Research Equipment		
Ser	**Description**	**Qty**
1	**Academic and Research Block Audio Visual Equipment**	
1.01	Camera-still (digital) Live View 2,359K-dot Oled Megapixels 16.05 Video Recording 4K2K	4
1.02	Camera Movie (digital) Operating Environment 0 – 40 °C, 85% or less humidity Dimensions (W x H x D) 135.8 x 98.3 x 84.4mm Weight (body only) Approx. 580 g	2
1.03	Scanner Type: Flatbed Resolution: Up to 4800 x 9600 dpi Auto document feeder: None Bit Depth: 48-bit Connectivity: Hi-Speed USB 2.0	2
1.04	Sound System Dimensions/weight Console:15.98" W x 2.56" H x 10.16" D (8.8 lbs) Jewel cube speakers (each):2.6" W x 6.2" H x 2.6" D (1 lb) Jewel cube center speaker:6.1" W x 2.7" H x 2.6" D (1.04 lbs) Acoustimass wireless bass module:11.61" W x 12.8" H x 11.61" D (30 lbs) Wireless receivers for rear speakers:6.54" W x 1.6" H x 3.07" D (9.8 oz) Additional details Supported audio formats: Dolby Digital, Dolby Digital Plus, Dolby TrueHD, DTS, Multichannel PCM. Video source compatibility: Support for six 4K/60 video sources (HDMI 2.0/HDCP 2.2) Inputs and outputs Rear panel of the console 1 HDMI™ output with Audio Return Channel (ARC) 5 HDMI inputs 2 optical digital audio connections 2 coaxial digital audio connections 2 analog L/R audio inputs 1 3.5 mm connection for the Acoustimass module 1 data port 1 IR repeater port 1 Ethernet port for SoundTouch and software updates via a network 1 USB connection for software updates only Front of the console 1 HDMI input 1 3.5 mm jack for ADAPTiQ system and headphones 1 power button 1 source button 1 system setup button What's in the box Console 4 Jewel cube speakers Jewel cube center speaker Acoustimass wireless bass module Universal remote control Front speaker cable 2 rear speaker cables 5 AC-2 adapters 2 wireless receivers ADAPTiQ headset IR emitter HDMI cable 4 AA batteries Console power supply 4 Power cords Screwdriver	2

Research Equipment		
Ser	**Description**	**Qty**
2	**Endoscopy Section**	
2.01	Disinfector Endoscopes • Unit shall be small and easy to use • Shall be mobile, mounted on 4 castors, to facilitate use in different areas, fitted with a rail to facilitate control when moving unit • The unit shall be suitable for the processing of a minimum of 8 flexible endoscopes, plus a variety of rigid endoscopes. • Unit shall ensure complete containment of chemical agent with venting through a carbon filter • 8 endoscopes shall be cleaned in approximately ten minutes • Simple connection to water and drain and to a standard 13 amp socket WATER FILTRATION SYSTEM • Shall be supplied with a water filtration system, that shall require separate installation • Shall provide bacteria bacteria free water by passing through 2 pre filter elements and finally through a 02 micron filter	1
2.02	Laparoscope Set • Telescope Dia 7mm, 300mm long 0o • Telescope Dia 7mm, 300mm long 25o • Telescope Dia 7mm, 300mm long 50o • Tracer sleeves 7mm with insufflations tap • Metal sleeve, standard straight distal tip WL 150mm, 7mm Dia • Metal sleeve, standard straight distal tip WL 100mm, 7mm Dia • Trocar sleeve, conical tip for use with straight tip sleeve • Trocar sleeve, pyramidal tip for use with straight tip sleeve • Trocar sleeve conical tip for use with oblique tip sleeve • Trocar sleeve, pyramidal tip for use with oblique tip sleeve • Reducing adapter for reduction from Dia 7mm to 5.5mm • A traumatic grasping forceps both jaws opening WL430mm • A traumatic grasping forceps both jaws opening babcock WL430mm • Grasping forceps blunt. Both jaws openingWL430mm • Grasping forceps 14mm tapered, both jaws opining WL310mm • Grasping forceps with teeth, both jaws opining WL310mm • Grasping forceps with one teeth, grooved, both jaws opining WL310mm • Grasping forceps with two teeth grooved, WL310mm • Grasping forceps for fine structures WL 430mm • Grasping forceps and coagulation forceps, both jaws opining WL310mm • Grasping and Dissecting forceps both jaws opening WL310mm • Grasping and Dissecting forceps18mm, tapered, both jaws opening WL310mm • Grasping and dissecting forceps 20mm, single jaw action WL 310mm • Grasping and dissecting forceps 15mm, single jaw action • Universal grasping forceps both jaws opening WL310mm • Plate shaped grasping forceps both jaws opeing WL310mm • Biopsy forceps spiked, both jaws opening WL 310mm • Biopsy forceps cutting action WL 430mm • Biopsy forceps cutting action WL 430mm • Hook punch by frangenheim, cutting action 310 • Hook punch by frangenheim, cutting action WL 430mm • Grasping forceps 5mm with spring handle and cleaning channel WL 315mm	2
2.03	Laparoscopic System equipment system cart mounted, consisting of : • CO2 insufflator 30 liters flow rate and heating device • Irrigation / suction pump • H/F unit unipolar / bi-polar with footswitch 200 watt • Camera control unit • Monitor colour 50cm • Video colour printer • Light source Xenon lamp 175 watt • 2 carts mobile	1
2.04	Video Gastroscope • Working length: 1010mm • Outer Dia 713.8mm • Forward / oblique view : Min.100 • Complete with: • Biopsy forceps 2 Nos. • Grasping forceps 2 Nos. • Inj. Needle 1 No. • Channel cleaning brush set • Case and standard maintenance kit	2
2.05	Video colonofibroscope- wide screen image for routine endoscope examination and diagnosis, and therapeutic treatment of lower digestive tract (rectum and colon) Graduated flexible insertion tube with 12.9mm outer diameter. Ultra-wide 140o field of view, 0o forward viewing, 5-100mm field depth and 3.7mm instrument channel. Range of distal end bending up & down 180o, right and left 160o each, working length 1630mm. supply with 2 biopsy forceps & 1 channel cleaning brush	2

2.06	Video Sigmoidoscope Paed • Working length: Min 630mm A. Adults outer Dia. Min less than 12mm B. Paed. Outer Dia. MAX no grater than 12mm • Filed of view 100 deg. Min • Complete with: • Biopsy forceps 2 Nos. • Channel Cleaning brush 1 No. • Grasping forceps 2 Nos. • Endoscopic injector 2 Nos. • Coagulation electrodes • Diathermic snare 2 Nos. • Case and standard maintenance kit • CO2 insufflation adaptor • Standard maintenance kit	1
2.07	Video sigmoidoscope adult • Working length: Min. 63 mm A. Adults outer Dia. Max less than 12mm B. Paeds. Outer Dia. Max. no greater than 12 mm • Filed of view 100 deg. Min • Complete with • Biopsy forceps 2 Nos. • Channel Cleaning brush 1 No. • Grasping forceps 2 Nos. • Endoscopic injector 2 Nos. • Coagulation electrodes • Diathermic snare 2 Nos. • Case and standard maintenance kit	1
2.08	Video Gastroscope Paed • Working length 900mm Min • Outer Dia 7.9mm Max • Forward / oblique view Min. 100 Complete with: • Biopsy forceps 2 Nos. • Grasping forceps 2 Nos. • Inj. Needle 1 No. • Channel cleaning brush set. • Case and standard maintenance kit	1
2.09	Video system center unit shall comprise of the following • Diathermy unit endoscopy • Suction / irrigation unit endoscopy • 3 chip camera • Xenon light source • Colour video monitor 20” • VCR and DVD recorder with colour printer • Monitor trolley	3
2.10	Endoscopy Storage Cabinet. The unit shall be capable of storing up to 10 endoscopes on an extendible support frame. To be ventilated with 50 mc/h fan unit requiring a 240 V 3A fused supply.	10
2.11	Patients Trolley Mobile trolley rubber castors breakable Power coated side guard pair easily foldable Trolley constructed of square hollow tubular pipe of 1 “ dia Fitted with IV pole adjustable, oxygen cylinder holder Top of stretched stretcher make stain less steel	4
2.12	Ambu bag large Autoclaved and reusable silicon ambo bag for adult. Should be 100% medical level silicon material. Built in H2O pressure relief valve. All in one intake valve connects to oxygen reservoir bag directly.	2
2.13	Refrigerator 18sq ft Top mount refrigerator type, Direct cool cooling technology. Temperature control thermostat, extra wide design, Glass door with mirror finish. Thicker door insulation. Inverter technology for save 40% energy. IR Technology for Health and Hygiene. Need no stabilizer. Capacity: 525L. Durable compress. Refrigerant: R600a. Temp of refrigerator: +5 C Temperature of freezer: -25C No of shelves total: 5 Nos +z	4
2.14	Ultrasonic Nebulizer (Hospital) 40W ultrasonic nebulizer Particle size: 0.5 – 6 um Crystal operating frequency: 1.65 MHz Aerosol tank capacity: 300 ml Average nebulization rate: 0 – 5 ml/ min Voltage: 230 V 50Hz With adult and pediatric mask, vapour tubing, medicine cup	4
2.15	Glucometer Easy to use large LCD Icon driven Display Gluco meter.Ejector remove lancet. Alternate site testing cap should available. Level 1 shallowest, level 5 deepest. Fast result. Patented comfort zone technology proved to reduce pain without impeding blood flow	4
2.16	Suction machine (Electric) Electronically controlled foot paddle suction machine. Oilless motor type. Max vacuum: - 740 mmHG Max air flow rate: 90 LPM Noise level: <50 dB Suction control knob with suction pressure dial. Four Castor wheel. Two Suction Jar 3000 ml Power requirement: 230V – 50 Hz	2

2.17	Operating light • One major and one satellite light heads • Light intensity at l m at colour temp of 4500K should be: • 2,00,000 Lux or more • Colour temperature 4300-4500K • Multi reflector / multifaceted reflector system to ensure shadow less light at all levels of the light column • Illuminated field diameter should be : Min 140-200 mm, Max: 250-350 mm • Depth of illumination should be 100-120 cm or more • Special filters to filter out 99.9% infrared component of the emitted light • Increase in temperature near head should not be more than 2 degree C • The light head should be so constructed as to provide optimum conditions for laminar flow • Colour rending index should be 92-98 • Light filed adjustment by sterilisable handle • Control panels on the light assembly as well as away from it for adjustment of light	2
2.18	Procedure Table With two section radiotranslucent top hydraulic with matters. Complete SS with standandard accessories Approximate Dimensions & Movements: • Width including side bars 560,, • Length with in fill section = 2000mm • Minimum height (without mattress) 745mm • Maximum height (without mattress) 110mm • Maximum trendelenburg =350 • Head section adjustment = +450	2
2.19	Endoscopy instrument set Biopsy Forceps a. Standard type Fenestrated (3 Nos.) b. Elongated Cups with needle fenestrated (1 No.) c. Hot biopsy forceps (1 No.) Grasping Forceps a. Rat tooth with alligator Jaw (1 No.) b. Pentanod type (1 No.)	1
2.20	Diathermy Unit High frequency: 330-380 KHz Cut Mode : Cut 1/ 2/3 120w @500 Ohm Pulse Cut : Slow / Fast 12w @ 500 Ohm Soft Coag: 120w @ 100 Ohm Forced Coag: 1: 50w @ 500 Ohm Forced Coag: 2: 120w @ 500 Ohm Bioploar out Cut: Cut 1/2/3 120w @ 500 Ohm Soft Coag: 120w @ 100 Ohm RF Coag: Including BCAP: 40w @ 100 Ohm	2
2.21	Crash cart with defibrillator Unit completely equipped as detailed below along with the defibrillator • The contents will be clearly documented for each unit. Emergency Resuscitation Cart: • S.S top approx. 630*445mm. 25mm dished • Lift up laminated work flap approx. 305*455 • Three drawers 2 shallow 600*430*65mm and 1 deep 600*430*165mm • Lower cupboard 625*475*290mm • Double hook stainless steel I.V Pole • 2 * SS cylinder holders for D or E size Cylinders • Cardiac board 600*400*55mm • 6" aneroid spyhygmomanometer with adult Velcro cuff and rail clamp • Electronic timer and rail clamp • Venture suction unit with 02 outlet and 1.8 liter jar and rail clamps • Yankauer suction tube and connecting tubing • 0-15rpm 02 flowmeter fitted to 02 venturi outlet • Pin index regulator with outlet for connection to remote venture hose and 02 outlet • Intubation set comprising • Maclntosh layngoscops with 3 blades • Magill introducing forceps • Adult resuscitator • Set disposable E.T tubes (5) • Set guedel airways (3) • Pen torch • Artery forceps (2) • Dressing tubes (2) • Set plastic tubes Examination light (1 no.)	1

2.22	Vital Sign Monitors • The unit shall consist of the following components • A six trace color display unit with two, six or eight space-segment satellite enclosure. • The unit shall be "PC" compatible to allow peripheral and operational options. • User selectable formats according to procedural requirements and user preferences. • The control shall be by the use of simple, functional zones & color-coded wipe-down, tactile feedback keys. • Unit shall have alarms providing visual and audible warnings of alarms, faults and validation messages; all of which shall be individually selected. The unit shall include: • Power Cable • Operators manual • Module housing to hold parameter modules • 3m cabling for connection to module enclosure • The unit shall be supplied with the following modules: • ECG/RESPIRATION/NIBP/SPO2/TEMP	5
2.23	Instrument Trolleys Heavy duty stainless steel pipe constructed instrument trolley. Two stainless steel shelves Mobile on four quality rubber wheels	10
	Total	**Endoscopy Section**

Research Equipment			
Ser		**Description**	**Qty**
3.01		**RADIOLOGY DEPARTMENT**	
3.02		Fluoroscopy unit (Single tube) with image intensifier facility , Remote control 90/90 titling table, Wall Bucky, 65 KW HF X-Ray Generator, 32 cm 1.1 , D/COM connectivity and operator console.	1
3.03		Portable X-Ray plant Mobile 300 mA High frequency Mono block Geneator ,40 - 150 KVP mAs 0.2 to 150, Rotationg Anode tube with Dual Spot.	2
3.04		Color Doppler Ultrasound system Digital color Doppler ultrasound system for Doppler studies including abdominal, gyn/obs, urology, vascular And etc.	2
3.05		Radiation Protection Accessories 1. Mobile Lead class 2.0 mm barrier for the protection of radiologists. Size: 74"Hx52"W Mobile with four wheels two lockable. Protection level: Main panel is 1.5mm leas equivalent. Floor curtain is 1.0mm LE 2. Adjustable Radiation aprons. High quality natural rubber. Internal multi layer protective matrial lead is evenly distributed. Not easy to break, light and soft, waterproof, antistatic . Easy to clean and disinfect. 3. Lead Gloves: Best quality imported. Flexible lead rubber in tear resistant plastic cover. 0.2mm lead thickness inside gloves	1
3.06		X-Ray Illuminators 4x4 Housing made of Epoxy coated steel Viewing area 4ft x 4 ft Light intensity more than 6000 Lux With Light intensity control Suitable for wall mounted and table use Film clamps and hooks for holding wet films Power requirements: 220V, 50 Hz	2
3.07		Digital X-ray (500mA with PACS System) HIGH FREQUENCY X-RAY MACHINE 500 MA (RADIOGRAPHY ONLY) with Inbuilt or external AVR and UPS In case of external AVR the model /brand /make of the main x ray unit and each quoted component must be mentioned • the AVR must able to control the voltage between 100V to 260V&to provide constant output voltage of 220V,50Hz • In case of external AVR and ups system the AVR/UPS system shall be compatible with the x ray unit for minimum of 70 to 100 exposes on different KV and mA. (Compatibility certificate from the supplier must be provided). • AVR and UPS maximum power, brand and model must be mentioned. • With over and under current, voltage and heat protection X-RAY unit Comprising of following: - • High Frequency X-Ray Generator 500mA /150 KV / 40 KW or better. • With inbuilt /external AVR and UPS system minimum 70 to 100 exposures or better. • 4 Way Floating top Bucky table Floor to ceiling or free standing Tube stand. X-ray tube head with; • Focal spot Size 0.6 x 1.2 mm or better on either side • 300 KHU or more. • Manual Collimator. • Pair of H.T cable • .Bucky wall stand. X-RAY GENERATOR RAD TYPE, 01 TUBE SYSTEM • Microprocessor controlled High frequency. • Power: 40 kW or better. • kV Range: 40 - 150kV • mA Range : 10 -500mA • Minimum exposure time: 1 milli second or less	1
3.08		PC core2 duo processor with laser printer Branded Core 2duo to better system as Desktop CORE I 5 System 3.2 GHz , I TB HHD, 4GB RAM, Bit Processing: 32 bits DVD-RW Drive, active USB Ports, 19" LCD High resolution Color Monitor, Mouse, Keyboard, Headphone, Speaker, UPS system. Computer Trolley, Heavy Duty LaserJet Printer: Up to 30 ppm, Duty Cycle: Up to 25000 pages.	4

3.09		Interventional Radiology Cath Lab PRE-REQUISITE: • The firms must quote their leading brands from the above mentioned origins with the proven past performance nationally and internationally. • The firm must possess its related back up support services including trained engineers, workshop facilities, spare parts availability and repair/calibration tools etc. • The firm will submit the details regarding managerial, engineering, history of past projects, testing tools, key engineer's qualifications and their relevant trainings related to Angiography system etc which will be verified by the technical team to access its qualification for determining the eligibility. Only the qualified eligible firms will be evaluated further as per evaluation criteria. • The quoted Brand / product must be installed and enjoyed good reputation in Pakistani market for minimum three years. The quoted model should be developed / produced by the manufacturer not earlier than five years for high tech equipment (which will be counted from the date of its certification). The manufacturer will provide the Warranty; local agent's Warranty will not be acceptable. The manufacturer will further certify that in case of change of its agent, it will provide after sales services itself or through their newly appointed agent. • The firms shall quote make and models, country of origin for each main equipment, accessories and allied equipment also. • The performance guarantee will be furnished by the manufacturer or by the local agent on the behalf of the manufacturer in the currency of the contract.	1
		SPECIFICATION OF EQUIPMENT	
		A fully digital flat panel single plane Peripheral Angiography / Catheterization System, dedicated for diagnostic & interventional procedures.	
		POSITIONING ARM:	
A		The system should be advanced ceiling mounted for easy unhindered access to patient and head to toe coverage without patient repositioning.	
1		Real time display of rotation angulations.	
2		Geometry: C-arm / G-arm	
3		RAO / LAO: RAO 120º to LAO 120º or more.	
4		C-Arm Sliding: Minimum RAO 45º to LAO 50º or more.	
5		Rotation Speed: 30°/sec or more in LAO / RAO.	
6		Isocentric Height: Variable / Fixed.	
7		Auto Positioning: Programmable auto positioning of selected.	
8		Angulations, (50 or more programmable positions.)	
9		The control panel can be mounted at any side of the patient table.	
10		All the rotational / angles should be digital displayed.	
11		Ceiling mounted 56 inch or more LCD/LED monitor.	
12		Motorized / rotation of the positioning arm.	
13			
		DIGITAL FLAT PANEL DETECTOR 12 X 12 INCH.	
B		Single plane C-Arm / G-Arm	
1		Image matrix of 1024 x 1024 x 16 bits or more.	
2		Standard 12” x 12” size with four formats.	
3		Built in temperature stabilizer.	
4		Integrated collision protection feature	
5		All other standard accessories according to this digital flat panel.	
6		Dose management with fluoro filters range of 0.1/0.2mm to 0.9/1.0 mm Cu.	
7		Pixel Size of 200um or better.	
8		Removable grid for peadiatric application.	
9			
		PATIENT SUPPORT / CATHERIZATION TABLE:	
C		Floor mounted tilting hybrid catheterization, dedicated operating table allowing precise imaging during operation.	
1		up down / vertical, longitudinal and transverse	
2		Longitudinal tilting of +/-16^{o} without changing the table height.	
3		Lateral movement with the table lateral tilt of +/-16^{o} without changing the table height.	
4		Tabletop length of 300cm or more.	
5			
		Tabletop pivoted around the support column, facilitating shunt angioplasty in the upper extremities.	
		Table top should be durability to accept patient’s weight of not less than 200kg plus 100kg for resuscitation.	
6		Table dimensions should be able to accommodate patients of all ages.	
7		Emergency stop switch on the tableside as well as touch sensor on the FPD for table operation lock.	
8		Interface control functions for table tilting as well as C-Arm movement.	
9		Compact tableside control unit with easily distinguished buttons and controls.	
10		Stepping DSA with stepping table in addition to bolus chase through C-Arm movement.	
11			
		X-RAY GENERATOR:	

D		Microprocessor based high frequency using fiber optic for data communication between each imaging system.	
1		Dedicated X-Ray generator of 100kW.	
2		Radiographic rating minimum 1000mA.	
3		Serial filming exposures with shortest exposure of 1ms, with automatic kV and mA control for optimum image quality.	
4		The system should have capability of digital radiography and fluoroscopy.	
5		Should have capability of doing digital pulsed fluoroscopy at 10/2.5/15 frames.	
6		Automatic kV,mA & pulse width regulations.	
8			
		DIGITAL IMAGING AND ACQUISITION / FLUOROSCOPY:	
E		Acquisition, storage and display in 1024 x 1024 x 12 bits or more at 12.5 / 15 and 25/30 FPS.	
1		Parallel processing capability / multitasking facility.	
2		Real time filtering and road map function.	
3		Magnetic Disk Capacity for Storage of 100,000 images in 1024 x 1024 matrix on the magnetic disk of main console. Multiple Hard Disks (RAID) system for greater reliability.	
4		Minimum scene length to be 10 seconds in 1024 matrix.	
5		Digital pulsed fluoroscopy with 12.5 / 15 and 25 / 30 FPS in 1024 x 1024 x 12 bits or more.	
6		Images to be stored on and retrieved from archival disks for possible manipulation and quantification using available software packages.	
7			
		X-RAY TUBE:	
F		Minimum of three years unconditional warranty on the X-Rays tube by the original manufacture.	
		Triple focus with at least 3.0MHU or better anode heat storage.	
1		Capacity to enable continuous heat dissipation during serial exposure.	
2		Triple foal rotating anode.	
3		Tube and generator should have same power output of 100kW.	
4		Dose management with auto adjustment fluoro filters.	
5			
		MONITORING SYSTEM:	
G		Flat Screen LCD/LED 56 inch of 1024 x 1024 matrix.	
1		Monitors should be ceiling mounted in the operation room with the original ceiling suspension system.	
2		Two monitors for live images and road mapping in the Examination room 18 inch or larger LCD/LED as back up.	
3		Two monitors for live images and road mapping in the control room 18 inch or larger LCD/LED.	
4		All the monitors will be of Medical Graded, complied with international standards for medical monitors.	
5			
		CONTROL:	
H		All controls of digital imaging shall be in the examination as well as control room.	
		RECORDING / ARCHIVING & COMMUNICATION SYSTEM:	
I		Recording / archiving system should be DICOM-3 compatible.	
1		They digital images should be stored as backup on CD/DVD.	
2		DICOM (send/storage, commitment, retrieve/query)	
3		Ethernet connection to connect with other terminals.	
4		Integrated Intercom system.	
5			
		BRANDED REVIEW STATION:	
J		DICOM-3 Compatible.	
1		Edge enhancement, adjustable view speeds & post processing.	
2		High Definition Medical Graded 18 inch LCD/LED Monitor.	
3		CD/DVD writer and CD/DVD ROM drive.	
5		Image storage capacity 3 x 80 GB with at least 10,000 RPM Speed.	
6		And SCSI/ Equivalent Controller at each review station.	
7		Laser black & white printer, 2400 DPI or better (HP, LEXMARK, XEROX, CANNON)	
8			
		SOFTWARE / HARDWARE PACKAGES:	
K		Complete analysis package for the following applications.	
1		Dynamic pre and post PTCA / valvotomy comparison with one image live and other reference.	
2		Automatic loop replay after acquisition or fluoroscopy.	
3		Dynamic real time pan / zoom.	
4		Dynamic real time digital image processing like edge enhancement or gamma correction, noise reduction (spatial filtration.)	
5		They bidders should quote their licensed software with part number in their Principals offer.	
6		Simultaneous display of fluoroscopy and reference images, not only as static images but as dynamic loop.	
7		Online image density (gray scale) correction.	
8		Facility to review previous studies in the examination room from the patients old CD.	
9		Automatic positioning of the C-Arm corresponding to reference image.	
10		Store fluoro facility to store fluoroscopy.	
11		Dose Area Product (DAP) meter mounted on front of beam limiting device to monitor and display air kerma radiation dose in numerical.	

12		Dose Tracking System for patient entrance skin dose measurement and display in real time is required. The system should be capable to show a color map to indicate the distribution of actual skin dose on the patient model GUI should be available to look patient model from 3 to 250kg and 50 to 200cm height and male/female/child for the patient calculated from the X-ray conditions and geometric position information of each unit obtained during the study. Accumulated skin dose and peak skin dose must be shown in real time.	
13		QVA (quantitative vessel analysis) software package for quantitative analysis of blood vessels such as the aorta, iliac arteries, renal arteries etc.	
14		Digital Subtracted Angiography.	
15		3D imaging:	
16		- 3D Rotational Angiography Application Software with C-Arm rotation of 40degree / second or better.	
		- 3D DA from control room or examination room.	
		- 3D Rotational DSA at 40degree / second or better.	
		- 3D Roadmap with fusion of live fluoro data on Angio 3D roadmap.	
		Fusion Multi-Modality Roadmap function.	
17		3D image / 3D volume data from CT and MR, a fluoroscopic image, and a device-enhanced image generated from the fluoroscopic image can be superimposed automatically or manually and displayed. The Multi-Modality Roadmap Using 3D volume from 3D-Angio, CT or MR as Roadmap overlay.	
		Low Contrast Imaging to perform CT like images for Low contrast imaging from the control or examination room.	
18		Stepping DSA to perform lower-extremity peripheral stepping DSA by moving the tabletop from the control or examination room.	
19		Dynamic trace / dynamic image acquisition function for interactive and radiation dose saving through adapted movement speed according to flow situation. Save up to 60% dose vs DSA.	
20		Needle Guidance software using 3D volume from 3D-Angio, CT and MR to support Needle Guided procedures with guiding markers.	
21		Low Dose Spot Fluoroscopy with asymmetrical collimation in addition to symmetrical collimation, allowing real time fluoroscopy within a specific region of interest (ROI) while continuing to display a still image outside the specific region. Any small asymmetrical area can be zoomed live, reducing patient radiation dosage.	
22		Digital live zoom to enlarge the specific ROI upto 2.0X or more in real time without increasing the detector dose.	
		Workstation:	
23		High performance workstation for 3D Reconstruction and visualization in real time volume rendering technique, MPR and MIP.	
		Low contrast imaging, high-resolution images can be displayed. Display of 3D Angio, Low contrast imaging, Angulation feedback.	
		SURGICAL SHADOW LESS LIGHT:	
L		Ceiling suspended/Floor mounted, for Angiographic and related surgical procedures.	
1		RADIATION PROTECTION:	
2		Ceiling suspended / floor mounted tiltable lead glass for radiation protection of operators head & neck regions and lower body parts.	
3		Collision tolerant.	
4		Lower body radiation protection flaps.	
5		Lead lining of room where necessary.	
6		QUALITY AND SAFETY STANDARDS FOR ANGIOGRAPHY MACHINE:	
M		FDA 510 K approval, CE (MDD) compliance, MHLW certificate	
1		Country of Origin and manufacturing should be USA, Europe or Japan only. Since this is a high technology system, Chinese manufacturing is strictly not acceptable.	
2		ACCESSORIES WITH THE SYSTEM:	
N		500 writable CDs should be delivered with the system.	
1		Lead glass window size 2x1 meter or more Pb. equivalent 2.0mm or better.	
2		5 x Pb aprons for the male, double side with different sizes, Pd equivalent front 0.5mm and back 0.35mm with belts and as per sample approved.	
3		5 wall mounted hangers.	
4		5 x Pb aprons for the female, double side with different sizes, Pd equivalent front 0.5mm and back 0.35mm with belts and as per sample approved.	
5		5 x Thyroid shields.	
6		05 x Pb Goggles	
7		160KVA or more true on line sine wave UPS for whole angiography system. with a minimum back up time of 10 minutes.	
8		Programmable contrast media injector with 100 disposable syringes. Medrad, Angiomat or Medtrone.	
9		RAYSAFE DOSIMETERY system WITH EIGHT DOSIMETERS	
10		Complete RaySafe i2 or latest dosimeter system for real time measurement and display of fluoroscopy dosage with 8 dosimeters.system to measure and records dose and dose rate every second. Data to be wirelessly transferred via radio to the i2 real time display. Accumulated dose to be stored in the dosimeter by hour for 5 years and the dose rate to be stored by second for the last hour of exposure. Real time display on central 10.4" touch screen to be placed in the examination room to show real time doese exposure from all dosimeters in range, up to eight at a time. Color indication bars (red, yellow, green) TP represent dose rate levels with a logarithmic scale and the accumulated dose per individual user should be displayed next to the color indication bars.	

		POWER REQUIREMENTS:	
O		Three Phase with line voltage of 220V, 50Hz.	
		WARRANTY:	
P		The warranty period shall be for FIVE YEARS unconditional including X-Rays tube and flat panel detector from the date of full functional commissioning will all specified parameters that shall cover labor and parts for all equipment supplied stated in the contract including non-proprietor parts, accessories, transducers, batteries, high vacuum elements like X-Ray tube etc.	
3.10		CT Angiography (256 Slices)	1
		PRE-REQUISITE: 1. THE QUOTED EQUIPMENT MUST BE MANUFACTURED IN USA, EUROPE OR JAPAN ONLY. 2. THE MEDICAL EQUIPMENT MUST COMPLY WITH 510(K) FDA (FOOD & DRUG ADMINISTRATION), AND EUROPEAN MDD (MEDICAL DEVICE DIRECTIVE) AND JAPANESE MHLW (MINISTRY OF HEALTH, LABOUR & WELFARE) FOR SPECIFIC QUOTED MODEL. ALL THREE CERTIFICATES ARE REQUIRED. 3. THE FOLLOWING ARE THE KNOCKOUT CLAUSES AND THE FIRMS NOT FULFILLING THESE CLAUSES, WILL BE NOT CONSIDERED: (a) The firms must quote their latest and leading brands from the above mentioned origins with the proven past performance nationally and internationally. The firm must possess its related back up support services including trained engineers, workshop facilities, spare parts availability and repair/calibration tools etc. Firm must have PEC registration. (b) The quoting firm must possess ISO certificate for service operations and should have proper infrastructure to handle and execute the complete package with previous experience. (c) The quoting firm must have installed at least 5-Units of same equipment in Pakistan and must bring satisfactory recommendation letters from at least 5 local users along with installation certificates. (d) The firm must be a sole distributor at least for the five consecutive years and should have sole agency from manufacturer and also must have an established track record government supplies of over 5-years. (e) The most important criterion is the capability to provide quick and efficient after sales service at site. The hospital reserves the right to inspect workshop facilities of the vendor at any time to ascertain technical delivery capability. Bidders with inadequate facilities will not be considered.	
1	GANTRY	1.1. System should be capable of Acquiring / Generating 160 to 256-slices per gantry rotation in real time.	
		1.2. Gantry bore / aperture to be at least 75cm or more.	
		1.3. Minimum gantry rotation time to be at least 0.35seconds or better, for 160 to 256-slices per 360 degree rotation, for all applications. All the firms should quote their latest model scanner.	
		1.4. System should be able to acquire helical/ sequential scan with the gantry tilted from the vertical.	
		1.5. Gantry tilt range must be ± 30 degree.	
		1.6. Maximum scan field of view to be at least 50cm for Paeds & Children the system should be able to reduce the field of view to 200mm or less.	
		1.7. Extended Field of View: 70cm or more.	
		1.8. Minimum slice thickness of at least 0.5mm.	
		1.9. Dual Control (including tilt,) of gantry and table from the gantry-housing and console.	
2	TUBE	2.1 Heat storage capacity of at least 7.5KHU or better without Iterative Dosage.	
		2.2 Generator output of up to 600mA or more for all applications.	
3	GENERATOR	3.1 High frequency power generator with minimum power of at least 70kW or more	
		3.2 should be capable of variable kV setting in steps	
		3.3 should have ability to vary the power (mAs) automatically in steps.	
		3.4 Real-time dose reduction hardware / software and with ECG modulation	
		3.5 Able to calculate patient dose in mili-seviert preferably before image acquisition (CTDI) Iterative dose reduction must be offered.	
		3.6 Low contrast detectability (LCD) is the most important specifications of CT Scanner. The CT Scan must be capable to show LCD of 2mm at 3HU (0.3%) contrast difference with radiation dosage of not more than 10mGy.	
		3.7 Scan Length of at least 1.75meters or more of helical or axial scan in a single acquisition.	
		3.8Maximum Scan Time 100sec. or more for handling heavy patient load.	
4	DETECTORS	4.1 Solid state crystal ceramic detectors with conversion efficiency (X-Ray to signal strength) of nearly 100% latest technology.	
		4.2 Isotropic voxel size of 0.33mm or better, in all three axis	
		4.3 Minimum 80 to 128 physical detectors and detector electronics capable of providing 160 to 256 slices per gantry rotation or more.	
		4.4 Detectors width 40mm or more per gantry rotation.	
5	COUCH	5.1 Dual motorized control (from console and gantry) of table movements in horizontal and vertical axis.	
		5.2 Maximum weight allowed on the couch up to 200kg or more	
		5.3. Horizontal movement speed up to 100mm per second.	
		5.4 Single acquisition scan range of at least 1.75meter	
		5.5 Scan with at least 0.25mm accuracy / reproducibility on a 200kg patient.	

		5.6 Lateral table shift of +/- 42mm for easy patient centering during cardiac and trauma scanning.	
6	CONSOLE COMPUTER	6.1 System architecture and operating system must be based on latest technology (64 bit RISC or Dual Xenon Processor PC) original.	
		6.2 Multitasking and parallel processing CPU system.	
		6.3 At least 12gb Ram or more	
		6.4 Hard disc capacity for image storage of at least 900GB or more.	
		6.5 Capable of storing at least 3000 raw data files / rotations or 700 GB raw data / 450000 images in 512 x 512 format	
		6.6 Reconstruction of at least 50 images per seconds or better at 512 x 512 matrix with iterative dose reduction.	
		6.7 Image area display matrix dimensions (1024 x 1024)	
		6.8 Console color monitor, TFT type of at least 19inches, medical grade with maximum viewing angle	
		6.9 CD / EOD and DVD writer	
		6.10 Console soft ware	
		all the latest cardio-vascular and whole body software should be supplied as standard which is available at the time of shipment.	
		USER INTERFACE SOFTWARE	
		6.10.1 True isotropic volume acquisition	
		6.10.2 Prospective and retrospective ECG gated acquisition	
		6.10.3 Variable Delay algorithm like fixed percent delay (FPD) and fixed offset delay (FOD) or better , for selection of period of least motion in cardiac cycle (temporal resolution of 40 milli second or better; less will be preferred)	
		6.10.4 Automated contrast media bolus tracking software	
		6.10.5 3D RECONSTRUCTION DISPPLAY ORIGINAL COMPANY SOFTWARE:	
		a. Maximum and minimum intensity projections	
		b. Multiplaner and curved planer reconstruction	
		c. 3D shaded surface display	
		c) ITERATIVE DOSE REDUCTION SOFTWARE SHOULD BE APPLICABLE FOR WHOLE BODY ORGANS.	
		6.10.14 MANDATORY OPTION to be quoted. SYSTEM MUST HAVE CAPABILITY OF DUAL ENERGY SCANNING SYSTEM WITH BLENDING SOFTWARE FOR COMBINING IMAGES ACQUIRED AT DIFFERENT KV'S. System should be able to acquire 2 energies 120KV and 80KV simultaneously in one scan. The Dual Energy scanning should be based upon ultrafast KV switching or slow KV switching or filter based twin beam or dual detector technology. Older technology of 2 full scans at different KV's is not acceptable. Dual energy latest applications to include : o Composition Analysis to detect uric acid for gout and to analyze renal calculi. o Dose neutral iodine mapping for detection of tumors in lungs, liver etc. o Virtual non contrast (iodine subtraction) o monochromatic HU / spectral curve for advanced analysis	
7	WORK-STATION	FDA/CE approved, independent, multimodality, fully functional. All companies will supply the work-stations from the same manufacturer of CT Scanner (third party solution is not acceptable) THREE INDEPENDENT STAND ALONE WORKSTATIONS ARE REQUIRED, THESE SHOULD NOT BE THIN CLIENT	
		7.1 High speed link to operator console on DICOM network	
		7.2 System architecture and operating system a. Dual processor Xeon b. 2.66 GHz or more speed c. 512 cache or more d. Graphic cord and network cord	
		7.3 Should have one high resolution TFT monitor of 18 inch or more	
		7.4 DVD RW (super-drive will be preferred)	
		7.5 DICOM-3 viewer with universal PC display capability (licensed)	
		7.6 Heavy duty Laser black and white printer A4 /letter size 2400 dpi or higher, two paper trays for A4/ letter size media, (HP, Lexmark, Xerox, CANNON) network-ready	
		7.7 WORK STATION SOFTWARE 7.7.1 3D RECONSTRUCTION DISPLAY a. Maximum and minimum intensity projections b. Multi-planer and curved planer reconstruction c. 3D shaded surface display d. 3D volume rendering software e. 3D virtual endoscopy, colonoscopy and bronchoscopy 7.7.2 CT Angiography 7.7. 3 Advanced coronary vessels analysis 7.7.4. Calcium scoring with ECG gating and prospective / retrospective reconstruction. 7.7.5 Cardiac function analysis – 7.7.6 Advanced peripheral /general vessels analysis 7.7.7 Lung nodule detection and analysis 7.7.8 Brain perfusion analysis	
8	DICOM	DICOM 3 ready (multi-vendor and multimodality compatible for send, receive, achieve, retrieve and print, on main console and workstations).	

9	QUALITY and SAFETY STANDARD	MDD (CE), FDA (510K) and MHLW (all three are required)
10	Power requirement	Three phase with line voltage of 380-440V, 50Hz.
11	FLOUROSCOPE	Fluoroscopy with real time imaging and display of at least 8 frames/sec with required hardware & software. One high resolution in-room TFT monitor of at least 15 inches or more on mobile base/ceiling mounted.
12	ACCESSORIES	12.1 Programmable, dual head power injector with flow/volume and temperature control. Mounted on mobile base, with 500 syringes of 150 ml capacity and connecting tubes (Medrad-Bayer, Angiomat, Nemoto)
		12.2 DICOM 3 ready dry laser camera / imager, Multi-size upto 14 x17 in. (Agfa, Fuji, Kodak, Konica) for black and white printing on films including 5000 films.
		12.3 On-line sine wave UPS for whole CT suite, with a minimum back-up time of 10 minute on full load.
		12.4 Lead glass for control room (5 x 3 feet), 0.5 mm lead equivalent.
		12.5 Standard set of Phantoms for calibration of CT
		12.6 Pediatric scanning package - software and hardware with small FOV as low as 200mm or less.
		12.7 Dedicated Cardiac Monitor for synchronize with cardiac scan.
		12.8 TABLE ACCESSORIES – Table pads, arms rest, patient restraint kit, IV pole, infant cradle, flat head holder.
13	TRAINING	TWO visits (of one week each) of application specialist foreign trained trainer are mandatory for training of doctors and technicians – one visit will be immediately after complete installation of the system and second will follow by 03 months.
14	WARRANTY:	COMPREHENSIVE WARRANTY OF THREE YEARS WITH ALL PARTS INCLUDING CT TUBE AND DETECTOR TO BE OFFERED BY THE MANUFACTURER (LOCAL FIRM'S WARRANTY WILL NOT BE ACCEPTED)
15	NOTE	The firms must quote all other advanced available applications / packages as optional (which will not form the basis of acceptance or rejection).
		Total
		RADIOLOGY DEPARTME

Research Equipment		
Ser	**Description**	**Qty**
4	**Pathology Department**	
1	**Immunohematology & Transfusion Research Laboratory**	**Qty**
1.01	Blood Bank Fridge, vertical with glass door, digital display and record of temperature for quality control Microprocessor based temperature controller with large screen LCD display allows user to maintain temperature up to 4C – 1 C. Auto defrost, CDC free refrigerant R1340. Alarm test functions and reliable field verified refrigeration system. Made up of painted structural plate (Outside) and stainless steel material or ABS material (Inside). Four casters for easy handling and lackable door. Three layer transparent door with heater to prevent ice leakage and interior fluorescent lighting. Having forced air circulation system. Auto temp control and defrost. Audio Alarms and visual alarm for high / low temp, door open and system failure. Adjustable 5 unit shelves. Equipped with German EBM fan motor and international famous compressor. Have Chart Recorder. Capacity: 358 L Blood bad capacity (450ml/bag): 200 bags Internal Dimension (WxDxH): 512x515x1270 mm External Dimension (WxDxH): 700x628x1962 mm Temperature controlling range: 1 C to 4 C Power supply: 220V/ 50 Hz Input Power: 600W	2
1.02	Plasma freezer (vertical) Automatic defrost function to keep the cabinet dry. Automatic alarm function system. Fast refrigeration speed with function to maintain constant temperature. Air cooling double stage refrigeration method. Temperature control range: -70C to -100C Core Temperature: -30C Max. Refrigeration capacity per cycle: 14400 ml (200ml x 72) Cooling time for the empty box: -55C <20 min & -70C < 40 min Number of the special plasma bag clip: 12 pcs Total power: <7 kW Inside dimension (LxWxH): 450x500x1050 mm	2
1.03	Platelet shaker Low maintenance with quiet operation. Made of high grade steel with stainless steel trays for easy cleaning and durability. Exhibits a steady and smooth 360 degree movement Attached with a tachometer for easy monitoring of speed Shaking speed range: 0 – 9 rmp Capacity: 24 bags Overall Dimension: 510x255x290 mm Power supply: 220V, 5 0 – 60 Hz	2
1.04	Aphresis unit cell separator Latest blood component collection technology Portable Aphresis system for cell therapy Therapeutic Aphresis Transfusion Medicine Programmable Microprocessor controlled Applicable to both adults and peads Discontinuous flow centrifuge system Single needle for all type of application protocols Apharesis platelets in a fully automated procedure Leukodepleted platelets in a fully automated procedure Easy of use & flexibility Data acquisition capability Upgradeable software & compatible with new generation of kits Single access Power: 550W Centrifuge speed: 3000 – 7000 RPM Inlet flow ml/min: 20 – 100 Anticoagulant ratio: 1:8 – 1:16 Closed & Open apheresis kits available Monitors & Alerts: 4 air detectors, 2 pressure monitors, 2 spill sensors, 2 scparation sensors. Self regulating flow Standard protocols Leukodepleted platelets and plasma Therapeutic Plasma exchange Optional Protocols Platelet poor plasma Fresh frozen plasma Leukodepleted platelets & Red blood cells Red blood cells and Plasma Therapeutic Collection Peripheral blood stem cells Bone marrow concentrate Autologous Pre-Operative Collection Plasma Erythrocyte saver (2 buffy coat depleted RBC units + 2 FFP Units)	1
1.05	Bag sealer Microprocessor control heat time Blood Bag Sealer. Heating time can be adjusted from 0.5 – 2s Sealing head with an elastic auxiliary device Power of supply: 200W Supply voltage: 190 - 250V, 50 Hz Size of sealing tube: 3 – 5 mm	2
1.06	Blood Gas analyser, microprocessor based, measured parameters pH, H+, pO2, pCO2, HCO3-, Na+, K+, Cl/Li	1

1.07	Ultralow upright deep freezer -86C Ultra freezer; Volume capacity 25 cft, Upright cabinet orientation, double doors, Multiple compartments for specimen/compounds banking system Temperature range -86°C, Power supply 220V, 50/60Hz, along with UPS backup.	1
1.08	Laboratory refrigerator / freezer (domestic) Upright cabinets 16 cft 2.00-8.00°C Lab refrigerator with freezer combination floor type with digital control panel, microprocessor controlled system. Refrigerator has +4C set point and deep freezer has -20C set point/ Audio and visual alarm system for upper and lower temperature limit, open door and low voltage or electricity cut off issues. Double thermal gazing door with lock and magnetic seal rings. Stainless steel Cr-Ni inner body Adjustable plastic covered wire shelves Equal temperature distribution using strengthen fan system USB output with 10 years recording memory Refrigerator temp range: 0 to 15C Freezer section: -10 to -30C Refrigerator capacity: 230L Freezer capacity: 80L	1
1.09	Physical Balance made in China which can weigh up to 620 gram. High accuracy with digital display.	2
1.10	High speed vortex mixers for use with tubes from 0.5ml conical to large Tubes and small bottles. Vibration free and quiet. The mains on/off switch Is located at the back of the instrument. With rubber cup for use with Single or multiple tubes. Variable speed. For 230V/50Hz	1
1.11	Incubator, Partitioned inner glass door and divided shelves, user friendly LCD screen operations Hot air for cleaning and disinfection, stainless steel inner chamber, volume 200 liters, perforated stainless steel shelves. Temperature range 20-80 degree centigrade.	1
1.12	PCR thermocycler: Temperature range: 4.0–99.9ºC. Displays calculated sample temperatures; set to 0.1ºC. Average heating/cooling rates: Sample: 1ºC/second. Static temperature uniformity: ±0.5ºC, 30 seconds after clock-start at 95ºC. Temperature accuracy: ±0.5ºC (range: 35–100ºC). Temperature calibration: Calibrated to standards traceable to the National Institute of Standards and Technology (NIST). Heated cover: Maintains constant temperature of 105ºC for oil-free operation. Ramp time reproducibility: Reaches thermal set points within ±5 seconds. Make: UK/Germany/USA	1
1.13	Gradient PCR thermocycler: Block Format: 0.2 mL Alloy, Features: Standard 0.2 mL format and sample block. Enabled to run FAST chemistry, Max Block Ramp Rate: 3.9 ºC/Sec, Max Sample Ramp Rate: 3.35 ºC/Sec Temperature Accuracy: ±0.25 ºC (35 ºC – 99.9 ºC) Temperature Range: 4.0 ºC to 99.9 ºC, Temperature Uniformity: <0.5 ºC (20 sec after reaching 95 ºC) PCR Volume Range: 10-80 µL, Tm Calculator: Menu driven through touch screen, VeriFlex™ Blocks: 25 °C (5 °C Zone-to-Zone) The block ramp adjustable according to the volume of a sample. Make: UK/Germany/USA	1
1.14	Haematology auto analyzer, 7 parts differential, with printer, microsampling capability, autosampler	1
1.15	Binocular microscope Infinity Corrected SystemConsisting of followings: Microscope frame for transmitted microscopy with LED illuminator, binocular tube, a pair of eyepiece 10X (F.N.18), quadruple revolving nosepiece, mechanical stage, abbe condenser and plan objectives (4X, 10X, 40X , 100X, including AC adapter and immersion oil Power cord, Dust cover	2
1.16	Water Baths; Capacity: 30-40 Liters, Digital Display, Microprocessor PID Control, Material Bath: Seamless Stainless Steel, Temp. Control: 4-100°C,	1
1.17	Digital hotplate strirrer Speed range 60-1500 rpm, Plate dimensions 150x150-200x200 mm, Ambient temperature +5 to 300°C, Electronic solid state controllers, Ceramic coated stainless steel top plat, 100ml-5 liters stirring capacity	1
1.18	Digital orbital shaker, Bench Top Incubation Shaker, Incubation chamber: Steel construction, with plexiglass lid, Drive mechanism : Simple snap mechanism digital display voltage input 220V.	1
1.19	Incubator, Partitioned inner glass door and divided shelves, user friendly LCD screen operations Hot air for cleaning and disinfection, stainless steel inner chamber, volume 200 liters, perforated stainless steel shelves. Temperature range 20-80 degree centigrade.	1
1.20	Hot air Oven with digital fuzzy control and digital LCD Capacity 80 liters automatic, Digital time control programmable heating facility temp range 50-250 degree centigrade.	1
1.21	Vacuum pump Basic vacuum pump for laboratories, Low noise level, Moisture trap and filters easy replacement, 600 mmHg vacuum, adjustment, low maintenance	1
1.22	Adjustable pippets Single channel, autoclavable with delivering capacity from 10-100uL, 20-200uL, 100-1000uL	2
1.23	Reagents for PCR (Taq, dNTP, MgCl, PCR grade water, primers) chemicals and reagents used for electrphoresis of DNA and proteins, enzymes for RFLP, reagents for analyzers (chemistry, special chemistry, immune assays, blood gas, Hb gold and haematology)	1
1.24	Stabilizers for high sensitive equipments for more than 5 KVA - imported Automatic 5 KVA Stabilizer 100% copper wire. In/Out meter circuit breaker. 2 relay 2 meter. Input V: 150 B21	5
1.25	UPS 5-10KvA imported	5

1.26	Desk top Computer branded, core i5, laser printer, scanner Branded Core 2duo to better system as Desktop CORE I 5 System 3.2 GHz , I TB HHD, 4GB RAM, Bit Processing: 32 bits DVD-RW Drive, active USB Ports, 19" LCD High resolution Color Monitor, Mouse, Keyboard, Headphone, Speaker, UPS system. Computer Trolley, Heavy Duty LaserJet Printer: Up to 30 ppm, Duty Cycle: Up to 25000 pages.	5
1.27	Glassware (beakers, tubes, flasks, pippets, reagent bottles [pyrex])	1
1.28	Plasticware (racks, PCR tubes, eppendorf tubes, tips-yellow, blue, filtered tips etc)	1
1.29	Hb Gold (HPLC The D-10™ System and accessories provide automated diabetes monitoring and β-thalassemia testing in one compact platform	1
1.30	Deionizer (automatic regeneration after manual initiation, auto shut off in even of power failure, compact non-corrosive compartments)	1
1.31	Adjustable pippets Multiple channel, autoclavable with delivering capacity from 10-100uL, 20-200uL, 100-1000uL (set)	2
1.32	Autoclave medium size (30-60L) Timer: Microprocessor PID, Multifunctional Controller, Material Cabinet: Powder coated Steel, Programme end time and over heating warning Alarm, programmable water recycling capacity, input 220V	1
1.33	Complete electrophoresis apparatus with safety lid and attached power cords platinum wiring for 50 ml gel volume, 2 short glass plates 19.7x16.0 cm, 2 long glass plates 19.7x18.5 cm, 2 replacement gaskets with 12 comb blocks, 12 spring clips, spacer sets (complete with 1 bottom spacer, 2 side spacers and 2 foam blocks) 0.8 mm thick, combs, 0.8 mm (max. vol./well at an insertion depth of 9 mm): 20 wells (34 ul), spacers and comb thickness must be the same. The system shall be of horizontal electrophoresis. Power supply included with assembly.	2
1.34	Universal autoplate washer Compatible for flat, U or V bottom. Provide complete bottom washing. Include 8 and 12 manifold channels. Provide wash, rinse, buffer and wash bottle to make getting started simpler. Large LCD Display. Applicable for plate mode and strip mode washing. Equipped with dipping and shaking function. Automatic monitoring of vacuum and pressure. Automatic rinse cycle to reduce clogging. Emergency stop available. Low residual volume. Adjustable dipping and shaking time. Large memory to stor up to 48 user programmed wash protocols Residual liquid: <1uL/well Washing heads: 1x8 / 1x12 Wash strip: 1 – 12 adjustable Washing volume: 50 – 3000ul/well Washing times: 0 – 99 times adjustable Dipping time: 0 – 3600 sec adjustable Shaking time: 0 – 600 sec adjustable Sipping time: 0.1 – 909 sec Power requirement: 198-242 V, 50 Hz	1
1.35	Autoplate ELISA reader 96 well micro plate readers with UV/Visible (400-750 mm) spectroscopy the system shall be have built in software with computer and printer e.g. system shall have accuracy with higher precession and 220 volts inputs.	1
	Total	

Research Equipment		
Ser	**Description**	**Qty**
4	**Pathology Department**	
2	**Clinical Research Laboratory**	**Qty**
2.01	Laboratory refrigerator / freezer (domestic) Upright cabinets 16 cft 2.00-8.00°C Lab refrigerator with freezer combination floor type with digital control panel, microprocessor controlled system. Refrigerator has +4C set point and deep freezer has -20C set point/ Audio and visual alarm system for upper and lower temperature limit, open door and low voltage or electricity cut off issues. Double thermal gazing door with lock and magnetic seal rings. Stainless steel Cr-Ni inner body Adjustable plastic covered wire shelves Equal temperature distribution using strengthen fan system USB output with 10 years recording memory Refrigerator temp range: 0 to 15C Freezer section: -10 to -30C Refrigerator capacity: 230L Freezer capacity: 80L	3
2.02	Analytical Balance Full automatic calibration, recalibrates with temp. change, Clock Calibration Function at the user preset time, Motor driven calibration weight. Built- in clock RS – 232 C interface as standard Self adjustment to environmental condition, Wide selection of unit and mode, Data output conforming to ISO, Capacity: 0.1 mg, Standard deviation : 0.1 mg input 220V, 50Hz	1
2.03	Physical Balance made in China which can weigh up to 620 gram. High accuracy with digital display.	1
2.04	High speed centrifuge 13000 rpm RPM max. (min-1): 14000, RCF max: 23,910, Capacity max (ml) 6x50, 24x1.5,	1
2.05	Laboratory cryo centrifuge (Refrigerated) -20°C to 40°C internal temperature, With rotor capacity 0.2ml-2.2ml tubes, 30 tubes spaces maximum (30x1.5/2.0ml rotor), Rotor speed 14,000-18,000 rpm, Power supply 220V, 50/60 Hz	1
2.06	High speed vortex mixers for use with tubes from 0.5ml conical to large Tubes and small bottles. Vibration free and quiet. The mains on/off switch Is located at the back of the instrument. With rubber cup for use with Single or multiple tubes. Variable speed. For 230V/50Hz	1
2.07	pH/mV meter electronics Automated pH calibration Buffer values memorization facilities for a wide range of 4, 6, 7, 9, 11 pH range -2.00 to 16.00 Exchangeable readability 0.001|0.01|0.1 Temperature range up to 120°C	1
2.08	Real time PCR: Peltier-based system, 96-well block, 96-well plates and 0.2 mL tubes 25 – 100 µL, Standard Mode: +/-1.6°C/sec, 4°C-100°C /-0.25°C of set point/display temperature, measured at 3 minutes after Clock Start, Tungsten-halogen lamp excitation source, Five-excitation filters, five-emission filters and CCD camera, TAMRA™, ROX™, Texas Red®, Cy3™, Cy5™, ROX™ or any calibrated dye. Option should exist to select no passive reference. Should collect data for all 5 filters for all wells regardless of plate setup. Quantitative PCR Run Time: Less than 2 hrs, Sequence Detection Software, RQ Study Relative Quantitation Software, HID Software & Primer software. Install Kit, Chemicals, Quantifiler Human DNA Kit, Spectral, Calibration Kit, TaqMan RNase P 96-wellInstrument, verification Plate, Spectral Calibration Kit II. Desktop computer with Windows ® XP OS, 17" flat panel monitor, Installation / Operational Manuals. Machine must be calibrated from the company. Make: Germany/USA/Japan	1
2.09	Universal autoplate washer Compatible for flat, U or V bottom. Provide complete bottom washing. Include 8 and 12 manifold channels. Provide wash, rinse, buffer and wash bottle to make getting started simpler. Large LCD Display. Applicable for plate mode and strip mode washing. Equipped with dipping and shaking function. Automatic monitoring of vacuum and pressure. Automatic rinse cycle to reduce clogging. Emergency stop available. Low residual volume. Adjustable dipping and shaking time. Large memory to stor up to 48 user programmed wash protocols Residual liquid: <1uL/well Washing heads: 1x8 / 1x12 Wash strip: 1 – 12 adjustable Washing volume: 50 – 3000ul/well Washing times: 0 – 99 times adjustable Dipping time: 0 – 3600 sec adjustable Shaking time: 0 – 600 sec adjustable Sipping time: 0.1 – 909 sec Power requirement: 198-242 V, 50 Hz	1
2.10	Autoplate ELISA reader 96 well micro plate readers with UV/Visible (400-750 mm) spectroscopy the system shall be have built in software with computer and printer e.g. system shall have accuracy with higher precession and 220 volts inputs.	1
2.11	Complete electrophoresis apparatus with safety lid and attached power cords platinum wiring for 50 ml gel volume, 2 short glass plates 19.7x16.0 cm, 2 long glass plates 19.7x18.5 cm, 2 replacement gaskets with 12 comb blocks, 12 spring clips, spacer sets (complete with 1 bottom spacer, 2 side spacers and 2 foam blocks) 0.8 mm thick, combs, 0.8 mm (max. vol./well at an insertion depth of 9 mm): 20 wells (34 ul), spacers and comb thickness must be the same. The system shall be of **horizontal electrophoresis**. Power supply included with assembly.	2
2.12	Complete electrophoresis apparatus with safety lid and attached power cords platinum wiring for 50 ml gel volume, 2 short glass plates 19.7x16.0 cm, 2 long glass plates 19.7x18.5 cm, 2 replacement gaskets with 12 comb blocks, 12 spring clips, spacer sets (complete with 1 bottom spacer, 2 side spacers and 2 foam blocks) 0.8 mm thick, combs, 0.8 mm (max. vol./well at an insertion depth of 9 mm): 20 wells (34 ul), spacers and comb thickness must be the same. The system shall be of **vertical electrophoresis**. Power supply included with assembly.	1
2.13	Protein gel electrophoresis unit Horizontal Electrophoresis system. High resolution horizontal unit with 3 different gel dimensions. Supplied with 3 different gel trays and 6 comb positions. Complete control over sample loading and casting dams to maximum of 168 sample throughput large volume buffer of 1800 ml ensures cooling effects and stable pH value for running gel at high voltage. Transparent safety lid evades electricity drip and sample volatilizing in cell. Ultra high resolution separation over extended run times Multi channel pipette compatible combs reduce gel loading time Dismountable electrodes easy maintenance Automatic power off lid removal High quality gel casting apparatus prevents gel leakage Long life platinum electrodes and high apparent martial for fel molding Lugs for convenient opening and closing of lid Side handles, for safe and easy transportation around the lab. Sample capacity: 17 to 104 Gel Dimensions: 200x200mm, 200x150mm, 200x100mm Gel casting material: Polycarbonate Rows of comb: 6 Comb thickness and no of well: 1mm and 1.8mm for 17, 22, 36 and 44 well comb Power supply Voltage range: 10 to 600V Current range: 1 to 500mA Power range: 1 to 300W Type of control: Constant V, Constant I and constant P Display: LCD Screen Output jack: Four sets Storage function: store 10 methods Timing function: 1 min to 99 hrs 59 min Having following function Pause control function, automatic memory function, automatic shutdown function, intelligent prompt functions, Safety performance, Molding machine casing. Standard accessories Body tank with electrodes Gel Tray for 200x200mm, 200x150mm, 200x100mm Lid with cables, Gel casting stand, 1.0mm thickness 17 well comb 2 each, 1.8mm 17 thickness well comb 2 each, 1.0mm thickness 22 well 2 each, 1.8mm thickness 22 well comb 2 each, 1.0mm thickness 36 well comb 2each, 1.8mm thickness 36 well comb 2each, 1.0mm thickness 44well comb 2 each, 1.8mm thickness	1

2.14	Incubator, Partitioned inner glass door and divided shelves, user friendly LCD screen operations Hot air for cleaning and disinfection, stainless steel inner chamber, volume 200 liters, perforated stainless steel shelves. Temperature range 20-80 degree centigrade.	1
2.15	PCR thermocycler: Temperature range: 4.0–99.9ºC. Displays calculated sample temperatures; set to 0.1ºC. Average heating/cooling rates: Sample: 1ºC/second. Static temperature uniformity: ±0.5ºC, 30 seconds after clock-start at 95ºC. Temperature accuracy: ±0.5ºC (range: 35–100ºC). Temperature calibration: Calibrated to standards traceable to the National Institute of Standards and Technology (NIST). Heated cover: Maintains constant temperature of 105ºC for oil-free operation. Ramp time reproducibility: Reaches thermal set points within ±5 seconds. Make: UK/Germany/USA	1
2.16	Gradient PCR thermocycler: Block Format: 0.2 mL Alloy, Features: Standard 0.2 mL format and sample block. Enabled to run FAST chemistry, Max Block Ramp Rate: 3.9 ºC/Sec, Max Sample Ramp Rate: 3.35 ºC/Sec Temperature Accuracy: ±0.25 ºC (35 ºC – 99.9 ºC) Temperature Range: 4.0 ºC to 99.9 ºC, Temperature Uniformity: <0.5 ºC (20 sec after reaching 95 ºC) PCR Volume Range: 10-80 µL, Tm Calculator: Menu driven through touch screen, VeriFlex™ Blocks: 25 °C (5 °C Zone-to-Zone) The block ramp adjustable according to the volume of a sample. Make: UK/Germany/USA	1
2.17	Chemistry Auto analyzer Microprocessor based windows operated system Samples / Hour: 200 or better tests, up to 320 or better tests/hr with ISE. Sample Tray with 20 or more sample positions for primary tubes and test tubes. •Sample Volume: 2 µL – 30 µL. •Probe Sensors: Liquid level detection and collision protection. •Probe cleaning: Automatic washing. • Wavelengths: 340nm, 405nm, 450nm, 492nm, 505ml, 546nm, 578nm, 620nm, 670nm, 700nm (10 positions) •Absorbance Range: 0.0001 Abs units at 1.0 Abs. •Data Storage: 1800 or more (patient results) • 50,000 or more (test results) Port: RS-232. •220 V, 50 Hz AC operated. •With external printer (Model must be mentioned) Accessories 1. Tubes 01 set (50 Tubes) 2. Fuse 04 Sets 3. Extra Lamp 03 4. User manual 5. Operation Software • (The bidder will provide kits for 100 patients along with the machine free of cost FOC at the time of installation • The bidder will also quote per test price with the machine)	1
2.18	Haematology auto analyzer, 7 parts differential, with printer, microsampling capability, autosampler	1
2.19	Binocular microscope Infinity Corrected SystemConsisting of followings: Microscope frame for transmitted microscopy with LED illuminator, binocular tube, a pair of eyepiece 10X (F.N.18), quadruple revolving nosepiece, mechanical stage, abbe condenser and plan objectives (4X, 10X, 40X , 100X, including AC adapter and immersion oil Power cord, Dust cover	2
2.20	Water Baths; Capacity: 30-40 Liters, Digital Display, Microprocessor PID Control, Material Bath: Seamless Stainless Steel, Temp. Control: 4-100°C,	1
2.21	Digital hotplate stirrer Speed range 60-1500 rpm, Plate dimensions 150x150-200x200 mm, Ambient temperature +5 to 300°C, Electronic solid state controllers, Ceramic coated stainless steel top plat, 100ml-5 liters stirring capacity	1
2.22	Digital orbital shaker, Bench Top Incubation Shaker, Incubation chamber: Steel construction, with plexiglass lid, Drive mechanism : Simple snap mechanism digital display voltage input 220V.	1
2.23	Incubator, Partitioned inner glass door and divided shelves, user friendly LCD screen operations Hot air for cleaning and disinfection, stainless steel inner chamber, volume 200 liters, perforated stainless steel shelves. Temperature range 20-80 degree centigrade.	1
2.24	Hot air Oven with digital fuzzy control and digital LCD Capacity 80 liters automatic, Digital time control programmable heating facility temp range 50-250 degree centigrade.	1
2.25	Deionizer (automatic regeneration after manual initiation, auto shut off in even of power failure, compact non-corrosive compartments)	1
2.26	Water purification system Millipore biopak UF membrane to reduce the pyrogen, Rnase, Dnase. Ultra purification system: Millipore ion exchange resin cartridge and special flow design, high ultra purify efficiency Effectively remove the trace ions in water, guarantee the stability of water quality. Micro filtration making the particle content larger than 0.22um is <1/ml and bacteria less than 0.1CFU/ml Built in manual water cycling program and ultrapure water auto cycle program to keep the eater quality of ultrapure water Water resistance online monitoring. System can be installed on the lab bench 30L PE water reservoir with vent value Feed water: RO Water / Distilled water Water temperature: 5 – 40C TOC: <5ppb Bacteria: <0.1 cfu/ml Endotoxin: <0.001 EU/ml Particle: (>0.22um) <1/ml Absorbance: 254nm, 1cm, optical distance <0.001 EU/ml Ractive silica (SiO2): <0.01 ppm RNases: <0.01 ng/ml Dnases: <4 pg/ul Humidity: 10 – 80% Power supply: 230V 50 Hz, 150W	1
2.27	**HPLC** PUMP: Flow rate range 0.01 to 10.0 mL/min. Maximum operating pressure rang 0 to 6100 psi. Flow Precision 0.3%, Flow Accuracy should be ±1% at 1ml/min. Pump should be piston type. Uv/ Vis Detector: Wavelength Range should be 190 to 700nm. Bandwidth should be 5 nm (Not more than 5 nm will be acceptable). Wavelength Accuracy should be ± 1nm. Wavelength Reproducibility should be ± 0.5 nm. Optics should be dual beam. Light Source: Deuterium(190-360 nm) and tungsten (360-700 nm). Software should be graphical method editing, for visual optimization of component names, ISTD and reference peak identification search windows component grouping, and data processing and calibration parameters. It should have the facility of display component names, retention times, relay events, and baseline timed events in Graphic method editing. It should obtain average and %RSD value of summarized component amounts, area heights, response factors. HPLC Column Oven: Operating rang should be 30 to 90 C. Temperature accuracy should be + 1C. Temperature Stability should be + 0.2C. Should have Leakage sensor for safety. Computer and Printer should be of the following specification: Intel Pentium Core i5, 17" LCD Monitor, 52X CDROM, ATX Casing, Keyboard, Mouse., Printer HP Laser Jet 400 M401 or equivalent, Make: USA / Japan / UK. UPS supported the complete system	1
2.28	Ultrasonic bath digital Adjustable temperature range 5-500 C stainless steel made tank with built in drain values, capacity 5 liters. Frequency 40 KHz input 220 V. digital LCD display with back light and adjustable timer (0-30 mints)	1
2.29	Vacuum pump Basic vacuum pump for laboratories, Low noise level, Moisture trap and filters easy replacement, 600 mmHg vacuum, adjustment, low maintenance	1
2.30	Autoclave medium size (30-60L) Timer: Microprocessor PID, Multifunctional Controller, Material Cabinet: Powder coated Steel, Programme end time and over heating warning Alarm, programmable water recycling capacity, input 220V	1
2.31	Adjustable pippets Single channel, autoclavable with delivering capacity from 10-100uL, 20-200uL, 100-1000uL	2

2.32	Freezing microtome Microprocessor chamber temperature control with LED Display Automatic evaporator defrost system, solid knives or disposable blades including new lever release father blade holder. Contains tried and tested 5040 rotary microtome. Stainless steel constructed cryo chamber. Quick freezer 9 position, running at 10C below chamber temperature. Minimum chamber temperature: -35C Lowest set temperature ambient to -35C with automatic defrost. 3 internal, 1 external shelves Automatic evaporator defrost with analogue clock Manual with balanced hand wheel cutting system Maximum knife block adjustment 44mm Maximum head advance 5.6mm Section range 0.5 to 30um in 0.5um increments Window surrounds heated Defrost clock analogue with battery back up Microtome knife 22 degree angle Night plug. Circular object holder 2x22mm, 1x37mm Bottle of low temperature oil 200ml	1
2.33	Glassware (beakers, tubes, flasks, pippets, reagent bottles [pyrex])	1
2.34	Plasticware (racks, PCR tubes, eppendorf tubes, tips-yellow, blue, filtered tips etc)	1

2.35	Safety hood, HEPA filteration system with internal working area of 6-9 feet (Class II, Type A2 Biological Safety Cabinet with base stand and UV lamp)	1
2.36	Ultrasonic cell disruptor Microcomputer control Large LCD Display, can be set ultrasonic time and power. Ultrasonic power automatically detect, prevent ultrasonic power with the sample temperature change. Integrated sample temperature control to prevent overheating. Frequency automatic tracking, automatic fault alarm. Operating frequency: 22 KHz Ratio of ultrasonic power: 2 – 150W (1 – 99% adjustable) Ultrasound time setting: 0.1 – 9.9S Gap set: 0.1 – 99.9 S Total time setting: 999M Duty cycle: 0.1 to 99.9% Random probe: Ø3, Ø6, Ø8 Crushing capacity: 0.2 – 150ml Sample temperature protection: 90C Power requirement: 220V – 50Hz	1
2.37	HLA typing strips, complete equipment	1
2.38	Reagents for PCR (Taq, dNTP, MgCl, PCR grade water, primers) chemicals and reagents used for electrphoresis of DNA and proteins, enzymes for RFLP, reagents for analyzers (chemistry, special chemistry and haematology, immune assays, hormones, ELISA)	1
2.39	Stabilizers for high sensitive equipments for more than 5 KVA - imported. Automatic 5 KVA Stabilizer 100% copper wire. In/Out meter circuit breaker. 2 relay 2 meter. Input V: 150	5
2.40	UPS 5-10KvA-imported	5
2.41	Desk top Computer, branded, core i5, laser printer, scanner Branded Core 2duo to better system as Desktop CORE I 5 System 3.2 GHz , I TB HHD, 4GB RAM, Bit Processing: 32 bits DVD-RW Drive, active USB Ports, 19" LCD High resolution Color Monitor, Mouse, Keyboard, Headphone, Speaker, UPS system. Computer Trolley, Heavy Duty LaserJet Printer: Up to 30 ppm, Duty Cycle: Up to 25000 pages.	5
2.42	Sequence four capillary genotyper	1
2.43	Liquid nitrogen canesters 10L, 20L	1
2.44	Adjustable pippets Multiple channel, autoclavable with delivering capacity from 10-100uL, 20-200uL, 100-1000uL (set)	2
2.45	Ultralow upright deep freezer -86C Ultra freezer; Volume capacity 25 cft, Upright cabinet orientation, double doors, Multiple compartments for specimen/compounds banking system Temperature range -86°C, Power supply 220V, 50/60Hz, along with UPS backup.	1
2.46	Chemicals, reagents, routine and selective media, plasticware and glassware, disposable plates, other consumables for microbiology section	1
	Total	**Research Lab**

Research Equipment		
Ser	**Description**	**Qty**
4	**Pathology Department**	
3	**Molecular Cytogenetics Research Laboratory**	**Qty**
3.01	Analytical Balance Full automatic calibration, recalibrates with temp. change, Clock Calibration Function at the user preset time, Motor driven calibration weight. Built- in clock RS – 232 C interface as standard Self adjustment to environmental condition, Wide selection of unit and mode, Data output conforming to ISO, Capacity: 0.1 mg, Standard deviation : 0.1 mg input 220V, 50Hz	1
3.02	Physical Balance made in China which can weigh up to 620 gram. High accuracy with digital display.	1
3.03	High speed centrifuge 13000 rpm RPM max. (min-1): 14000, RCF max: 23,910, Capacity max (ml) 6x50, 24x1.5,	1
3.04	Laboratory cryo centrifuge (Refrigerated) -20°C to 40°C internal temperature, With rotor capacity 0.2ml-2.2ml tubes, 30 tubes spaces maximum (30x1.5/2.0ml rotor), Rotor speed 14,000-18,000 rpm, Power supply 220V, 50/60 Hz	1
3.05	High speed vortex mixers for use with tubes from 0.5ml conical to large Tubes and small bottles. Vibration free and quiet. The mains on/off switch Is located at the back of the instrument. With rubber cup for use with Single or multiple tubes. Variable speed. For 230V/50Hz	1
3.06	pH/mV meter electronics Automated pH calibration Buffer values memorization facilities for a wide range of 4, 6, 7, 9, 11 pH range -2.00 to 16.00 Exchangeable readability 0.001|0.01|0.1 Temperature range up to 120°C	1
3.07	Universal autoplate washer Compatible for flat, U or V bottom. Provide complete bottom washing. Include 8 and 12 manifold channels. Provide wash, rinse, buffer and wash bottle to make getting started simpler. Large LCD Display. Applicable for plate mode and strip mode washing. Equipped with dipping and shaking function. Automatic monitoring of vacuum and pressure. Automatic rinse cycle to reduce clogging. Emergency stop available. Low residual volume. Adjustable dipping and shaking time. Large memory to stor up to 48 user programmed wash protocols Residual liquid: <1uL/well Washing heads: 1x8 / 1x12 Wash strip: 1 – 12 adjustable Washing volume: 50 – 3000ul/well Washing times: 0 – 99 times adjustable Dipping time: 0 – 3600 sec adjustable Shaking time: 0 – 600 sec adjustable Sipping time: 0.1 – 909 sec	1
3.08	Autoplate ELISA reader 96 well micro plate readers with UV/Visible (400-750 mm) spectroscopy the system shall be have built in software with computer and printer e.g. system shall have accuracy with higher precession and 220 volts inputs.	1
3.09	Incubator, Partitioned inner glass door and divided shelves, user friendly LCD screen operations Hot air for cleaning and disinfection, stainless steel inner chamber, volume 200 liters, perforated stainless steel shelves. Temperature range 20-80 degree centigrade.	1
3.10	PCR thermocycler: Temperature range: 4.0–99.9ºC. Displays calculated sample temperatures; set to 0.1ºC. Average heating/cooling rates: Sample: 1ºC/second. Static temperature uniformity: ±0.5ºC, 30 seconds after clock-start at 95ºC. Temperature accuracy: ±0.5ºC (range: 35–100ºC). Temperature calibration: Calibrated to standards traceable to the National Institute of Standards and Technology (NIST). Heated cover: Maintains constant temperature of 105ºC for oil-free operation. Ramp time reproducibility: Reaches thermal set points within ±5 seconds. Make: UK/Germany/USA	1
3.11	Gradient PCR thermocycler: Block Format: 0.2 mL Alloy, Features: Standard 0.2 mL format and sample block. Enabled to run FAST chemistry, Max Block Ramp Rate: 3.9 ºC/Sec, Max Sample Ramp Rate: 3.35 ºC/Sec Temperature Accuracy: ±0.25 ºC (35 ºC – 99.9 ºC) Temperature Range: 4.0 ºC to 99.9 ºC, Temperature Uniformity: <0.5 ºC (20 sec after reaching 95 ºC) PCR Volume Range: 10-80 µL, Tm Calculator: Menu driven through touch screen, VeriFlex™ Blocks: 25 °C (5 °C Zone-to-Zone) The block ramp adjustable according to the volume of a sample. Make: UK/Germany/USA	1
3.12	Interchangeabel block for PCR New generation peltier technology, allow 1000000 cycles. 10" full color touch screen with adjustable angle, graphically protocols run edit and running status. Easily interchange the TalenGener series without tools. 2 USB and LAN communications. Temperature range: 4 – 99.9 C Max heating rate: 7C/s. Max cooling rate: 6C/s Ramping rate can be adjustable. Sim tube & block mode of temperature control. Sample block: 3x32 wells 0.2ml Gradient range: 30C – 99.9C Each individual block has 8 gradient temperatures capability. Lid Temperature range: 30 – 112C. Innovative top open technology, with excess even pressure of heat lid. Lid shut off automatically when the block temperature below set temperature. Max. 15000 programs onboard, unlimited storage of protocols with USB flash drive. 30 steps multiple nesting cycle. 100 typical cycles (multiple nesting allows 10000 cycles) Time increment / Decrement: 1 – 120Sec, available for long PCR Temp increment/Decrement: 0.1 – 9.9C available for touchdown PCR. Auto pause / auto restart. Below ambient temperature incubation allow PCR results storage overnight. Provide full review after protocol running. +B22	1

3.13	**Trinocular research microscope:** Microscope frame with quintuplerevolving nosepiece Mechanicalstage (right handle) with slot of analyzer 30W illuminator, Trinocular tube, Brightfield condenser, N.A. 1.25, with A.S. vernier scale Dust cover, Plan achromat objective 4X, 10X, 20X, 40X, 100X, Wide field eyepiece 10X, FN20, Digital Camera C-mount video attachment with 0.5X lens, Digital camera for microscope with 2M pixel CCD, connection cable between desktop PC, Instruction manual, Software for image capturing	1
3.14	Binocular microscope Infinity Corrected SystemConsisting of followings: Microscope frame for transmitted microscopy with LED illuminator, binocular tube, a pair of eyepiece 10X (F.N.18), quadruple revolving nosepiece, mechanical stage, abbe condenser and plan objectives (4X, 10X, 40X , 100X, including AC adapter and immersion oil Power cord, Dust cover	3
3.15	Water Bath; Capacity: 30-40 Liters, Digital Display, Microprocessor PID Control, Material Bath: Seamless Stainless Steel, Temp. Control: 4-100°C,	1
3.16	Digital hotplate strirrer Speed range 60-1500 rpm, Plate dimensions 150x150-200x200 mm, Ambient temperature +5 to 300°C, Electronic solid state controllers, Ceramic coated stainless steel top plat, 100ml-5 liters stirring capacity	1
3.17	Digital orbital shaker, Bench Top Incubation Shaker, Incubation chamber: Steel construction, with plexiglass lid, Drive mechanism : Simple snap mechanism digital display voltage input 220V.	1
3.18	Incubator, Partitioned inner glass door and divided shelves, user friendly LCD screen operations Hot air for cleaning and disinfection, stainless steel inner chamber, volume 200 liters, perforated stainless steel shelves. Temperature range 20-80 degree centigrade.	1
3.19	Hot air Oven with digital fuzzy control and digital LCD Capacity 80 liters automatic, Digital time control programmable heating facility temp range 50-250 degree centigrade.	1
3.20	Water purification system Millipore biopak UF membrane to reduce the pyrogen, Rnase, Dnase. Ultra purification system: Millipore ion exchange resin cartridge and special flow design, high ultra purify efficiency Effectively remove the trace ions in water, guarantee the stability of water quality. Micro filtration making the particle content larger than 0.22um is <1/ml and bacteria less than 0.1CFU/ml Built in manual water cycling program and ultrapure water auto cycle program to keep the eater quality of ultrapure water Water resistance online monitoring. System can be installed on the lab bench 30L PE water reservoir with vent value Feed water: RO Water / Distilled water Water temperature: 5 – 40C TOC: <5ppb Bacteria: <0.1 cfu/ml Endotoxin: <0.001 EU/ml Particle: (>0.22um) <1/ml Absorbance: 254nm, 1cm, optical distance <0.001 EU/ml Ractive silica (SiO2): <0.01 ppm RNases: <0.01 ng/ml Dnases: <4 pg/ul Humidity: 10 – 80% Power supply: 230V 50 Hz, 150W	1
3.21	Deionizer (automatic regeneration after manual initiation, auto shut off in even of power failure, compact non-corrosive compartments)	1
3.22	Ultrasonic bath digital Adjustable temperature range 5-500 C stainless steel made tank with built in drain values, capacity 5 liters. Frequency 40 KHz input 220 V. digital LCD display with back light and adjustable timer (0-30 mints)	1
3.23	Vacuum pump Basic vacuum pump for laboratories, Low noise level, Moisture trap and filters easy replacement, 600 mmHg vacuum, adjustment, low maintenance	1
3.24	Adjustable pippets Single channel, autoclavable with delivering capacity from 10-100uL, 20-200uL, 100-1000uL	2
3.25	Glassware (beakers, tubes, flasks, pippets, reagent bottles [pyrex])	1
3.26	Plasticware (racks, PCR tubes, eppendorf tubes, tips-yellow, blue, filtered tips etc)	1
3.27	Safety hood, HEPA filteration system with internal working area of 6-9 feet (Class II, Type A2 Biological Safety Cabinet with base stand and UV lamp)	1
3.28	Autostainer Fully self contained bench top unit with 18 reagent vessels, 1 integrated fan forced oven, 5 wash vessels with flow control valve, 10 slide racks, each holding 30 standard slides, wide range of rack adapters. Continuous load via load/unload and exit drawers. Menu driven user friendly integrated control panel. 15 programs of 25 steps each, ability to run multiple programs together, vessel sequence, incubation time and agitation flexible. Air filter vent with charcoal filter to retain solvent fumes. Power: 230 – 240V, 50/60 Hz Accessory kit 22 reagent vessels with lids 5 wash vessels 10 slide rack 30, plastic 2 slotted lids for reagent vessels 1 Jumper cable mains 1 tubing band clamp 1 Elbow hose 1 V- filter ¾" for inter hose 1 jack connector (Remote alarm), 1 activated carbon filter, 1 fume cover, front, 1 wax collection tray (Heater) included in the instrument. 1 program pad (attached to the instrument) 1 inlet hose with washer 1 Drain hose	1

3.29	Reagents for PCR (Taq, dNTP, MgCl, PCR grade water, primers) for Karyotyping, ELISA kits and other auto analyzers, chemicals and reagents used for electrphoresis of DNA and proteins, enzymes for RFLP	1
3.30	Ice making machine Vertical unit, fast efficient production for whole institute, production capacity 70 kg.	1
3.31	Incubator with CO2, Partitioned inner glass door and divided shelves, user friendly LCD screen operations Hot air for cleaning and disinfection, stainless steel inner chamber, volume 200 liters, perforated stainless steel shelves. Temperature range 20-80C.	1
3.32	Slide Hybridizer: StatSpin ThermoBrite	1
3.33	Ikaros MetaSystems automatic Karyotyping System including computer with complete software liscence with 1360x1024 pixel resolution. Pixel size 645umx645um, long term integration upto 270 s.	1
3.34	Stabilizers for high sensitive equipments for more than 5 KVA-imported.	5
3.35	UPS 5-10KvA-imported	5
3.36	Chemistry Auto analyzer Microprocessor based windows operated system Samples / Hour: 200 or better tests, up to 320 or better tests/hr with ISE. Sample Tray with 20 or more sample positions for primary tubes and test tubes. •Sample Volume: 2 µL – 30 µL. •Probe Sensors: Liquid level detection and collision protection. •Probe cleaning: Automatic washing. • Wavelengths: 340nm, 405nm, 450nm, 492nm, 505ml, 546nm, 578nm, 620nm, 670nm, 700nm (10 positions) •Absorbance Range: 0.0001 Abs units at 1.0 Abs. •Data Storage: 1800 or more (patient results) • 50,000 or more (test results) Port: RS-232. •220 V, 50 Hz AC operated. •With external printer (Model must be mentioned) Accessories 1. Tubes 01 set (50 Tubes) 2. Fuse 04 Sets 3. Extra Lamp 03 4. User manual 5. Operation Software • (The bidder will provide kits for 100 patients along with the machine free of cost FOC at the time of installation • The bidder will also quote per test price with the machine)	1
3.37	Humidity chamber Humidity and Temperature test chamber having contact temperature and humidity conditions. Ideal for high and low temperature testing. Easy to use LCD screen controller and a graphic display to allow monitoring of the set and actual working parameters Humidity controller Corrosion resistant interior chamber Observation window built in toughened double layered glass Independent R and D software Humidity regulation with capacitive humidity sensor Inner chamber material stainless steel plate Thermal insulating material resistant to high temperature and density Compressor overload switch Unit shuts down after alarm for over heating Safety self protection function include short circuit, over temperature, motor overheating, compressor pressure, fuse failure Window with anti seat heater device to prevent water from vapor condensation and water droplets Capacity: 80 – 100L Temperature range: -20C to 150C Temp cooling rate: 1C / min Temp heating rate: 3C/ min Humidity range: 20% - 98% R.H Humidity deviation: +/- 2.5% RH High temperature: 180C Internal dimension (DxWxH): 400x500x500 mm	1
3.38	Desk top Computer, branded, core i7, laser printer, scanner	5
3.39	Liquid nitrogen canesters 10L, 20L	1
3.40	Laboratory refrigerator / freezer (domestic) Upright cabinets 16 cft 2.00-8.00°C Lab refrigerator with freezer combination floor type with digital control panel, microprocessor controlled system. Refrigerator has +4C set point and deep freezer has -20C set point/ Audio and visual alarm system for upper and lower temperature limit, open door and low voltage or electricity cut off issues. Double thermal gazing door with lock and magnetic seal rings. Stainless steel Cr-Ni inner body Adjustable plastic covered wire shelves Equal temperature distribution using strengthen fan system USB output with 10 years recording memory Refrigerator temp range: 0 to 15C Freezer section: -10 to -30C Refrigerator capacity: 230L Freezer capacity: 80L	3
3.41	Adjustable pippets Multiple channel, autoclavable with delivering capacity from 10-100uL, 20-200uL, 100-1000uL (set)	2

3.42	Ultralow upright deep freezer -86C Ultra freezer; Volume capacity 25 cft, Upright cabinet orientation, double doors, Multiple compartments for specimen/compounds banking system Temperature range -86°C, Power supply 220V, 50/60Hz, along with UPS backup.	1
3.43	Autoclave medium size (30-60L) Timer: Microprocessor PID, Multifunctional Controller, Material Cabinet: Powder coated Steel, Programme end time and over heating warning Alarm, programmable water recycling capacity, input 220V	1
	Total	**Molecular**

Research Equipment		
Ser	**Description**	**Qty**
4	**Pathology Department**	
4	**Stem Cell Research Laboratory**	**Qty**
4.01	Physical Balance made in China which can weigh up to 620 gram. High accuracy with digital display.	1
4.02	High speed centrifuge 13000 rpm RPM max. (min-1): 14000, RCF max: 23,910, Capacity max (ml) 6x50, 24x1.5,	1
4.03	High speed vortex mixers for use with tubes from 0.5ml conical to large Tubes and small bottles. Vibration free and quiet. The mains on/off switch Is located at the back of the instrument. With rubber cup for use with Single or multiple tubes. Variable speed. For 230V/50Hz	1
4.04	pH/mV meter electronics Automated pH calibration Buffer values memorization facilities for a wide range of 4, 6, 7, 9, 11 pH range -2.00 to 16.00 Exchangeable readability 0.001|0.01|0.1 Temperature range up to 120°C	1
4.05	Complete electrophoresis apparatus with safety lid and attached power cords platinum wiring for 50 ml gel volume, 2 short glass plates 19.7x16.0 cm, 2 long glass plates 19.7x18.5 cm, 2 replacement gaskets with 12 comb blocks, 12 spring clips, spacer sets (complete with 1 bottom spacer, 2 side spacers and 2 foam blocks) 0.8 mm thick, combs, 0.8 mm (max. vol./well at an insertion depth of 9 mm): 20 wells (34 ul), spacers and comb thickness must be the same. The system shall be of **horizontal electrophoresis**. Power supply included with assembly.	2
4.06	Complete electrophoresis apparatus with safety lid and attached power cords platinum wiring for 50 ml gel volume, 2 short glass plates 19.7x16.0 cm, 2 long glass plates 19.7x18.5 cm, 2 replacement gaskets with 12 comb blocks, 12 spring clips, spacer sets (complete with 1 bottom spacer, 2 side spacers and 2 foam blocks) 0.8 mm thick, combs, 0.8 mm (max. vol./well at an insertion depth of 9 mm): 20 wells (34 ul), spacers and comb thickness must be the same. The system shall be of **vertical electrophoresis**. Power supply included with assembly.	1
4.07	Protein gel electrophoresis unit Horizontal Electrophoresis system. High resolution horizontal unit with 3 different gel dimensions. Supplied with 3 different gel trays and 6 comb positions. Complete control over sample loading and casting dams to maximum of 168 sample throughput large volume buffer of 1800 ml ensures cooling effects and stable pH value for running gel at high voltage. Transparent safety lid evades electricity drip and sample volatilizing in cell. Ultra high resolution separation over extended run times Multi channel pipette compatible combs reduce gel loading time Dismountable electrodes easy maintenance Automatic power off lid removal High quality gel casting apparatus prevents gel leakage Long life platinum electrodes and high apparent martial for fel molding Lugs for convenient opening and closing of lid Side handles, for safe and easy transportation around the lab. Sample capacity: 17 to 104 Gel Dimensions: 200x200mm, 200x150mm, 200x100mm Gel casting material: Polycarbonate Rows of comb: 6 Comb thickness and no of well: 1mm and 1.8mm for 17, 22, 36 and 44 well comb Power supply Voltage range: 10 to 600V Current range: 1 to 500mA Power range: 1 to 300W Type of control: Constant V, Constant I and constant P Display: LCD Screen Output jack: Four sets Storage function: store 10 methods Timing function: 1 min to 99 hrs 59 min Having following function Pause control function, automatic memory function, automatic shutdown function, intelligent prompt functions, Safety performance, Molding machine casing. Standard accessories Body tank with electrodes Gel Tray for 200x200mm, 200x150mm, 200x100mm Lid with cables, Gel casting stand, 1.0mm thickness 17 well comb 2 each, 1.8mm 17 thickness well comb 2 each, 1.0mm thickness 22 well 2 each, 1.8mm thickness 22 well comb 2 each, 1.0mm thickness 36 well comb 2each, 1.8mm thickness 36 well comb 2each, 1.0mm thickness 44well comb 2 each, 1.8mm thickness 44 well comb 2each Level adjusting button 4 each	1
4.08	Incubator, Partitioned inner glass door and divided shelves, user friendly LCD screen operations Hot air for cleaning and disinfection, stainless steel inner chamber, volume 200 liters, perforated stainless steel shelves. Temperature range 20-80 degree centigrade.	2
4.09	PCR thermocycler: Temperature range: 4.0–99.9ºC. Displays calculated sample temperatures; set to 0.1ºC. Average heating/cooling rates: Sample: 1ºC/second. Static temperature uniformity: ±0.5ºC, 30 seconds after clock-start at 95ºC. Temperature accuracy: ±0.5ºC (range: 35–100ºC). Temperature calibration: Calibrated to standards traceable to the National Institute of Standards and Technology (NIST). Heated cover: Maintains constant temperature of 105ºC for oil-free operation. Ramp time reproducibility: Reaches thermal set points within ±5 seconds. Make: UK/Germany/USA	1
4.10	Gradient PCR thermocycler: Block Format: 0.2 mL Alloy, Features: Standard 0.2 mL format and sample block. Enabled to run FAST chemistry, Max Block Ramp Rate: 3.9 ºC/Sec, Max Sample Ramp Rate: 3.35 ºC/Sec Temperature Accuracy: ±0.25 ºC (35 ºC – 99.9 ºC) Temperature Range: 4.0 ºC to 99.9 ºC, Temperature Uniformity: <0.5 ºC (20 sec after reaching 95 ºC) PCR Volume Range: 10-80 µL, Tm Calculator: Menu driven through touch screen, VeriFlex™ Blocks: 25 °C (5 °C Zone-to-Zone) The block ramp adjustable according to the volume of a sample. Make: UK/Germany/USA	1
4.11	Interchangeabel block for PCR New generation peltier technology, allow 1000000 cycles. 10" full color touch screen with adjustable angle, graphically protocols run edit and running status. Easily interchange the TalenGener series without tools. 2 USB and LAN communications. Temperature range: 4 – 99.9 C Max heating rate: 7C/s. Max cooling rate: 6C/s Ramping rate can be adjustable. Sim tube & block mode of temperature control. Sample block: 3x32 wells 0.2ml Gradient range: 30C – 99.9C Each individual block has 8 gradient temperatures capability. Lid Temperature range: 30 – 112C. Innovative top open technology, with excess even pressure of heat lid. Lid shut off automatically when the block temperature below set temperature. Max. 15000 programs onboard, unlimited storage of protocols with USB flash drive. 30 steps multiple nesting cycle. 100 typical cycles (multiple nesting allows 10000 cycles) Time increment / Decrement: 1 – 120Sec, available for long PCR Temp increment/Decrement: 0.1 – 9.9C available for touchdown PCR. Auto pause / auto restart. Below ambient temperature incubation allow PCR results storage overnight. Provide full review after protocol running.	1

4.12	Fluorscent microscope Quadruple quick stop revolving mechanism nosepiece, with multiple ball bearing. Epi fluorescent unit (B,G) Siedentopf type binocular head Infinite plan objectives 5 pcs 4x,10x,20x, 40x(s), 100x(s.oil) Abbe N.A 1.25 condenser with iris diaphragm Viewing head: siedentopf type binocular head, inclined at 30 degree 360 rotation Interpupillary adjustable distance 50 – 75mm anti fungal system Eyepiece: EF10x / 20 mm Stage: Double layer mechanical stage with removable slide holder: 180mm x 145mm Travel stage: 76 mm (X) x 52mm (Y) with right hand stage handle Focusing: coaxial coarse & fine adjustment with rack and pinion mechanism fine focusing internal 0.002mm Condenser: Abbe N.A 1.25 condenser with iris diaphragm Nosepiece: quadruple quick stop revolving mechanism with multiple ball bearing Illumination: 3W LED brightness adjustable Fluorescence attachment: Epi-fluorescence unit B,G,U,V 100W mercury power source (Pointer or digital) 100W mercury lamp house Center objective 1xC mount 0.57X c-mount Phase contract attachment	1
4.13	Binocular microscope Infinity Corrected SystemConsisting of followings: Microscope frame for transmitted microscopy with LED illuminator, binocular tube, a pair of eyepiece 10X (F.N.18), quadruple revolving nosepiece, mechanical stage, abbe condenser and plan objectives (4X, 10X, 40X , 100X, including AC adapter and immersion oil Power cord, Dust cover	3
4.14	Digital precise circulation water bath Capacity: 20-40 Liters Digital Display Microprocessor PID Control Material Bath: Seamless Stainless Steel Temp. Control: 4-100°C Shaking: upto 300 rpm Rubber Sample Trays (1.5, 15, 20, 50 ml Tubes)	1
4.15	Digital hotplate stirrer Speed range 60-1500 rpm, Plate dimensions 150x150-200x200 mm, Ambient temperature +5 to 300°C, Electronic solid state controllers, Ceramic coated stainless steel top plat, 100ml-5 liters stirring capacity	1
4.16	Digital orbital shaker, Bench Top Incubation Shaker, Incubation chamber: Steel construction, with plexiglass lid, Drive mechanism : Simple snap mechanism digital display voltage input 220V.	1
4.17	Incubator, Partitioned inner glass door and divided shelves, user friendly LCD screen operations Hot air for cleaning and disinfection, stainless steel inner chamber, volume 200 liters, perforated stainless steel shelves. Temperature range 20-80 degree centigrade.	1
4.18	Hot air Oven with digital fuzzy control and digital LCD Capacity 80 liters automatic, Digital time control programmable heating facility temp range 50-250 degree centigrade.	1
4.19	Vacuum pump Basic vacuum pump for laboratories, Low noise level, Moisture trap and filters easy replacement, 600 mmHg vacuum, adjustment, low maintenance	1
4.20	Autoclave medium size (30-60L) Timer: Microprocessor PID, Multifunctional Controller, Material Cabinet: Powder coated Steel, Programme end time and over heating warning Alarm, programmable water recycling capacity, input 220V	1
4.21	Adjustable pippets Single channel, autoclavable with delivering capacity from 10-100uL, 20-200uL, 100-1000uL	2
4.22	Glassware (beakers, tubes, flasks, pippets, reagent bottles [pyrex])	1
4.23	Plasticware (racks, eppendorf tubes, tips-yellow, blue, filtered etc)	1
4.24	Safety hood, HEPA filteration system with internal working area of 6-9 feet (Class II, Type A2 Biological Safety Cabinet with base stand and UV lamp)	1
4.25	Reagents for PCR (Taq, dNTP, MgCl, PCR grade water, primers) chemicals and reagents used for electrphoresis of DNA and proteins, enzymes for RFLP, hormone assays	1
4.26	Laboratory refrigerator/freezer (domestic) Lab refrigerator with freezer combination floor type with digital control panel, microprocessor controlled system. Refrigerator has +4C set point and deep freezer has -20C set point/ Audio and visual alarm system for upper and lower temperature limit, open door and low voltage or electricity cut off issues. Double thermal gazing door with lock and magnetic seal rings. Stainless steel Cr-Ni inner body Adjustable plastic covered wire shelves Equal temperature distribution using strengthen fan system USB output with 10 years recording memory Refrigerator temp range: 0 to 15C Freezer section: -10 to -30C Refrigerator capacity: 230L Freezer capacity: 80L	3
4.27	Stabilizers for high sensitive equipments for more than 5 KVA- imported	5
4.28	UPS 5-10KvA-imported	5
4.29	Desk top Computer, branded, core i5, laser printer, scanner	5
4.30	Deionizer (automatic regeneration after manual initiation, auto shut off in even of power failure, compact non-corrosive compartments)	1
4.31	Laboratory refrigerator / freezer (domestic) Upright cabinets 16 cft 2.00-8.00°C Lab refrigerator with freezer combination floor type with digital control panel, microprocessor controlled system. Refrigerator has +4C set point and deep freezer has -20C set point/ Audio and visual alarm system for upper and lower temperature limit, open door and low voltage or electricity cut off issues. Double thermal gazing door with lock and magnetic seal rings. Stainless steel Cr-Ni inner body Adjustable plastic covered wire shelves Equal temperature distribution using strengthen fan system USB output with 10 years recording memory Refrigerator temp range: 0 to 15C Freezer section: -10 to -30C Refrigerator capacity: 230L Freezer capacity: 80L	3
4.32	Adjustable pippets Multiple channel, autoclavable with delivering capacity from 10-100uL, 20-200uL, 100-1000uL (set)	2
4.33	Ultralow upright deep freezer -86C Ultra freezer; Volume capacity 25 cft, Upright cabinet orientation, double doors, Multiple compartments for specimen/compounds banking system Temperature range -86°C, Power supply 220V, 50/60Hz, along with UPS backup.	1

4.34	**GENETIC ANALYZER for Sequencing, Fragment Analysis and Human Identification** 8-Capillary Electrophoresis Genetic analyzer with the following Sequencing, HID specific workflow preconfigured for Sequencing and Human Identification Kits, simplified run setup and software Navigation Advanced thermal system design improves temperature control for more consistent data migration and reduced run times. Reduced signal variation. Innovative “snap-in-and-go” consumable design with radio frequency identification (RFID) technology that tracks and records key consumables data. Powerful, integrated data collection and QC analysis software provide real-time assessment of data quality and streamlined STR analyses New single-line 505 nm, solid-state long-life laser Controlled access and tracking through Security, Audit, and signature features Upgradable to 24 capillary system Including INSTALL KIT and Software for GENEMAPPING Onsite Installation Calibration and training Operational Training at manufacturer Site(Optional) Computer Requirement Hardware: Pentium® IV Processor, 1.86 GHz Processor• Operating System: Windows® Vista® SP1 • Installed RAM: 2GB • Hard Drive: 1 x 80GB 7200 RPM SATA 3.0 GB/s and 8MB Data Burst Cache UPS PureSinewave Online UPS 5KVa	1
	Total	

Research Equipment

Ser	Description	Qty
5	**General Equipment**	**Qty**
5.01	**Infusion Pump,** Spec: - LCD Display, Double CPU, Can use all standard IV sets.	20
5.02	Pulse Oximeter Color 3" TFT LCD screen Four different screen modes Perfusion index (PI) Graphical and tabular trend Upto 10 hours operation time Li-ion rechargeable battery Measuring range: SPO2: 0 – 100% Pulse rate: 30 – 250 bpm Perfusion index: 0.05 – 20% Saturation accuracy: Adult / Child: 70 – 100% +/- 2 % 50-69% +/- 3 digits 0 – 49% unspecified Neonate: 70 – 100% +/- 3 digits Resolution: 1 bpm Power: 9 VDC max.	10
5.03	**Linen Trolley.** Spec: - Finger pulse oximeter to provide spot check for oxygen saturation level and pulse rate, To show sp 02 and pulse rate on color display, To detect conditions such as hypoxemia, a deficiency in the concentration of oxygen in arterial blood, whether due to an inadequate supply or poor circulation.	20
5.04	**TSSU.** Complete with 1 x steam sterilizer 200 lit, washer disinfector dryer, ultrasonic cleaner, flash sterilizer, SS portioning of dirty, clean and sterile areas, packing sorting tables, washing sinks, water softner, loading unloading trollies.	1
5.05	**Hospital Bed Private Electric.** sPEC: - Adjustable height, 4 section bed with 4 motor adjustment with patient and nurse control panel, Till 12 degree head down, 6 degree foot down, Mattress with internal hinge and standard nylon fire proof cover, Mattress 4'' to 6'' thick, Bed fitting patient lifting pole, Collapsible / removable side rails pair, ABS plastic, I.V Rod, Removable head and foot end ABS plastic.	20
5.06	**Hospital Bed Semi Private Hydrauli.** sPEC :- Fixed height, 4 section bed with hydraulic adjustment, 5'' castors with individual brakes, all round buffers included, Mattress with internal hinge and standard nylon proof cover, Safe working load 180 kg, Mattress 4'' to 6'' thick, Bed fitting patient lifting pole, Collapsible / removable side rails pair, ABS plastic , I.V rod, Removable head and foot end ABS plastic.	100
5.07	**Stretcher Trolley.** accident Emergency transfer recover trolley for use in any emergency / treatment sPEC ; Fie retardant upholstered 3'' mattress, Titing top, Hydraulic height ,adjustable, Collapsible side rails, Cylinder cage, Bumper bar /push handle IV pole, 200mm base plate castors.	10
5.08	Central Gasses System 130 X outlet point 02 surface type, including flowmeter 10 x outlet point N20 surface type 2 x outlet point air / 7 bar surface type 42 x outlet point air / 4 bar surface type 130 x outlet point vacuum surface type, including suction unit with bottle 3 x flexible pendants 5 gas 1 x manifold header 02 size 2 x 4 with automatic change over panel 1 x compressed air plant 1 x vacuum plant Scavenging unit 10 x zone service units or 02/N20/Air 7 bar / Vacuum 30 x cylinder 02 appr. Size 240 cft 8 x cylinder N20 16200 lit,. capacity 16 x cylinder air 6.23 cft. Capacity Full copper pipe with fittings 27 x line valves 5 x3, 8x 2, 2x4 and 2x5 Gas Alarm	1
5.09	Oxygen Cylinder 52 CFT with Gauge Flowmeter	20
5.10	Medicine Cart • Frame and carcass made of mild steel powder coated • Mounted on approx 10 cm castors • The approx internal dimension 83 w x 50 d x 29 h cm • Lockable with heavy duty dead lock • Document support on under lid surface • 4 tier rack for holding medications • Waste bins qty 2 off mounted under the medicine container • Ampoule holding rack • Side mounted fold down writing flap • Tamper proof medicine container locking system with plastic seals	10
	Total	

Research Equipment		
Ser	**Description**	**Qty**
6	**OPERATION ROOMS & ICU**	**Qty**
6.01	Cell Saver Auto transfusion cell separator with auto start processing on reaching pre defined pre programmed trigger volumes with integrated/stand alone vacuum source and also capable of working on central vacuum Vacuum Range 0-300 mmHg Graphic Color LCD Display Auto transfusion reservoirs x 6 of various sizes available Wash Sets with various size bowls Replacement Vacuum Filters x 20 Clamped Empty L:ione detection Centrifuge Bowl Leak detection Overfilled Waste Bag Detection Buffy Coat Sensor	1
6.02	Operating Microscope Motorized zoom ration 1:6 Motorized internal fine focusing system Integrated spot illumination system for increased luminous density Integrated balancing system for easy and precise positioning Laser compatible Straight binocular tube f=170mm 12.5x screw type wide field eyepiece. Objective f=200mm Objective f=250mm Objective f=300mm Objective f=350mm Objective f=400mm Standby lamp module Counterbalanced suspension arm Fibre light guide	1
6.03	Hemostasis Analyser- Eight simultaneous sample via 4 analyzers, each with 2 channels , Two independent channels per insturment. Maximum sensititvity with software vibration damping . Electromagnetic detection system with torsion wire . Full network support with remote viewing. Preferably Windows - based softwar. 110V/60Hz or 220V/50 Hz Power. Analog output via DB9 cable to computer interface box. One year factory warranty against manufacturers defects. Sample Capacity 8 Samples. Tests/Assays: Clotting time clot inetics, Clot strength. Hemostasis profile, Clot stability.	1
6.04	Limon (liver Monitor) Parameters: Non-invasive sensor and any venous access Quick be-side results Up to 20 measurements per 24 hours by Plasma Disappearance rate of ICG-PULSION (PDR), Retention rate of ICG-PULSION extrapolated to 15 minutes (R 15) Blood Clearance of ICG-PUSION (CB) Circulating blood volume (BV) and continuous measuring of arterial oxygen saturation (SpO2) heat rage (HR	2
6.05	Ultrasonic scalpel and Aspirator 1 ULTRASONIC SCALPEL system microprocessor-controlled High frequency switching power supply with three blade Positions: blunt, flat and shear with maximum longitudinal Displacement of 50 to 100 microns, complete with Generator x 1 Cart x 1 Footswitch x 1 Handpiece 220 VZ 1 Dissecting Hook – length 10 cm x 6 Sharp hook – length 10 cm x 6 Curved blade – length 10 cm, shaft 5-8cm x 6 Sharp curved blade – length 10 cm x 6 Dissecting hook – length 14 cm x 6 Sharp hook – length 14 cm x 6 Curved blade with grip – length 14 cm x 6 Reusable adaptor for 5mm hard sheath blades x 2 Handswtiching adaptor x 1 Short curved shears – length 14 cm x 6 Sharp hook with sheath x 4 HS blade system adaptor x 2 Reusable torque adaptor x 2 Reusable test tip x 4 2 COMPACT SURGICAL ASPIRATOR SYSTEM • With simple hand pieces and manifold tubing connections • Easy, console setup • Steam sterilizable hand pieces • Low noise pumps with auto resting phase when not in use • Maximum selectivity for surgeon control • Electro surgery functionality • Laparoscopic mode for effective minimally invasive procedures • Onboard suction for maximum power to increase tip/tissue coupling and fragmentation ability • Dual frequency system	2

6.06	Molecular adsorbant recycling system The system to replace the detoxification function of the liver and able to remove following toxins • Bilirubin, bile acids • Phenols, mercaptans • Dioxin – like substances • Tryptophan • Ammonia • Copper , iron Capable of combination therapy of kidney and liver dialysis. Suitable for treatment of both hemodynamically stable patients and continuous treatments for patient with multi organ failure or unstable blood pressure. The system should be complete with following functionality and hardware. • Effectively remove protein bound and water soluble toxins • Mange fluid-eclctrolyte and acid/base balance • Control glucose and lactate revel • Dialysis machine compatible with MARS circuit / kit certificate of the effect with installed base information in specific clinical setting to be provided with the offer • MARS Monitor with Albumin flow rate: 50-250 ml/min , Pressure range of 100 to 500 mm Hg and albumin circuit volume of 600 ml 20% albumin solution and compatible with quoted dialysis machine	2
6.07	Diathermy Mono / Biplane – 250W to 300W Monopolar, 80 to 100W Bipolar with under water cutting and coag consisting of: • Mains Cord. 5m long • Vario Dual Foot Switch, Explosion Proof • Silicon Neutral Electrode Large 31 x 16 cm • Silicon Rubber Band with 4 Buttons 1.5m • Cable for Silicon Neutral Electrode 5m	2
6.08	Lamp Operating Major One major and one satellite light heads Light intensity at 1 m at colour temp of 4500K should be 200,000 Lux or more combined Colour Temperature: 4300 – 4500K Bulb: Halogen Spare bulb for automatic fast switch over with visible indicator in case of bulb failure	2
6.09	Rack Swab	2
6.10	Stand Bowl Horizontal	2
6.11	Stand Bowl single	2
6.12	Stand IV Antistatic SS	2
6.13	Suction Unit6 2w Jar Mobile • Power Voltage: AC220V+22V 50 Hz+1Hz • Max negative pressure: 0.09MPa • Noise: 65dB (A) • Power: 180VA • Pumping rate: 20 L/min • Reservoir capacity: 2500 ml /Pc, 2 pieces	2
6.14	OT table Description of function Operating table for Gynae/Obst as well as general and specialty surgery Operational requirements An operating table with radiolucent table top comprising of five parts, head test, back section, seat section with cut out and divided leg plate Operating table with hydraulic/mechanical adjustment Movements may also be operated manually Provided with remote control for different positioning	2
6.15	Warmer blood Dry Heat Type Dry heat rapid warmer Open system using low cost standard disposables Compatible to other systems as well Microprocessor controlled Low and high temperature alarms (audible / visible) with auto shut- off at 43 c Easy wrapping extension sets (clock-wise) Maintenance free Error codes showing on the display Large bright LED display, easy to view from distance	1
6.16	Anesthesia machine with ventilator Anesthesia unit with 2 Vaporizers and inbuilt ventilator Unit shall be comprised of the following components. • Non interchangeable pipeline inlets. • Pipeline and cylinder gauges for O2 and N2O. • Pin index cylinder yolks for at least one or more cylinders of O2 and N2O each. • N2O cut off device in case of O2failure. • O2 failure alarm. • Gas out let and O2 flush control. • Lockable casters. • Monitor shelf. • Bar assembly for mounting of at least 2vaporizers. • Impact resistant and easy to clean frame. • Cleanable works surface. • Absorber support arm. • 45 Hr or more Trend • Three gas flow meter unit electronic/ manual. • O2, N2O and Air (4-bar) hoses. • Isoflorane and Sevoflorane vaporizer (models of the vaporizers must be mentioned). • Should support future upgrade for AG, Paramagnetic oxygen monitoring and EtCO2 (Should be quoted Optional as mandatory): • Three or more drawers unit power outlets with 4 or more sockets. • Auxiliary O2 outlet. • Writing shelf/plateform. • Soda-lime absorber with CO2 bypass function ,1-2 Kg complete with valve for bag/ventilator, manometer, 3 liter breathing bag, breathing tube, mouth and Y piece. Ventilator : Ventilator must be inbuilt with the anesthesia unit. Ventilator to be complete with manometer display. The ventilator shall be capable of ventilating pediatric patients. The ventilator shall have the following features as a minimum requirement. • Ventilation mode: VCV, PCV, PCV-VG, SIMV-VC, SIMV-PC, SIMV-VG, CPAP, PSV • Electronic Microprocessor controlled. On/Off switch. • Breathing mode selection. (Standby/Volume/Spontaneous and pressure). • Built in monitor 12” or better color screen to display all the mentioned parameters. • Inverse I: E Ratio Capability. • Able to display P-V, P-F, F-V lung function loop and store up to 15 lung function loops • 3 waveform and lung function loop can be displayed simultaneously in one screen • Gas specific input connectors (Air/Oxygen ISO) • Tidal Volume from 20 ml to 1400ml or better on either side • Rate or frequency 4 to 100bpm or better on either side • I:E ratio from 4 : 1 to 1 : 8 or better on either side • PEEP off from 3 to 30 cmH2o or better on either side • Inspiratory pressure limits from 10 to 70cmH2O 0r better. • Adult bellows graduated from approximately 20ml to 1500ml. • Battery backup (90 minutes or more). • Audio Visual Alarm for the following: • Alarm mute. • Low/High FiO2 Alarms (18% to100%). • Low Supply Pressure	2

	• High Airway Pressure. • High Continuous Air Pressure • Low Pressure • Incorrect rate or Ratio • Mains failure. • Low Battery	
6.17	Ventilator Ventilator, electrically operated microprocessor controlled, suitable for adult / Paeds / Neonate use. • Tidal Volume: 5 ~ 2000ml or better on either side. • Frequency: 4 ~ 150b/min or better on either side. • I:E ratio: 1:10- 4:1 or better • Inspiratory Time: 0.1-10s or better • Inspiratory Pressure: 1-100cmH2O or better • Support Pressure: 0-100cmH2O or better • Pressure Trigger: -20- -0.5cmH2O, OFF • Flow Trigger: 0.5-20 L/min (neonatal 0.1-5.0L/min), OFF • PEEP: 0-30 cmH2O • FiO2: 21-100% • Patient Circuit: Autoclavable/ disinfectible (adult, Paeds & Neonate) • Supplied with pole clamp • O2 and Air input hoses Modes: Invasive and non-invasive ventilation which could be used inside ICU or outside ICU. • Volume control: CMV/AC , SIMV, PRVC, VS • Pressure Control: CMV/AC, SIMV, CPAP, PS • Adaptive ventilation mode, APRV, Duolevel (BiLevel) Monitoring: • Standard parameters • Alveoli Ventilation Calculation • One Hour or more Built-in Battery Backup • TFT / LCD Monitor Size: 12" or more • Display Loops including Pressure-Volume, Flow-Volume, Flow-Pressure, show up to 2 loops simultaneously • Modular design have modular rack for supporting future upgrade. • Support future upgrade EtCO2, SPO2 by adding parameter module (Price to be Quoted Optionally) • Should operate on O2 & Air • Alarms for Gas failure, RR, Pressure, Apnea, Volume, Low Battery	4
6.18	Anesthesia induction machine Anesthesia unit with 2 Vaporizers and inbuilt ventilator Unit shall be comprised of the following components. • Non interchangeable pipeline inlets. • Pipeline and cylinder gauges for O2 and N2O. • Pin index cylinder yolks for at least one or more cylinders of O2 and N2O each. • N2O cut off device in case of O2failure. • O2 failure alarm. • Gas out let and O2 flush control. • Lockable casters. • Monitor shelf. • Bar assembly for mounting of at least 2vaporizers. • Impact resistant and easy to clean frame. • Cleanable works surface. • Absorber support arm. • 45 Hr or more Trend • Three gas flow meter unit electronic/ manual. • O2, N2O and Air (4-bar) hoses. • Isoflorane and Sevoflorane vaporizer (models of the vaporizers must be mentioned). • Should support future upgrade for AG, Paramagnetic oxygen monitoring and EtCO2 • Three or more drawers unit power outlets with 4 or more sockets. • Auxiliary O2 outlet. • Writing shelf/plateform. Soda-lime absorber with CO2 bypass function ,1-2 Kg complete with valve for bag/ventilator, manometer, 3 liter breathing bag, breathing tube, mouth and Y piece Built in Patient Monitor on rack: 15" LCD Display with following parameters: ECG, SPO2, NIBP, RESP, TEMP, IBP, ETCO2. Built in Battery. The following RE-USABLE AND AUTOCLAVABLE accessories shall be supplied with the unit. • Reusable Adult Breathing system 1. No's • Reusable Pediatric Breathing system 1. No's • Re-breathing bag 0.5l 2. No's • Re- breathing bag 1L 2. No's • Re-breathing bag 2L 2. No's • Forceps Magill adult 1 Nos	2
6.19	Laryngoscopes with 4 blades Straight, Curved blades with Batteries, different size (Small, Medium, Large)	10
6.20	Resuscitation Bag Different sizes Silicon Resuscitation Bag with infant / child and adult face mask sizes 00, 0, 1, 2,3,4,5 & airway size 0, 1, 2,4,4,5 with E2 valve and fully autoclavable. • The resuscitator to meet with all requirements lay down by international standards. • Reservoir Bag volume approx. 600ml.and 2 L • Oxygen Reservoir Volume approx. 2500ml for adult and child • Tidal maximum volume: approx. 200ml for infant and 1000ml for adult • Unit to operate in all climatic conditions and not to be dependent upon a power supply. • To be able to connect to an oxygen supply up to100%. • The resuscitator must be able to ventilate through a mask and/or endo tracheal tube. • Re-usable and must be autoclavable	8
6.21	Crash cart with Defibrillator and resuscitation accessories Unit completely equipped as detailed below along with the defibrillator • The contents will be clearly documented for each unit. Emergency Resuscitation Cart: • S.S top approx. 630*445mm. 25mm dished • Lift up laminated work flap approx. 305*455 • Three drawers 2 shallow 600*430*65mm and 1 deep 600*430*165mm • Lower cupboard 625*475*290mm • Double hook stainless steel I.V Pole • 2 * SS cylinder holders for D or E size Cylinders • Cardiac board 600*400*55mm • 6" aneroid spyhygmomanometer with adult Velcro cuff and rail clamp • Electronic timer and rail clamp • Venture suction unit with 02 outlet and 1.8 liter jar and rail clamps • Yankauer suction tube and connecting tubing • 0-15rpm 02 flowmeter fitted to 02 venturi outlet • Pin index regulator with outlet for connection to remote venture hose and 02 outlet • Intubation set comprising • MacIntosh laryngoscops with 3 blades • Magill introducing forceps • Adult resuscitator • Set disposable E.T tubes (5) • Set guedel airways (3) • Pen torch • Artery forceps (2) • Dressing tubes (2) • Set plastic tubes Examination light to rail clamp (Angle neice type)	2

6.22	Surgical Equipment Electrosurgical Diathermy Machine Diathermy Machine for use of General Surgery, Endoscopy, Dermatology, Gynecology, Vascular Surgery, Heart/Thoracic Surgery, ORL/ENT, T.U.R, Orthopedics, Oral Surgery, Urology Pediatric surgery. Monoplar mode for easy urethral resection or laparoscope procedure Bipolar mode with large areas or wet tissues treatment with standard coagulations Easy automatic coagulations with hand switch Long Key (Speed key) function Super Liability and Durability Bipolar Cut Auto recognition of 50Hz or 60Hz REM (Return Electrode Monitoring for Safety) The last operating condition memory when turn ON and OFF Bipolar Mode with Easy Auto hand switch: Easy operation by switch able hand and foot switch control Automatic control of the patient plate connection Coagulation: choosable contact or Spray type coagulation. Monopolar CUT Pure Cut: 400W / 300Ω Blend I : 250W / 300Ω Blend II: 200W / 300 Ω Blend III: 150W/300 Ω Monopolar Coag: Contact: 120W/ 300 Ω Spray: 100W/ 300Ω Bipolar CUT: 120W/ 200 Ω Coag: 99W/ 100 Ω Other specification: Main Frequency: 400 KHz Power Source: 110V/220V, 50/60 Hz	1
	Total	**OPERATION**

Research Equipment		
Ser	**Description**	**Qty**
10	**C.S.S.D**	**Qty**
10.01	Steam Sterilizer Fully automatic steam sterilizer, PID Control sets temperature, timer, reservation and auto tuning. Pressure gauge Checks the pressure condition. Manually exhaust steam by turning the manual steam valve knob. Silicon packing lid is installed to prevent the leakage of steam Automatically replenishes water when water is put in the water tank. Water drain control device. Chamber type: Round vertical type Capacity: 103 liter In size: 450x650 Dimension (WxDxH)mm: 670x620x1110 mm Heater capacity: 4kW Temp: Range: ambient to 130C LED Microprocessor programmable control PT-100Ohm sensor Time range: 99 hours 59 min Material: IN: stainless steel Door system: One touch handle type (Single screw door) Basket: stainless steel 304 manufactured for sterilizing 2 each Pressure range: 0 – 3kg/cm2 analog Using pressure: 0 – 1.2 kg/cm2 Wheel: silicon carrier w/fixed screw frame Power requirement: AC 220V, 50-60 Hz	2
10.02	ETO/Low Heat Sterilizer Hydrogen Peroxide Gas Sterilizer The device should be a Gas Sterilizer for sterilization of all medical and electronic materials, metal or other non-metallic surgical materials, except for materials containing copper and cellulose that are not resistant to high temperature and humidity. 2. The device should be able to sterilize at 40-55 ° C for a maximum of 70 minutes. 3. The device should be able to sterilize with at least 58% Hydrogen Peroxide solution. 4. Sterilization chamber internal volume of the device should be at least 160 liters. 5. The device must have a vertical sliding door. This door must be sealed with a 0-ring seal. 6. The device should form plasma outside the boiler. In this way, the entire boiler internal volume should be able to be used. 7. If the sterilization parameters are not reached by the microprocessor in the instrument, the cycle is automatically canceled, and a printer should inform you about the problem and the measured parameters. 8. A printer on the device should obtain all information about the sterilization cycle and all stages of the sterilization cycle. 9. The values such as date, time and total number of cycles should be monitored by means of the keys of the device and the alphanumeric touch screen. 10. The display on the front panel of the device should be able to monitor cycle stages and remaining time. The device can warn the user through the same screen when the periodic maintenance period has expired and the number of cycles can be seen on the screen. 11. In case of any problem during sterilization, the device gives an audible and light alarm and the alarm should be indicated on the front panel display and printer output. 12. There must be a safety mechanism to prevent the door from opening unless the cycle is stopped by the user. 13. Vacuum system of the device should be done with vacuum pump. 14. The device must be equipped with a HEPA filter that cleans the outside air. 15. The device must have two (2) shelves to accommodate material. 16. The device must work with at least 3 process cassettes containing hydrogen peroxide. 17. Sterilization should be monitored with chemical and biological indicators. 18. The device must be operated on 220-380V / 50Hz. 19. Installation validation of the device should be performed by the contractor company to accredited organizations.	2
10.03	Aseptic Unit	1

10.04	Washer, Disinfector and Drying Unit The device should be advanced and fully automatic, controlled by microprocessor (PLC), operation, washing phases and monitoring and recording of these phases. Device; dentistry hand tools, general surgical instruments, ENT instruments, gynecology instruments, laparoscopic instruments, anesthesia instruments operating room slippers laboratory glassware, stainless steel and aluminum sterile containers and bottles automatically wash and disinfect (thermal or chemical) and then dry. The device must have 4 preset programs. In addition, at least 10 more adjustable programs must be added to meet specific needs. 4- Programming of the microprocessor should be done with the touch buttons on the control panel and each program should consist of at least 5 stages: prewash, wash, rinse, disinfection and drying. 5- The microprocessor of the device must have a memory battery to prevent data loss (such as power failure). 6- The microprocessor of the device must also have an RS 232 port. 7- The device must be cabinet type and two-door, and the materials supplied by the contaminated environment must be washed and disinfected and removed from the door on the clean environment side. The volume of the washing chamber should be at least 290 liters. (10 pcs. DIN 1/1 Basket Capacity). 8- For a good washing, the recirculation pump must be at least 700 Lt / min. water circulation. 9- The doors of the device should be complete glass and the doors of the device should have automatic sliding door technology and up-down operation system. The doors shall be provided with safety locking devices to prevent sudden fall in the event of a malfunction. 10- Washing cabinet and boiler should be made of 316 L stainless steel. In no way should they be affected by detergents or lubricants. 11- The washing cabinet must be equipped with a suitable lighting system with explosion / vapor leakage protection. 12- The loading / unloading height of the device must be at least 700 mm. 13- The safety device in the washer must not start operations before the doors are fully closed and all operations must be stopped immediately if the doors are opened in any way during the operation. The display on the clean side of the device should be able to be monitored separately. 14- The appliance must be equipped with a hot air drying system and the system should allow drying by keeping the temperature of the air in the washing room between about 60 ° C and 120 ° C. The Drying Unit must ensure that the internal and external surfaces of the instruments are dried with at least 100 m^3 / h air circulation. Hot air must be distributed through the cabin and the arms. 15- The unit must have at least H 13 class HEPA filter 1- The device should be advanced and fully automatic, controlled by microprocessor (PLC), operation, washing phases and monitoring and recording of these phases. 2- Device; dentistry hand tools, general surgical instruments, ENT instruments, gynecology instruments, laparoscopic instruments, anesthesia instruments operating room slippers laboratory glassware, stainless steel and aluminum sterile containers and bottles automatically wash and disinfect (thermal or chemical) and then dry. 3- The device must have 4 preset programs. In addition, at least 10 more adjustable programs must be added to meet specific needs. 4- Programming of the microprocessor should be done with the touch buttons on the control panel and each program should consist of at least 5 stages: prewash, wash, rinse, disinfection and drying. 5- The microprocessor of the device must have a memory battery to prevent data loss (such as power failure). 6- The microprocessor of the device must also have an RS 232 port. 7- The device must be cabinet type and two-door, and the materials supplied by the contaminated environment must be washed and disinfected and removed from the door on the clean environment side. The volume of the washing chamber should be at least 290 liters. (10 pcs. DIN 1/1 Basket Capacity). 8- For a good washing, the recirculation pump must be at least 700 Lt / min. water circulation. 9- The doors of the device should be complete glass and the doors of the device should have automatic sliding door technology and up-down operation system. The doors shall be provided with safety locking devices to prevent sudden fall in the event of a malfunction. 10- Washing cabinet and boiler should be made of 316 L stainless steel. In no way should they be affected by detergents or lubricants. 11- The washing cabinet must be equipped with a suitable lighting system with explosion / vapor leakage protection. 12- The loading / unloading height of the device must be at least 700 mm. 13- The safety device in the washer must not start operations before the doors are fully closed and all operations must be stopped immediately if the doors are opened in any way during the operation. The display on the clean side of the device should be able to be monitored separately. 14- The appliance must be equipped with a hot air drying system and the system should allow drying by keeping the temperature of the air in the washing room between about 60 ° C and 120 ° C. The Drying Unit must ensure that the internal and external surfaces of the instruments are dried with at least 100 m^3 / h air circulation. Hot air must be distributed through the cabin and the arms. 15- The unit must have at least H 13 class HEPA filter 16- The circulation pump, the spreader system and the recirculation pipes must be made of stainless steel. Rotary spray arms should be placed on the ceiling and floor of the boiler and ensure that the entire surface of the material is washed. Depending on the selected program (material), the loading means must also have spray arms. If any of the spray arms of the loading vehicles are removed, the water line of that section should be closed with manifold. 17- The pressure of the circulating pump must be controlled via the microprocessor. 18- The electric water heating unit should maintain the water temperature in the tank at approximately 55 ° C - 65 ° C during the washing phase and 90 - 93 ° C during the disinfection phase. 19- The device must have at least two dosing pumps. At the required stages, it should automatically deliver the required amount of chemicals (detergent, neutralizer, disinfectant, etc.) to the water. There should be a system that warns the user when the amount of detergent is low. 21- The appliance should have a turbo feature that shortens the washing time. 22- The device is 220V / 380V / 50 Hz. It shall operate with city electricity and shall not be affected by voltage fluctuations of at least ± 10%. 23- The control panel must have keys that allow the program to be selected, started and finished, the values are changed, and the automatic door system allows the user to open and close the door. Also showing the necessary parameters in the dashboard; the selected program, phases, time, temperature and warnings. 24- The device is not coding for errors, etc., and all messages should be clear and understandable. In the event of any abnormal conditions during operation, it should give a warning on the screen and an audible warning. It should also register to the printer. 25- The device must be equipped with a system that detects or senses the temperature in the washing cabinet and the water level in the washing tank, and has an alarm system that alerts the user when this system fails. 26- The temperature in the washing cabinet of the appliance must be controlled by two independent temperature sensors. 27- The appliance must be equipped with removable and cleanable stainless steel filters located on the underside of the drum to prevent contaminants from entering the pump. 28- The noise ratio should not exceed 60 dB (A) during operation. 29- The device must comply with EN 15883-1 / 2. The device must have a Type Test Certificate obtained from the Accredited Organization. 30- External softening unit must be able to be installed in the device. 31 Manufacturer's ISO 9001: 2015, ISO 13485: 2016; ISO 14001: 2015 and TSE Service Qualification Certificate. 32- The following accessories must be supplied with the device. • 1 washing card with 5 layers at least • 1 loading and unloading trolley • 10 pieces of wire basket (DIN size 480x255x55 mm)	2

10.05	Distillation Plant Purification filter for laboratory deionization system, dialysis health care center and industrial using. Reverse osmosis membrane process that can separate undesirable mineral from water where classical purification methods are insufficient. High capacity filtration and ultra pure water. System capacity: 1500 lt/day Operating pressure 150 – 200 PSI Recovery: 40% Power: 0.37 kW Dimension: 2.5x40"	1
10.06	Ultrasonic Cleaner Eight functions in 1 tank: warm water spray cleaning, ultrasonic cleaning, water blast, ultrasonic rinse, hot water blast, hot water disinfection, rust lubricant processing, electric drying Digital indication of equipment's manufacturing date. Digital indication of add-up working time. Digital indication of ultrasonic cleaning time of memory and setting. Digital indication of operative mode and setting. Digital indication of low level, no liquid protection indication. Digital indication of over-temperature, over-current protection. Soft start, signal feedback function. internal fault, output open Output short circuit warning. Adjustable heating power 2 kinds of heating, electronic & input steam heating Adopting the electrical-control supplying enzyme Adopting electrical-control lifting apparatus to make better lower-noise effect. Adopting the stainless-steel net sieve and auto-argon arc welding. Tank size: 800x1000x1100 mm B10 Vol: 144L Water level: 1 – 300 mm Ultrasonic frequency: 40 – 80 – 120 kHz Ultrasonic power: 1800W Adjustable power: 20 – 80% Spray power: 1100W Wind power: 550W Water heating power: 15kW Dry heating power: 17kW Largest power: 17kW Disinfection temp: 93C Dry temp: 100C Timer adjustable: 1 – 480min Agent dosage: 100ml/min Drainage: Auto	1
10.07	Trolley Washer	1
10.08	Sealing Machine Automatic Sealing Machine automatically seals sterilization reels. Closure width: 12mm Closing margin: 0 – 35mm Sealing Temperature can be set digitally Heating system can reach 180C in 40 seconds Advanced flat ceramic heating elements heave a very long service life With 1C accuracy, it can shut off at 60 – 220C Closing speed 10m/min. Strong bonding with the type of barrier in sterilization reels Reel wheel system can cover any size of roll Having automatic cooling system 480x240x150 mm dimensions Power 500W	1
10.09	Hot Air Oven PID Temperature Control provides automatic compensation after load changes, setting changes or door opening for excellent accuracy. forced convection heat distribution combines with the adjustable air vents to provide excellent uniformity. Double wall construction, fiberglass insulation provided on 5 sides as well as between inner and outer walls, and silicon rubber door sealing reduce heat loss and power drain. Stainless steel interior chamber and shelves are corrosion resistant, durable and easy to clean. Powder coating exterior is beautiful, durable, and corrosion resistant. LED Display. Visual alarm indicator alerts. The temperature can be controlled and maintained to 200C Oven feature a smoked see thru window to view contents without opening. 2 shaves Working temperature: Ambient +5 – 200 degree C Time mode: continuous mode / timed mode 1 – 999 hours or 1 – 999 minutes Capacity: 300 Liters Chamber dimensions: 625x510x1000 mm (WxDxH) Power watts: 2500W Overall dimension: 725x620x1465mm (WxDxH) Power supply: 220V, 50Hz	2
10.10	CSSD Technical SS Furniture 1. Stainless steel packing table with electric height adjustable Equipment with accessories like lower shelf, sterile wrap rack, side rack and over head shelf, provides high efficiently for CSSD staff. 2. Stainless steel tray rack trolley / cart Height adjustment can be framed above the operating table Noise free castor 3. Stainless steel hospital aseptic cabinet surgical trolley Noiseless caster. Above the trolley can be opened One drawer, one cabinet, one handle. Size: 1000x555x990mm 4. Stainless steel trolley with basket Corrosion resistance, easy disinfected. Noise free caster, stainless steel handrail. Two column storage. Detachable cover, wire basket shelf. 4 – 10 storage basket 5. Stainless steel dirty clothes collection trolley / cart Easy cleaning and washing, corrosion resistance, sturdily constructed, noise free castor. Detachable basket	1
10.11	Instrument Container B4	30
	Total	**C.S.S.D**

Research Equipment		
Ser	**Description**	**Qty**
11	**Pharmacy**	**Qty**
11.01	Box Pharmacy Distribution	20
11.02	Pharmacy Miscellaneous Items	1
11.03	Planetary Stirring Unit Stirring and Beating Unit For volumes from 10L to 200L Casing with interior and exterior acrylic powder coating Protective covers made of plastic or stainless steel Lifting and locking of bowl in a single step Infinitely variable speed control Control Panel digital timer and emergency stop Power supply: 230V, 50/60 Hz Output 0.7 kW Infinitely variable speed control 110- 420 rpm UK, Germany, Japan, USA made	2
11.04	Balance Electronic Internal Calibration Analytical a high speed analytical weighing balance. Built-in magnetic sensor for faster weighing with stability. Equipped with a weighing capacity of 100 g with minimum weighing of 0.0004 g and 80 mm of pan size. The panel features five operational buttons with a slide glass windscreen for easy operation and an automated internal calibration. • Automated internal calibration • Weighing capacity - 100 g • Cast aluminum outer covering • Five operational button panel • Sliding glass windscreen • High precision magnet sensor • White back light with black font • Cast aluminum outer covering • Can be connected to external printer • RS-232 / RS485 interfaces provides speedy communication with computers and	2
11.05	Bench Pharmancy Preparation Horizontal Laminar Flow Clean Bench. HEPA filtered air horizontally over the work area with purification rank of 100 and is equipped with removable protective glass. Polished stainless steel table board with work are up to 1430x620x575 mm . adjustable air system with gear for speed regulation to maintain the work area wind speed in ideal condition. Noise less air system. Provided with power saving fluorescent lamp. Removable cabinet support with adjustable foot margin. External dimension (WxLxH): 1090x800x1800 mm Internal dimension (wxLxH): 930x620x575 mm Illumination: 300 Lux Power: 220W LED standard: 9x1 HEPA size (WxHxD): 610x970x69 mm Average velocity: 0.25 – 0.4 m/s	2
11.06	Refrigerator Pharmancy Air cooling, auto defrost, better cabinet temperature uniformity, Adjustable shelves. High accuracy temperature control: Accurate temperature, safe storage, high accurate controller and high sensitivity sensor, keep the temperature within 2 – 8 C Lockable design door. Safety control, Intelligent alarm three alarm types keep storage safe Door without condensation under ambient temp 32 C and 80% humidity. Electrical heating glass door, condensation free under humidity 75% Compressor: Germany Made Capacity (L/CU.FT) 290/10.2 Interior dimensions WxDxH: 530x555x1080 mm	8
11.07	Shelving Unit for Pharmacy Chrome shelves with corrosion resistant 130kg capacity per shelf Wire shelving works with shelfull bin to organize parts and increase efficiency A wide open hopper front for easy picking The shelves of wire shelving could be adjustable for needs The wire shelving is easy installation for one person Shelf No: 6, Bin Quantity in shelf: 4 Dimensions (Shelf) WxDxH inch: 860x600x1600	10

11.08	Standard Containers Different type of container for use in Pharmacy 1. Plastic container materials PP, PE. Volume 56L, Load capacity 30kg, 2. Recyclable Plastic storage tote box with dividers and steel handle 3. Strong foldable plastic container: Durable, hygienic, non toxic and convenient. Fold or open in one easy movement. Working temperature: -25C + 40C. Material: PP, 4. Transparent Container: Can overlap stacking; Non toxic. Maximum load bearing 30kg.	30
11.09	Tray Instrument Stainless steel instrument tray. High polished finish. Easy to clean and disinfect. Tray and lid are both autoclave.	80
11.10	Juge Pollpropylene Tough, lightweight and easy to handle. Translucent and Graduated printed with sharp. Comfortable handle for safe carry when full. With excellent heat and chemical resistance. Autoclavable. Different sizes: 50ml, 100ml, 250ml, 500ml, 1000ml, 2000ml, 3000ml	1
Total		**Pharmacy**

Research Equipment		
Ser	**Description**	**Qty**
11	**Printing Cell**	**Qty**
11.01	Photo Copier Standard 45 page per minute copier. Can transform into multifunctional device by adding the printer, scanner, and or fax options. Single and double side output paper. 128 MB RAM to 384 MB RAM. Toner cartridge has projected page yield of 30000. Store, Edit, share and retrieve document and files from PCs via the internet and securely scan hard copy document directly. 125 sheet output tray. 2500 sheet multi tray finisher. 2x500 sheet paper tray. 80 sheet automatic reversing document feeder. Intuitive control panel and large touch screen. Stackless duplex unit. Scanner element: Flatbed with moving CCD array image sensor. Twin laser beam scanning & electrophotographic printing dry, dual component printing process Toner: Dry Dual Component Hard Disc driver: 40 GB standard Document feeder: standard 80 sheet ARDF Copy reclusion: 600x600 dpi Exposure adjustment: Manual and automatic Maximum original size: up to 11x17” Copy size: 5.5x8.5” to 11x17” Warm up time: 15 seconds Reduction ratios: 25,50,65,73,78,85,93% Enlargement ratios: 121,129,155,200,400% Zoom: 25% to 400% in 1% increments. Auto magnification, auto paper select, auto tray paper select, auto tray switch. Background Numbering, Booklet/ Magazine Copy, Center/Border Erase, Combine Mode, Cover Insertion, Date Stamp, Directional Magnification, Document Server (3,000 file capacity), Electronic/ Rotate Sorting, 10 Job Programs, Negative/Positive, OHP Slip Sheet, Page Number Stamp, Paper Designate, Series Copy, Pre-Set and User Stamps, Touch Screen Control Panel, 100 User Codes (optional 500 max.)	1
11.02	Heavy duty Copier with Stacker 45 page per minute copier. Can transform into multifunctional device by adding the printer, scanner, and or fax options. Single and double side output paper. 128 MB RAM to 384 MB RAM. Toner cartridge has projected page yield of 30000. Store, Edit, share and retrieve document and files from PCs via the internet and securely scan hard copy document directly. 125 sheet output tray. 2500 sheet multi tray finisher. 2x500 sheet paper tray. 80 sheet automatic reversing document feeder. Intuitive control panel and large touch screen. Stackless duplex unit. Scanner element: Flatbed with moving CCD array image sensor. Twin laser beam scanning & electrophotographic printing dry, dual component printing process Toner: Dry Dual Component Hard Disc driver: 40 GB standard Document feeder: standard 80 sheet ARDF Copy reclusion: 600x600 dpi Exposure adjustment: Manual and automatic Maximum original size: up to 11x17” Copy size: 5.5x8.5” to 11x17” Warm up time: 15 seconds Reduction ratios: 25,50,65,73,78,85,93% Enlargement ratios: 121,129,155,200,400% Zoom: 25% to 400% in 1% increments. Auto magnification, auto paper select, auto tray paper select, auto tray switch. Background Numbering, Booklet/ Magazine Copy, Center/Border Erase, Combine Mode, Cover Insertion, Date Stamp, Directional Magnification, Document Server (3,000 file capacity), Electronic/ Rotate Sorting, 10 Job Programs, Negative/Positive, OHP Slip Sheet, Page Number Stamp, Paper Designate, Series Copy, Pre-Set and User Stamps, Touch Screen Control Panel, 100 User Codes (optional 500 max.)	1

11.03	Ring Binder Punches up to 25 sheets at one time and 24 holes can be adjustable • All metal chassis and mechanism with selectable punch pins. • Adjustable paper size guide • With comb binding controller • With punching margin depth controller • With international standard hole scale • Rectangle(3*8 m/m) hole punch • Punching performance: 7,000 Sheets • Binding performance: 500 Books	1
11.04	Shredder Cutting type: cross cut Cut size in mm:4 X 30 Cutting capacity per run, A4, 80 g/m², in sheets15 Sheets Cutting speed .2m/min Working width in mm: 240 Motor in watt: 350 Volume: 25L Shredder material Papers, Pins, Cards, CD, Diskettes	1
11.05	Paper Cutter This guillotine paper cutter has 12 inch cutting width. Ruler in inches and clear embossed grid for precise cutting. The paper cutter is capable of cutting up to 400 sheets high or approx 1.5 inch (for 80g A4 Paper). It is simple to operate with metal paper clamp handle and replaceable blade.	1
11.06	Comb Binder 24 holes (1-24 holes) machine • Punches up to 20 sheets at one time and binds up to 500 sheets • Applicable to all plastic ring (to 51 m/m) • Adjustable paper size guide • Fitted with a safety wired power plug • international comb size ruler • With comb binding controller • With international standard hole scale • All metal chassis and mechanism • Selectable punching pins • Punching performance: 17000 sheets/hour • Binding performance: 500 books / hour • Punching width 340 m/m (B4 foolscap)	1
11.07	Coil and Spiral Binder • Binding Style: Plastic Comb (19 ring) • Punch Style: 3-Hole & Plastic Comb • Operating Method: Punch-Electric, Bind-Manual • Punching capacity: 25 sheets (20# paper) • Max. Page Size: Letter w/Open Throat • Max. Bind: 2" (51 mm) • Margin Guide: Yes • Paper Load: Vertical	1
11.08	Heavy Duty Stapplers Capacity up to 210 sheets of 80gsm paper • 7-70mm adjustable stapling margin • Ideal for all types of heavy duty stapling work • Robust, extra heavy duty stapler with steel construction • Rotary anvil used for different staple length • Non slip base ensures the machine remain steady during operation and protects your desk • Use staples from 23/6mm to 23/24mm (23/6, 23/8, 23/10, 23/13, 23/15, 23/17, 23/20, 23/23, 23/24) • Weight: 1.5kg	1

11.09	Color Laser Printer Device Type Printer / copier / scanner Copier Type Digital Printing Technology Laser - color Monthly Duty Cycle (max) 20000 impressions Recommended monthly page volume 250 to 950 pages Display 2 lines x 16 characters Standard Memory 128 MB Max Copying Speed up to 16 pages / min. (B / W) /. Up to 4 pages / min (Color) Max Copying Resolution Up to 300 x 300 dpi (B / W) / up to 300 x 300 dpi (color) Max Document Enlargement 400% Max Document Reduction 25% Maximum Copies 99 Maximum print resolution up to 600 x 600 dpi (B / W) / up to 600 x 600 dpi (color) Max Printing Speed up to 16 pages / min. (B / W) /. Up to 4 pages / min (Color) Printer Drivers / Emulations PCL 6, PostScript 3, PCL 5c, PDF 1.7 Image Enhancement Technology HP ImageREt 2400 First Print Out Time B / W 15.5 sec Time to first print (color) 27.5 sec Scan Optical Resolution 1200 dpi Interpolated Resolution 19600 dpi Gray Scale Depth 8 bit Color Depth 30 bit Document & Media Handling Max Original Size 216 x 297 mm Original Type Sheets Min Media Size 76 x 127 mm Max Media Size Legal (216 x 356 mm) Min Media Weight 60 g/m2 Max Media Weight 220 g/m2 Supported Media Type: Transparencies, envelopes, plain paper, cards, labels, recycled paper, photo paper, bond paper	1
11.10	Laser Printer Heavy Duty Increase efficiency with fast colour printing Get the fastest in-class two-sided printing speed and First Page Out Time (FPOT).1,2 Help save energy with Auto-On/Auto-Off Technology.4 Safeguard data, devices, and documents.5 Stay productive and change paper less often with a 250-sheet capacity paper tray. Get quick and easy printing directly at the control panel. Automatically print two-sided documents. Speed through presentations and other business materials while saving paper. Spend less time replacing toner, with optional high-yield cartridges. Speed through print jobs right out of the box, using preinstalled Have confidence in your connection with steady performance from dual band Wi-Fi®.8 Connect your smartphone or tablet directly to your printer – and easily print without accessing a network.9 Simply tap the print button on your smartphone or tablet to print Print speed black: Normal: Up to 21 ppm 1 Print speed color: Normal:Up to 21 ppm 1 First page out (ready) Black: As fast as 10.70 sec Color: As fast as 12.10 sec 2 Print quality black (best) • Up to 600 x 600 dpi Print quality color (best) • Up to 600 x 600 dpi Print Resolution Technologies ImageRET 3600 Duty cycle (monthly, A4) Up to 40,000 pages Recommended monthly page volume 150 to 2,500 Print technology • Laser Processor speed 800 MHz Print languages HP PCL 6, HP PCL 5c, HP postscript level 3 emulation, PCLm, PDF, URF Display • 2-line graphical LCD display	1

	• 2-line graphical LCD display	
11.11	Laser Printer • Up to 26ppm print speed • First page out in less than 8.5 secs from PowerSave mode • 1200-dpi like quality • 250 sheet input tray plus 50 page multi purpose tray (expandable with 2nd 250 sheet input tray) • Fast processing with 400MHz processor and 32MB standard memory • Share the printer easily among workteams with integrated networking • Conserve paper with convenient, automatic two-sided printing	2
11.12	Large Format Printer Designjet fosters teamwork and mobility, delivers high quality results at fast speeds, .Print TIFF, JPEG, and PDF[4] files directly from your USB thumb drive, no computer required. Color Printer: Maximum print speed B/W: 39 sec / page Maximum printing resolution SV/V: 2400x1200 Memory capacity: 160 GB Laser printer technique: Thermal inkjet Maximum documents size: 8.3 to 44 inch wide sheets; 11 to 44 inch in rolls	1
	Total	**Printing Cell**

Research Equipment		
Ser	**Description**	**Qty**
12	**MISCELLANEOUS**	**Qty**
12.01	ECG Machine 3 channel Simultaneous acquistion of 12 channels and LCD display. Termal recorder for printing out 3/6 channels simultaneously . ECG interpration softwar with over 200 findings for complete ECG analysis reprots with measrurement data table should be provided. AC as well as battery operation . Built in AC interference , noise filter and baseline connection.	3
12.02	Hospital information Management System with 3 Servers and Terminals	1
12.02	Sucker Machine The electronically controlled foot paddle and selection of variable capacity accumulation jars give wide range of working facilities to the operator. Motor Type: Oilless Voltage: 230 VAC +/- 10% Max. Vacuum: -745 mmHg +/-5% Max Free Air Flow Rate: 45/60/90 LPM +/- 10% Noise Level: <50 dB	3
12.03	Weighing Machine Stand on Minimum value: 0.5 kg Height range: 80 to 210cm Minimum value of height: 0.5cm Loading platform area 375Lx275W mm Maximum weight: 120, 150 and 160 kg	3
12.04	Temporary Pace Maker TEMPORARY PACEMAKERS Dual Chamber Multi programmable modes. Rate atleast 30-180 during normal function. Rate upto 450 for overdrive pacing. Cross talk prevention. Maintain pacing during battery change. Atleast 01 week battery life. Cable connector for connecting to TPM lead Variable AV delay. Status warning indicators. Indicators for sensing, pacing and battery status. FDA approved. Protection against defib shock. SINGLE CHAMBER TPM Multi programmable modes. Rate atleast 30-180 during normal function. Rate upto 450 for overdrive pacing. Maintain pacing during battery change. Atleast 01 week battery life. Cable connector for connecting to TPM lead Indicators for sensing, pacing and battery status. FDA approved. Protection against defib shock.	2
12.05	Floor Srubbing Machine With the use of water along get excellent cleaning results in the case more stubbom dirt can easily add a small amount of detergent. Three commands of brush, washing, and drying solution tank and recovery tank removable Handy cord integrated in the machine Two independent motors Dries instantly using power vacuum motor Wash and dry both forward and reverse having double squeegee, front and rear Greater cleaning efficiency, having special rotation brush that removes dirt deep without being aggressive and without leaving marks. Can be operate for entire lenth to structures below 20 cm from the floor. Power requirement: 220 – 240V, 50 Hz	6
12.06	Nebulizer Aerosol with piston Electro compressor. • Nebulizing rate: 0.25 ml/minute or better • Compressor Pressure 40 psi or better. • Compressor air flow: 10lit/min or more. • Noise Level: 60db or less. • Granule-metric size of medication: 1-10 microns by means of multi PIPSER Component	3
12.07	Diagnostic Set Adult & Paeds Diagnostic set comprising with 3 standard specula. • With ophthalmoscope head. • Battery Handle with chargeable batteries • Nasal speculum, • Laryngeal stem to take tongue depressor, • Laryngeal or post nasal mirror • Antrum sheath. • Large handle and two spare lamps. • All to be supplied complete in plastic covered case.	3
12.08	Blood Pressure Aparatus Sphygmomanometer in lightweight case. • Recessed plastic manometer tube range 0-300mm Hg with shatter proof reservoir. • Velcro fastening cuff for adult and Paeds. • Provision for storage for bulb, valve tubing and cuffs.	20
12.09	Stethoscope Lightweight aluminum/ S S adult chest piece construction. • Adjustable chrome binaural • Flexible one piece molded 'Y' PVC tubing. • Ergonomic plastic ear tips..	20
12.10	Refrigerators Top mount refrigerator type, Direct cool cooling technology. Temperature control thermostat, extra wide design, Glass door with mirror finish. Thicker door insulation. Inverter technology for save 40% energy. IR Technology for Health and Hygiene. Need no stabilizer. Capacity: 525L. Durable compress. Refrigerant: R600a. Temp of refrigerator: +5 C Temperature of freezer: -25C No of shelves total: 5 Nos	3
	Total	**MISCELLANEOUS**