preview terminal. h) Solution for storing patient demographic data for multiple exams in RIS/non RIS environment. i) It should be possible to put a custom configurable data field in the demographic information of the patient linked with the image.</p> <p>Software System should include the following Software applications: Please list all the optional software(s) which are available with you for enhancing the workflow and service in the Digital Radiology environment for the following. Advanced Processing Software Application Software Connecting Software Visual Output Software</p>



Sl. No.	Name	Quantity	Specification
			<p>Quality Monitoring Software. The system should include the following SW applications as standard: Full Leg/Full spine image processing. Quality control software Software, which enables to see in the preview terminal the deviation from normal exposure and with the details of the deviation on the CR workstation. Software masking of the collimation areas. Special attention should be placed on pediatric applications. Software for storing images on any DICOM 3 (or newer versions) compliant stations. Software for printing on any DICOM printer CR Workstation System configuration requirements: Accept images from CR Reader without any loss of data Capable of Archiving & Printing selected images to a standard DICOM destination. Storing images in the local disk for pre-defined period. Mechanism for accepting New images when the local disk is full Should include 21" antiglare flicker free TFT/LCD color monitor Should include 21" Monochrome antiglare flicker free Medical Grade TFT/LCD Monitor with at least 2k x 2k resolution. CD/DVD Burner 80 GB or more on board storage System Functional requirements: Support DICOM work list or user defined Windows based interface to HIS/RIS. Mechanism for retrieving Demographics of atleast last 10 patient identified on that Terminal. Customizable Graphic User Interface with facility of</p>



Sl. No.	Name	Quantity	Specification
			<p>selecting DICOM print & storage destination. Indication of Over Exposure on the preview module Mechanism for User release in case of Auto-routing Images to Predefined DICOM Destinations. Functional requirement for CR workstations: Built in routine for using predefined image processing parameters for image quality enhancement. Mechanism for storing the Patient image based on name, date, exam, etc. Capability of storing user defined image processing parameters. Capability of overwriting predefined image parameter with userdefined parameters & storing these two images separately. Correcting typographically in Patient Demographic module, in case the RIS connection was down and annually data entry was done. Capability of changing W/1, Flipping, Rotating, Zooming, Collimating Annotating incoming image. Auto-routing incoming image to predefined DICOM Store (SCP storage) or Print Destination (SCP Print Destination) Mechanism for printing Multiple Images in one film, with the possibility of slide and True Size printing. Capability of storing to CD Systems should be able to converse with other DICOM systems – such as MR work station / CT workstation. <i>Laser Imager System Configuration requirements:</i> <i>Print Images CR Workstation</i> Capable of Printing Images in DICOM 3.9 format Mechanism to print images 14x17, 11x14, 8x10 film sizes</p>



Sl. No.	Name	Quantity	Specification
			<p>simultaneously. Resolution should be 500 dpi or more. Capable of handling mammography plates</p>
	<p>C-Arm Image Intensifier</p>	<p>1</p>	<ul style="list-style-type: none"> • Motorized vertical travel – 50 cm or more • Pivotal rotation – 12.5° or more • Orbital rotation 90° – 30° or better • Radius of C-arm – adequate to encircle O.T. table and bulky patient • Adequate free space between plate and x- ray tube – app. 75cm • or more • Rotation of C-arm – 80 cm or less • Option of biplanar imaging • Visualization of at least five vertebrae at a time • C-arm should have facility of locking movement with easy to • turn handle on control unit. Rear wheel must be freely movable • for easy to control unit. • Image Intensifier – Minimum 9” • TV Camera – <ul style="list-style-type: none"> ○ Ultra compact CCD camera with high no of pixel and video band with two flicker free TV monitor with facility to rotate the image continuously. ○ Radiography should be possible on a cassette to be fitted in a holder for 10” x 12” cassette. The complete with one such folder and 1 no. cassettes including high speed intensifying screens. • X-Ray Generator - <ul style="list-style-type: none"> ○ Fluoroscopy – output – 40 – 120 KV ○ MA Output – Minimum up to 8 mA or better ○ Snapshot – Minimum up to 12.0 mA or better • Image Memory – <ul style="list-style-type: none"> ○ Adequate on hard disc should have facility to insert patient name through key board.



Sl. No.	Name	Quantity	Specification
			<ul style="list-style-type: none"> ○ Unit should be capable to function/store in ambient temperature of 0^o- 50^o and relative humidity of 20-90 %. ○ Power input to be 220-240 VAC, 50 Hz with Indian plug.
	Hematology Analyser	3	<ul style="list-style-type: none"> • Should be a fully automated, three part differential hematology analyzer. • Should measure minimum 16 parameters like WBC, HGB, RBC, • PLT, HCT, MCV, RDW%, MPV, MCHC%, RDW, PDW and histogram for WBC, RBC, PLT. • Should have throughput of 50 or more samples/hour. • Should be suitable for whole blood (up to 50µl) and pre-diluted samples (less than 25µl). • Should have LCD display to show all parameters and histogram. • Should be supplied with inbuilt/external printer with necessary accessories. • Should have automatic calibration and a minimum of 6 in built quality control programs. • Should have facility for giving accurate results in case of low platelet count or megathrombocytes. • Hemoglobin measurement should be done using non-cyanide reagents. • Should provide reagents, cleaners, rinsers, lysers and consumables (which ever applicable) required to perform 2000 tests shall be provided along with each machine. • Should have patient report storing facility. • Should work with input 200 to 240Vac 50 Hz supply.
	Colorimeter	1	<ul style="list-style-type: none"> • 400 to 700nm Wave Length • Filters - Glass and Interference Filters 420, 470, 520, 620 and 660nm, 546nm. • Provision to add optional interference Filters 400 to 700



Sl. No.	Name	Quantity	Specification
			<ul style="list-style-type: none">• Display - Digital - 0% T to 100% T and OD mode• Reading Volume - 1ml• Optional direct reading of concentration up to 0.1 unit• Linearity and Digital Display of Standards, Drift 1% in 1 Hour• Accuracy 1% (0.010D)
	Electrolyte Analyzer	5	<ul style="list-style-type: none">• It should measure Electrolytes like Na+, K+, Cl-, Ca²⁺• Should be user friendly• Operating through buttons in the instrument• Should have speed of 60 samples/hr for serum, plasma, urine sample• Should have facility to minimize the cost per sample• Should have minimum 100 sample storage data• Should have inbuilt sample counter• Should store data for qc values
	Semi Auto Analyser	5	<ul style="list-style-type: none">• Should be microprocessor controlled general purpose bi-chromatic photometer system with at least 6 filters ranging from 340 to 630nm.• Light source: Tungsten/ halogen or higher grade with one additional bulb.• Should have end point, kinetic and two point kinetic measurement modes.• Should have flow cell measuring device.• Should have inbuilt printer.• Should have a measurement range from 0.001 to 2.300 Abs.• Should have a test program memory of 50 or more.• Aspiration should be based on Bellow/Peristaltic Pump/ Vacuum pump.



Sl. No.	Name	Quantity	Specification
	Blood Gas Analyzer	5	<ul style="list-style-type: none"> • It should measure Blood Gas (full parameters) in its addition to measure Electrolytes like Na+, K+, Cl- , pH, pO2, pCO2 and Haematocrit . • Calculated parameters: TCO2, HCO3, Base Excess A-aDO2, Buffer Base etc. • Should display all results in print out. • Should have input parameters of patient Temperature, Hemoglobin • FIO2, patient ID Etc. • 5 Should have a sample temperature control of 37 degree centigrade. • It should have inbuilt printer. • Analysis time should not be more than 90 seconds. • System should be supplied complete with all standard accessories,electrodes & start up kits. • Power input: 220 VAC + 10%, 50 Hz
	Laminar airflow workstation - Horizontal Laminar airflow table top model with accessories	5	<ul style="list-style-type: none"> • Working area 3 ft x 2 ft x 2 ft • Size of HEPA filter 3 ft x 2 ft x 6 in • Satin finish Stainless Steel work surface • Transparent UV resistant front door with double folding • Built in UV germicidal light • - HEPA filter and pre filter spares to be provided
	Autoref Keratometer	2	<ul style="list-style-type: none"> • Should have Refractometry and Keratometry in the system. • Should have continuous K/R, REF, KER modes. • Should have refractive measurement sphere from -25 to +22D in steps of 0.12/0.25D. • Should have refractive measurement cylinder from -10 to +10D in steps of 0.12/0.25D. • Should have refractive measurement axis angle from 1 to 180° in steps of 1° • Should have at least 0, 12 and 13.5 vertex distance. • Should measure a minimum pupil diameter of 2.5mm. • Should have maximum pupil distance measurement of 85 mm in steps of 1mm.



Sl. No.	Name	Quantity	Specification
			<ul style="list-style-type: none"> • Should have at least 5 inches display. • Should have vertically adjustable chin rest of at least ± 25mm. • Should have radius of curvature measurements from 5 to 10 mm in the increments of 0.01mm. • Should have corneal power measurement from 34.0 to 67.5D in the increments of 0.12/0.25D • Should have corneal Astigmatism measurement from -10 D to +10D in the increments of 0.12/0.25D • Should be supplied with printer. • Should be supplied with motorized table. • Should operate on 200 to 240 Vac, 50Hz input supply.
	Bipolar Cautery Ophthal	4	<ul style="list-style-type: none"> • Should have provision to connect wide range of bipolar forceps and hemostatic erasers to facilitate most ophthalmic surgical procedures. • Should have foot control. • Should be supplied with two sets of reusable, autoclavable cord for bipolar forceps and hemostatic erasers. • Should be supplied with one standard ophthalmic bipolar forceps. • Should be supplied with 2 bipolar eraser with 18 G tip. • Should work with input 200 to 240Vac 50 Hz supply.
	Direct Ophthalmoscope	6	<ul style="list-style-type: none"> • Should be rechargeable battery with Charger / mains operated. • Should have halogen / LED light source • Should have red-free filters • Should have small and large spot sizes, fixation targets, slit aperture, hemi-spot and cobalt blue filter • Should have wheel control with lens powers ranging from +20D to -35D in single diopter steps up to 10D and 5D steps above that. • Should have dust free optics and a spherical optical system
	Indirect Ophthalmoscope	6	<ul style="list-style-type: none"> • Should have a adjustable, light weight, soft cushioning metallic head band with non slip contoured ophthalmoscope. • Should have small pupil feature.



Sl. No.	Name	Quantity	Specification
			<ul style="list-style-type: none"> • Should have a Halogen/Xenon/LED light source. • Should have cobalt blue and green filters. • Should have adjustable interpupillary distance. • Should have synchronized adjustment of convergence parallax.
	<p>Operating Microscope Ophthalmic</p>	<p>4</p>	<ul style="list-style-type: none"> • Should have apochromatic optics • Should have 5 step magnification • Should have working distance of objective lens F = 200mm • Eye piece should be minimum 10x or 12.5x wide • Should have XY coupling • Should have red flex switching in/out facility • Should have 45 degree binocular with converging optics. • Should have total magnification from at least 4.5x to 22x • Should have field of view from at least 15mm to 50mm • Should have cold light coaxial illumination by fiber optic light guide • Should have heat absorbing and UV filters. • Should be operated in 200-240 Vac 50/60 Hz input supply.
	<p>Phaco machine</p>	<p>2</p>	<ul style="list-style-type: none"> • Should be a phaco system within built vitrectomy and diathermy units. • Should have a peristaltic, low pulsation aspiration pump / Venturi system with appropriately rated compressor. • Should have a gravity fed irrigation system. • Should have aspiration flow rate from 1cc/min to 40cc/min. • Should have a vacuum range from 5 to 500 mmHg. • The reflux should be continuous flow from irrigation source. • Should have fluid and air vents. • Should use linear and non-linear ultrasound power with 40Khz power band width. • Should have continuous, pulse, micro pulse, and burst ultrasound modes. • The Irrigation/Aspiration should have linear flow rate and vacuum control. • Should have pneumatic /electric driven vitrectomy cutter with cutrate 1 to 1000 cuts/minute or better.



Sl. No.	Name	Quantity	Specification
			<ul style="list-style-type: none"> • Should use Bi-polar wet field for coagulation. • Should have at least 4 programmable user presets. • Should have a linear foot switch to control phaco power and vacuum • Should operate from 200 to 240Vac, 50 Hz input supply.
	<p>Ophthalmic Operation Table Motorized</p>	<p>2</p>	<ul style="list-style-type: none"> • Should be motorised table with ophthalmic head piece and adjustable wrist support. • Should have operated on foot-pedal control for up and down movements. • Should provide with antibacterial, dis-infectable mattress. • Locks to stabilize when in use with high quality rust-proof castors. • Should have table top movements essential for ophthalmic surgery. • The table should have trendelenburg and reverse rendelenburg movement
	<p>Surgeon's Chair Hydraulic Operating</p>	<p>4</p>	<ul style="list-style-type: none"> • Should have motorized/ hydraulic up and down movement. • Should have foot operated lever control. • Should have an adjustable back support. • Should have arm support
	<p>Streak Retinoscope</p>	<p>7</p>	<ul style="list-style-type: none"> • Should have an external focusing sleeve which is easy to grip and manipulate • Should have crossed-linear polarizing filter. • Should allow one-hand operation for streak focus and 360° streak rotation. • Should be interchangeable to plane mirror and concave mirror mode by sleeve movement • Should have halogen / LED light source • Should have 100% dust proof housing and multi-coated optics. • Should have brow rest for spectacle wearer • Should be rechargeable battery with Charger / mains operated. • Should have a carrying case.



Sl. No.	Name	Quantity	Specification
	Slit Lamp	6	<ul style="list-style-type: none">• Should have at least 2/3/5 step magnification.• Should have real fields of view of 23mm to 5.6mm dia.• Should have interpupillary adjustment of atleast 55 to 75 mm• Should have slit width from at least 0 to 14mm continuously variable.• Should have slit length 0 to 14 mm continuously variable.• Should have slit inclination from 0 to 20°• Should have heat absorbing filters• Should operate from 200 to 240Vac, 50 Hz input supply.• Should be supplied with motorized table.• Should have a longitudinal movement of at least 90mm• Should have a lateral movement of at least 95mm.• Should have a vertical movement of at least 30mm.• Should have a chin rest vertical movement of at least 55mm.• Should have good illumination using Halogen/xenon lamps.
	Plain Hospital Beds	150	<ul style="list-style-type: none">• Overall size (Approx): 206 (L) x 91 (W) x 56 cms. (H).• Tubular Bows (outer pipe) made of Ø 31.75mm x 18 G CR ERW pipe• Top made of tubular frame work of 50 x 30 x 16 SWG• Head Bow (approx) 1060 mm (H). Foot Bow (approx.) 82mm (H) in 18• SWG.• Both bows will consist of one Horizontal (Ø 25mm x 18G) and three vertical (Ø 15mm x 18G) supports.• Bed top of 16 G MS CRCA ribbed perforated Sheet.• Provision for Mosquito Net Poles.• Legs should be fitted with castor wheels of 5" diameter of nylon/rubber, two with brakes.• Two spare wheels including one with brakes should be supplied.• Provision for I/V Stand with I/V Rod.• A mattress suitable for the bed made of 25mm thick soft 32 density top layer and 75mm thick high 40 density bottom layer for the patient comfort and better pressure care.• Finish: Should be pretreated and Epoxy powder coated



Sl. No.	Name	Quantity	Specification
	Bed side lockers	300	<ul style="list-style-type: none"> • Over all approx size: 40 cms x 40 cms x 82 cms H. • Body consisting of 2 sides and back is made from one piece made of 20 G MS • CRCA sheet. Top shall be fitted with superimposed Stainless Steel sheet 304 grade with raised edges on three sides. One drawer 100mm H x 350mm W x 390mm D fitted, should be provided below the top. Under the drawer should be an open storage space and below it should be a closed door cabinet. Door of the cabinet box shall be pivoted at top and bottom. Base of the drawer should be fitted with four non rusting swivel castors. Two buffers shall be provided at rear side of the locker box. • Finish: Should be pretreated and Epoxy powder coated
	Adjustable Bed Side Tables	300	<ul style="list-style-type: none"> • Approx Size: Top 810mm L x 350mm W . Laminated top should be fitted on mild steel square tubular telescopic stem with geared , handle for height adjustment from. • 760mm to 1050mm. • Base frame should be of mild steel rectangular tubular base frame mounted on four castors of 50mm dia.
	Instrument Cabinets	15	<ul style="list-style-type: none"> • Made of CRCA sheet of 18G three side closed front glass door and fixed glass shelves 5 shelves • Pre-treated and epoxy powder coated. • Approx Size: 58"* 24"*14" • Thickness of Glass 5mm.
	Crash Cart for ICU	10	<ul style="list-style-type: none"> • Six removable bins and S.S. Frame, two polystyrene storage units with three drawers each can be locked. Complete with corner buffers. • Oxygen Cylinder Holder, Electric lamp, cardiac massage board & 3 laminated shelves. SS I.V. Rod fitted with 5" castors two with break. Pretreated and Epoxy powder coated. • Approx Size: 940mm L * 490mm W * 1535 mm H made of 20G sheet and 16G Pipe.
	Instrument trolley	50	<ul style="list-style-type: none"> • Overall size(Approx): 680mm L x 450mm W x 900mm H. Stainless Steel tubular frame work made of 25.4mm OD x 18 G verticals mounted on 100 mm dia non rusting



Sl. No.	Name	Quantity	Specification
			<p>swiveling castor wheels two with brakes, two without brakes.</p> <ul style="list-style-type: none">• Two Stainless Steel shelves with protective railings on three sides.• Only 304 grade Stainless Steel should be used for trolley frame work and• SS shelves.
	Dressing Trolley	50	<ul style="list-style-type: none">• Overall Size(Approx): 1010 mm L x 510 mm W x 900mm H welded Stainless• Steel tubular frame work.• Verticals of also 31.7mm OD x 18 G tube horizontal stays of 19 mm OD x 18 G tube on all four sides to support two Stainless Steel shelves 22 G over with 10 mm dia Stainless Steel railings are provided on all four sides.• The trolley holds Stainless Steel bucket with SS lid at lower level and S.S. bowl at top level respectively.• Only 304 grade Stainless Steel should be used for tubular frame work &• SS shelves of trolley.• The trolley should be in buff finish with 100 mm dia non rusting swivel castors wheels two with brakes, two without brakes.
	Stretcher Trolley	20	<ul style="list-style-type: none">• Overall Size(Approx): 2030mmx 560mmW x 810H mm. Frame work made of 31-75 OD mm x 1.60 mm vertical & 25 mm x 1.22 mm horizontal CRC tubes• Trolley mounted on 15 cms dia castors -2 with brakes• Removable stretcher top made of 1.22 mm aluminium sheet with S.S. handle at both end with 25mm thick suitable rubber Mattress covered with good quality rexine.
	Emergency and recovery trolley	40	<ul style="list-style-type: none">• Overall Size(Approx): 1905mm L x 710mm W x 660mm To 910 mm H.• Stretcher dimension(approx) 1830 mmL x 555 mm W.• Two section top. Height adjusted by foot operated maintenance free hydraulic pump.• X-ray permeable removable stretcher, Backrest raised on ratchet.• Quick trendelenburg as well as reverse trendelenburg positions shall be provided with easily accessible



Sl. No.	Name	Quantity	Specification
			<p>operating handle provided with two gas springs for easy action. SS saline rod with 12mm dia SS rod shall telescope in SS socket tube</p> <ul style="list-style-type: none">• 15.8 mm dia x 18G welded on angular base bracket of 14G SS sheet.• Trolley shall be mounted on 125mm dia non-rusting good quality castor wheels two with brakes and two without.• Oxygen cylinder arrangement should be available.• It shall have a pair of Stainless Steeltuck down type railings made of 19mm dia x 18G tube fitted with M.S. brackets.• Effective railing height above main frame is. 235 mm (approx) & length of the railing is 1175 mm (approx).• Finish: Should be pretreated and Epoxy powder coated
	Examination Couch	15	<ul style="list-style-type: none">• Overall size(Approx): 1890 mm L x 560mm W x 840mm H.• Fixed upholstered top 64mm thick in two sections.• Body frame work made from 20G. CRCA sheet and 20 mm x 40mm x 16 G• MS. Rectangular Tubes, Couch shall be fitted with Stainless Steel Legs.• Headrest adjustable on gas spring.• Upper section of box size 1220 mm L x 460 mm W x 630 mm H with three sliding drawers of size 320 mm L x 430 mm W x 75 mm H.• Lower section shall be comprises of three cabinets of inside size 350mm L x 440 W mm x 430 H mm with separate doors & lock.• B.P.apparatus tray made of 18 G MS sheet of size 350 mm L x 120 mm W X 20 mm H provided on a swinging rod rotating through a bush welded on the body of the couch.
	Soiled Linen Trolley	30	<ul style="list-style-type: none">• Overall size (approx.): 910mm H x 510mm dia. SS tubular framework fitted with three swivel castors, 100mm dia.• Framework made of 25.4mm dia x 18G verticals, upper ring made of 19mm dia x 18G tube and support stays of 19 mm dia. X 18G Stainless Steel tubes.• Should be supplied with canvas bag. All SS components should be of 304 quality.



Sl. No.	Name	Quantity	Specification
	Wash Basin stand two tier	20	<ul style="list-style-type: none"> • Five legs plastic base mounted on 5 cmsdia castors. With two. 375 mm S.S. basin. • Vertical CRC tube made of 25.4 mm x 1.2 mm and basin holder tube made of • 16 mm x 1.22 mm ms tube • All mild steel components should be thoroughly pre-treated chemically to remove rust and foreign matter like Grease, Oil etc. by dip tank process pretreatment system. • The treated Metal Surface should have coating of Epoxy Polyester Powder with paint film thickness of 60 microns (minimum).
	Saline stand with SS Rod	200	<ul style="list-style-type: none"> • Five legs Stainless Steel stable base made of 20mm x 40 mm x 18g tubes fitted with 50mm Dia non rusting Castor, SS rod with double hooks made from 304 • Grade SS 10mm Rod. • Height adjustment from 1620mm to 2340 mm.
	Revolving Stool	10	<ul style="list-style-type: none"> • Overall Size (Approx): 480mm To 670mm H. • Tubular tripod base of 25.4 x 14 g ERW tube. SS top. • Height adjustment by screw. 300mm dia. • The legs fitted with high quality PVC shoes with nylon reinforcement.
	Birthing Bed (Non Motorized)	10	<ul style="list-style-type: none"> • A raising and lowering of a table is actuated mechanically (foot pedal pump operated). • High density PU form Mattress.. • Frameworks constructed with mild steel material. • Mobile on two lockable wheels of 10 cm. • IV rod for fluids and blood transfusion. • Basin under top for waste material. • Side rail on the head side for holding hands. • Height: - 500mm to 800mm (+/-25mm). • Total Length 1000 to 2000 mm (+/-25mm). • Body section: -1200mm x 300mm. • Leg section: -800mm x 300mm.



Sl. No.	Name	Quantity	Specification
	Wheel Chair	40	<ul style="list-style-type: none"> Overall approx size(Approx): 670mm W x 1120mm D x 920mm H. Welded frame construction of round tubes. Two solid rubber tyred bicycle wheels with brakes & self propelling Stainless Steelhoops. Minimum Frame size of round steel 22.2 x 18 G tubes and 19.05 x 18 G tubes. Mild steel tubular construction shall be fitted with cushionseat and back. Wheel chair shall be fitted with minimum 24" dia rim of bicycle wheel fitted on specially developed and heat treated axle with solid tyre in the rear. In the front minimum 150mm dia castor wheels are fitted. In front of castor wheels, aluminum foot paddles are provided on adjustable brackets. Two handles shall be provided with the hand grips. Brakes shall be provided on rear wheel to hold the chair to stop in 5 degree ramp.
	Three Fold Bedside Screen	30	<ul style="list-style-type: none"> Bedside Screen Three Fold with curtain. It should be fitted with six swivel, twin wheel non - rusting castors, 50 mm dia with M.S body frame. Overall approx. size: 1680mmHX2450mmW. Middle span 1210mm wide. Side spans 610mm wide each with hooks, springs and curtains.
	Cylinder Trolley	24	<ul style="list-style-type: none"> Cylinder Trolley (Push Type) fitted with 2 castors, 100mm dia. With M.S. body frame. Suitable for 1320 ltrs. Size gas cylinders. Trolley with SS base.
	Neurosurgery Items		
	Spinal Jackson Table	1	
	Neurosurgery Diathermy	1	



Sl. No.	Name	Quantity	Specification
	Machine		
	Neurosurgical Drills to perform Spine and other Emergencies	2	
	Ultrasonic with Cold Plasma aspirated to resect tumour	1	
	Radio Surgery Unit Gamma or Cyber knife	1	
	C-Arm Cray Unit	1	



For more information, please visit
<http://www.uhwi.gov.jm>

End of Document

