NO		Item specifications	No of Items	Fill your specifications
1		**Defibrillator**		
		Defibrillator for reviving heart functionality by applying selected electirical energy on the chest wall of the patient		
		Manual and Automated external defibrillation (AED) mode		
		Synchronized & asynchronized cardioversion		
		Biphasic defibrillator with energy range 0-270J joule		
		Should include TFT or LCD display screen > 6"		
		Delivered energy indicator (meter)		
		Standard external paddles for adults and pediatric with charge/ discharge controls		
		Chargeing time: < 15 sec. for 270J		
		Should include a 3-leads ECG monitor for vital cardiac signs monitoring		
		ECG leads and including reuslable electrodes		
		Should include paper speed: 25/50 mm/s for recorder		
		Should include abnormal heart rate alarm		
		Cotrolable alarm volume		
		Should have the capability to work directly on mains electrical supply as well as on a battery.		
		Should have a rechargeable battery with charging indicator.		
		Should include Low battery indicator		
		Should have self test capability		
		General requirements		
		Input power supply: 220 ± 20% AC V , 50Hz ,		
		Working temperature 0 till +50 degrees celsius		
		CE or FDA approved device		
		Service manual (English language)		
		Operation manual (English language)		
		Comprehensive warranty for 2 years from acceptance.		
2		**Fully Automated Coagulation**		
		Fully Automated Coagulation Analysis		
		A microprocessor controlled desk top, coagulation analyzer to include PT, PTT, TT and thrombin.		
		4 measuring channels		
		Cap piercing		
		Sample throughput up to 160 tests/h (without cap piercing)		
		Sample throughput up to 120 tests/h (with cap piercing)		
		Chromogenic, immunological and coagulometric tests		
		Open system, suitable for almost all reagents		
		Derived fibrinogen		
		Positive patient identification, all commercial barcodes		
		Automatic pre-dilution		
		Automatic test repetition		
		Automatic calibration curve creation		
		Automatic level detection		
		Follow up test (reflex test)		
		Digitalised measuring results recording		
		QC programme		
		Up to 30,000 patients' data, incl. reaction curves		
		Collection tubes		
		Operating Environment		
		The unit shall be capable of operating continuously in ambient temperature of 10 -40deg C and relative humidity of 15-90%		
		The unit shall be capable of being stored continuously in ambient temperature of 0 -50deg C and relative humidity of 15-90%		
		Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.		
		Suitable UPS with maintenance free batteries for minimum 30 min. back-up shall be supplied with the system.		
		Standards and Safety Requirements		
		Must submit ISO13485:2003/AC:2007 for Medical Devices AND		
		Should be FDA/CE/BIS approved product.		
		Shall meet internationally recognised for Electromagnetic Compatibility(EMC) for electromedical equipment: 61326-1.		
		Certified to be compliant with IEC 61010-1, IEC 61010-2-281, 61010-2- 101 for safety.		
		User Training		
		Must provide user training (including how to use and maintain the equipment).		
		Warranty		
		Comprehensive warranty for 2 years from acceptance.		
		Maintenance Service During Warranty Period		
		During the warranty period supplier must ensure planned preventive maintenance (PPM) and corrective/breakdown maintenance whenever required.		
		Installation and Commissioning		
		The bidder must arrange for the equipment to be installed and commissioned by certified or qualified personnel; any prerequisites for installation to be communicated tothe user in advance, in detail.		

		Documentation		
		User (Operating) manual in English Should provide 2 sets(hardcopy and soft-copy)		
		Service (Technical / Maintenance) manual in English Should provide 2 sets(hardcopy and soft-copy)		
		List of important spare parts and accessories with their part number and costing.		
		Certificate of calibration and inspection from factory.		
3		**Muti angles operation Table (neurosurgery)**		
	1	**Description of Function**		
	1.1	Hydraulic operating tables are simple tables for performing surgical procedures and it works without electrical powerSuitable for neurosurgery.		
	2	**Operational Requirements**		
	2.1	OT Table is required for Neurosurgery .		
	3	**System Configuration**		
	3.1	Operating Table Hydraulic with complete accessories and neurosurgery attachment(multi angles).		
	4	**Technical Specifications**		
	4.1	Four section table top with divided foot section.		
	4.2	The table shall be mobile on castors with efficient braking system for stability during surgery.		
	4.3	Table top must be constructed from a high-pressure laminate to permit x-ray penetration and fluoroscopy.		
	4.4	All table positioning, i.e., height, back section, lateral tilt, trendelenburg, and anti-trendelenburg, except foot and head section must be operated hydraulically.		
	4.5	Shall have a manual position selector, whose location must be interchangeable between foot and head end.		
	4.6	The casings on the frame and centre supporting column must be made of hygienic stainless steel.		
	4.7	Mattress must be radio lucent and suitable for fluoroscopy.		
	4.8	**Dimensions (approx. +/- 10 % variations):**		
		Height: 730-1040 mm.		
		Side tilt: + 15 degrees.		
		Back section adjustment: - 15 degrees to 70 degrees.		
		Foot section adjustment: - 90 to 0 degree, detachable.		
		Trendelenburg: 25 degree.		
		Anti trendelenburg: 25 degree.		
		Head section adjustment: -40 to -30 degrees, detachable.		
		Maximum width: 555 mm.		
		Length: 1950 mm.		
	5	**Accessories, spares and consumables**		
	5.1	Accessories:		
		Attachment frame for positioning the patient in sitting position.		
		Arm Board		
		Wristlet		
		Body straps		
		Anaesthesia screen		
		Radial setting clamp		
		Horse shoe with connecting fixtures adults		
		Horseshoe with connecting fixtures paediatrics.		
		Wrist support.		
		Accessories for prone and knee-chest posit		
		Padded arm rest with straps: pair with damps.		
		Side supports: pair with clamps.		
		Knee crutches: pair with damps.		
		X-ray cassette tray.		
		Kidney bridge.		
		SS bowl with clamps.		
		Infusion rod with clamp.		
	5.2	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.		
	6	**Operating Environment**		
	6.1	The product offered shall be designed to be stored and to operate normally under Climate, Temperature,Humidity, etc. for Sudan.		
	7	**Standards and Safety Requirements**		
	7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.		
	8	**User Training**		
	8.1	Must provide user training (including how to use and maintain the equipment).		
	9	**Warranty**		
	9.1	Comprehensive warranty for 2 years after acceptance.		
	10	**Maintenance Service During Warranty Period**		
	10.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.		
	11	**Documentation**		
	11.1	User (Operating) manual in English.		
	11.2	Service (Technical / Maintenance) manual in English.		
	11.3	List of important spare parts and accessories with their part numbers and costing.		

	11.4	Certificate of calibration and inspection from factory.		
4		**Non Invasive Cardiac Output Monitor**		
		⍰ The monitor should be Non invasive technology based, portable, compact.		
		⍰ It should have:		
		i. High resolution , light weight ,with at least 10" colour TFT display		
		ii. Impedance plethysmography principle based.		
		iii. Non invasive technique to measure continuous cardiac output (CO) and its variables i.e. CI,SV,SI,SVR,SVRI,HR		
		iv. User friendly display and menu flow with patient information & compatible consumables		
		v. Real time signal processing		
		vi. Data storage, analysis and reporting facility for at least 200 patients		
		vii. Printer compatibility		
		viii. FDA/CE/BIS approved product		
		ix. Compatible to requisite IEC standards		
		x. Future upgradeable to peripheral flow measurement(both arterial & veins)		
		xi. To be supplied with set of 200 patients consumables.		
		Documentation		
		User (Operating) manual in English.		
		Service (Technical / Maintenance) manual in English.		
		List of important spare parts and accessories with their part numbers and costing.		
		Certificate of calibration and inspection from factory.		
		Warranty		
		Comprehensive warranty for 2 years from acceptance.		
		Maintenance Service During Warranty Period		
		Input power supply: 220 ± 20% AC V , 50Hz ,		
		Suitable UPS with maintenance free batteries for minimum 30 min. back-up shall be supplied with the system.		
5		**3 Pin HEAD Fixator**		
		Standard		
		Warranty for 2 years		
		CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.		
6		**Air Drill**		
	1	**Description of Function**		
	1.1	The drill system is required to saw, cut dissect, curette, abrade, carve and shape the skull bones and the vertebral bodies, bio-metal, bio-plastics, methacrylate, ceramics and the like.		
	2	**Operational Requirements**		
	2.1	The drill system must be able to saw, cut dissect, curette, abrade, carve and shape the skull bones and the vertebral bodies, bio-metal, bio-plastics, methacrylate, ceramics and the like. A wide range of attachments and dissecting tips both for routine and microsurgical work required.		
	3	**System Configuration**		
	3.1	Pneumatic Drill Machine for Neurosurgery with complete accessories.		
	4	**Technical Specifications**		
	4.1	Motor speed must be at least 80,000 rpm, operating pressure up to 100-200 psi (variable).		
	4.2	Motor must be light weight (preferably less than 70 grams).		
	4.3	Main motor unit must be detachable from air supply hose.		
	4.4	Straight and angled attachments of various lengths must be available for Cranial and Spinal surgery.		
	4.5	Keyless Change of hand piece with mounted tool must be possible.		
	4.6	Motor must be converted to an angulated position with or without an adaptor.		
	4.7	Sound level must be very low less than 85db close to the operating field		
	4.8	Quick coupling attachment must be available.		
	4.9	Sterilization through Flash or Regular steam autoclave.		
	4.1	Perforator driver with cutter must be available.		
	4.11	Must have Saw hand piece (reciprocating, oscillating and sagittal with saw blades) with same system. Foot control for variable speed.		
	4.12	Compatible low noise medical grade air compressor to run the machine optimally at the required psi.		
	4.13	Irrigation pump must be available.		
	5	**Accessories, spares and consumables**		
	5.1	Shall supply all accessories including:		
		Handpieces:		
		⍰ Straight hand piece 120mm: 01 no.		
		⍰ Straight hand piece 90mm: 01 no.		
		⍰ Straight hand piece 160mm: 01 no.		
	5.2	**Craniotomy Attachment:**		
		⍰ Craniotome hand piece: 01 no.		
		⍰ Fixed Duraguard adult: 01 no.		
		⍰ Fixed Duraguard paediatrics: 01 no.		
	5.3	**Craniotome Cutter (Bits):**		
		⍰ Craniotome cutter (bits) paediatrics: 20 nos.		
		⍰ Craniotome cutter (bits) adult: 20 nos.		
	5.4	**Perforator:**		
		⍰ Perforator driver: 01 no.		
		⍰ Cranial perforator, 9X12mm, Hudson type: 02 nos.		

		? Cranial perforator, 6/9mm, Hudson type: 02 nos.		
		? Hudson chuck: 01 no.		
	5.5	**Burrs:**		
		? Rosen burr for medium hand piece: 10 nos.		
		? Diamond burr for medium hand piece: 10 nos.		
		? Diamond burr for large hand piece: 5 nos.		
		? Barrel burr for medium hand piece: 10 nos.		
		? Barrel burr for large hand piece: 05 nos.		
		? Acorn burr for small hand piece: 10 nos.		
		? Pin Point burr for medium hand piece: 25 nos.		
		? Twist drill for small hand piece: 10 nos.		
	5.6	**Micro Sagittal Saw Attachment:**		
		? Micro sagittal saw pencil shape: 01 no.		
		? Saw blade for micro sagittal saw 9/13/0.3/0.3mm: 04 nos.		
	5.7	**Storage & Maintenance:**		
		? Oil spray for high speed motor and hand pieces: 50 nos.		
		? Oil spray for perforator: 05 nos.		
		? Autoclaveable perforated basket with covering lid with holders for motors, all other accessories		
	5.8	**All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.**		
	6	**Operating Environment**		
	6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.		
	6.2	**Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.**		
	6.3	Suitable UPS with maintenance free batteries with voltage regulation and spike protection for minimum 30 min. back-up shall be supplied with the system.		
	7	**Standards and Safety Requirements**		
	7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND CE (93/42 EEC Directives) or USFDA approved product certificate.		
	7.3	**Electrical safety conforms to standards for electrical safety IEC 60601-1 General requirement for Electrical safety of Medical Equipment.**		
	8	**User Training**		
	8.1	**Must provide user training (including how to use and maintain the equipment).**		
	9	**Warranty**		
	9.1	**Comprehensive warranty for 2 years.**		
	10	Maintenance Service During Warranty Period		
	10.1	During warranty period supplier must ensure preventive maintenance & corrective/breakdown maintenance whenever required.		
	11	**Documentation**		
	11.1	User (Operating) manual in English.		
	11.2	Service (Technical / Maintenance) manual in English.		
	11.3	List of important spare parts and accessories with their part numbers and costing.		
	11.4	Certificate of calibration and inspection from factory.		
7		**Anesthesia machine**		
	1	**Anesthesia Machine for Adult, Pediatric and Neonates anesthetization with the following specifications:**		
		Compact 3 gases O2, N2O and Air		
		Internal pressure regulators for O2 and N2O		
		O2 and N2O hosts		
		Flowmeter flow range: O2 = 0.1 - 15 L/min, N2O = 0.1 - 15 L/min, Air = 0.1 - 15 L/min		
		Audible and visible alarms in case of loss of O2 supply pressure		
		Hypoxic control ratio if O2 drops (O2 bellow 21%) , at least 200ml/min or 25% col% for N2O as carrier gas.		
		Automatic N2O cut-off device in case of O2 failure		
		Emergency Oxygen Flush > 35LPM.		
		Should have pressure relief valve, with auto-reset feature, non return valves and oxygen flush.		
		Adult, pediatric and neonates autoclaveable silicon patient circuits		
		Test lung		
		Trolley with at least 2 drawers and mounted on four castors (two castors with breaks)		
	2	**Vaporizer:**		
		Maintenance free halothene and Isoflurine vaporizers with a capacity of more than 225ml. Each.		
		Suitable for low flow applications.		
	3	**Absorber:**		
		Canister contains more than 1 kg soda lime		
		Allow change over from open circuit to close circuit and from manual mode to ventilator mode without interchanging connection.		
		Fully autoclaveable.		
		Manometer for measuring circuit pressure.		
		Inbuilt beg vent switch & APL vavle		
		Adult circuit & pediatric circuit		
	4	**Build-in ventilator**		

		A microprocessor controlled ventilator		
		Large colored display approx. 10" .		
		Ventilation methods: volume mode (IPPV), Pressure mode (PCV)		
		Ventilation Modes: VCV, PCV, SIMV-V+PSV, SIMV-P+PSV, SIGH, SPONT & manual modes		
		Tidal Volume range from 20ml to 2000ml suitable for Adult, Pediatric & Neonates		
		PEEP in volume mode and pressure ventilation modes		
	5	**General requirements**		
		Input power supply: 220 ± 20% AC Volt , 50Hz , schuko		
		Working temperature 0 till +50 degrees celsius		
		CE or FDA approved device		
		Service manual (English language)		
		Operation manual (English language)		
		Comprehensive warranty for 2 years.		
8		Artery Forceps		
		Certified stainlss steel		
		18cm		
		straight		
		Comprehensive warranty for 2 years.		
		CE or FDA approved device		
9		**Autoclave full automated 40L**		
	1	**Description of Function**		
	1.1	Autoclaves are required for sterilizing an object in high temperature and high pressure steam.		
	2	**Operational Requirements**		
	2.1	Microprocessor based electrically heated vertical steam sterilizer		
	3	**System Configuration**		
	3.1	Microprocessor based Autoclave (Vertical Model) with complete accessories.		
	4	**Technical Specifications**		
		capacity: approx. 40 L.		
		Vertical type.		
		Stainless steel.		
		Digital controlled temperature and pressure system.		
		Steam sterilization, up to 135° C		
		Digital temperature and pressure gauges.		
		Safety devices : over heat (low water cut-off switch , safety valve and release valve)		
		Automatic controlled sterilization cycle.		
		2 modes sterilization (121°c - 134°c)		
		Exhaust system.		
		Stainless steel basket.		
		Double wall case.		
	5	**Accessories, spares and consumables**		
		Spare heating element- 2 set		
		All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.		
	6	**Operating Environment**		
	6.1	The product offered shall be designed to be stored and to operate normally under Climate ,Temperature , Power supply , Humidity, etc. for Sudan.		
		Power supply: 220-240V/ 50 Hz AC Single phase with appropriate plug .The power cable must be minimum 3 Meter		
	7	**Standards and Safety Requirements**		
	7.1	Must submit ISO 9001 or ISO13485:2003/AC:2007 for Medical Devices AND		
	7.2	CE or USFDA approved product certificate.		
		Shall meet IEC 61010-2-040 Safety requirements for electrical equipment for measurement, control and laboratory use - Part 2-040: Particular requirements for sterilizers and washer-disinfectors used to treat medical materials.		
	8	**Warranty**		
	8.1	Comprehensive warranty for 2 years.		
	9	**Maintenance Service During Warranty Period**		
	9.1	During warranty period supplier must ensure corrective/breakdown maintenance whenever required.		
	10	**Installation and Commissioning**		
	10.1	The supplier must accomplish proper commissioning of the item onsite.		
	11	**Documentation**		
	11.1	User and/or service manual shall be supplied in English.		
	11.2	User (Operating) manual in English		
	11.3	Service (Technical / Maintenance) manual in English		
	11.4	List of important spare parts and accessories with their part numbers and costing.		
	11.5	Certificate of calibration and inspection from factory.		
	11.6	Comprehensive warranty for 2 years.		
		CE or FDA approved device		
10		**Benzene Burner**		
		For use with butane / propane gas (include all accessories for hook up to butane cylinder)		
		Extern 1tube light 130mm		
		with air and gas regulator		

		Comprehensive warranty for 2 years.		
		CE or FDA approved device		
11		Bipolar Coagulator+Monopolar		
		Nominal HF output: 300W at ~400Ω		
		At least 2 modes of operation: mono-polar cutting and mono-polar/bipolar coagulation.		
		Mono-polar cutting modes shall have different level of effects from pure cutting to blend cutting (cutting with haemostasis).		
		Come with 3 mono-polar coagulation modes: soft, forced and spray		
		Desiccate mode for low voltage contact coagulation suitable in delicate tissue work		
		Fulgurate mode for efficient non-contact coagulation in most applications.		
		Spray mode for coagulation large tissue areas with minimum depth of necrosis.		
		Come with 3 bipolar modes: precise, standard and macro or equivalent.		
		Precise mode to have fine control of desiccation in delicate tissue.		
		Standard mode for applications at low voltage to prevent sparking.		
		Macro mode for applications on tissue with high resistance.		
		Control panel with digital setting and display of power of modes used.		
		All mono-polar and bipolar modes shall be controllable by hand switch and footswitch.		
		Bipolar mode can be activated by either foot pedal and / or auto coagulate by using forceps.		
		Footswitches shall be splash proof and unaffected by common OR fluid spills, easy to clean, have suitable mechanical protection against accidental pedal depression		
		and Switches shall not be susceptible to sticking in the ON position.		
		Unit must have automatic power regulating feature to always keep minimum current to the patient throughout the procedures.		
		come with Return Electrode Contact Quality Monitors (RECQMs) to monitor the quality of electrode-skin contact to eliminate the risk of patient's burn. It shall give		
		audio- visual alarm and deactivate output if contact between patient and electrode is loosened or disconnected.		
		Come with output Leakage controller.		
		Shall have over current protection.		
		Shall be able to be activated from only one output at a time.		
		Must have an undefeatable audible activation-tone indicator/alarm.		
		The unit must have RF activation port to tell other equipment like ECG or EEG that RF current is being generated.		
		Accessories, Spare Parts and Consumables		
		All standard accessories/consumables/parts required for the proper operation of the above item shall be included in the offer. Bidders shall specify, in a separate		
		Excel worksheet, the quantity and details of any items included in this offer which have not been specified in this Technical Specifications Forms.		
		Comprehensive warranty for 2 years.		
		CE or FDA approved device		
12		**Blood and infusion Warmer**		
		Modular type Microprocessor controlled unit for warming & infusion of intravenous & irrigating solutions.		
		With facility to store the warm fluid.		
		Temperature range: 37° C-42° C, with Accuracy of +/- 0.5° C of set temp point.		
		Temperature (in Fahrenheit and Celsius) shall be set & monitored through digital LED display.		
		The set temperature shall be achieved in less than half an hour.		
		Desirable feature of delivery of high volumes and flows while constantly maintaining the infusion temperature.		
		Shall have safety feature of cut-off protection with alarms preferably audio-visual, if temperature exceeds 1.5-2° C of set temperature.		
		Cabinet shall be of good quality having minimum two drawers to store accessories & keep the warm solution bags to remain warm till infusion.		
		The approx. capacity & dimensions of cabinet: · 2.0-3.0 cu feet volume · Overall cabinet dimension: 400-410 x 780-790 x 700-710 mm · Internal dimensions:		
		360-370 x 670 x 580-590 mm		
		Storage temperature in cabinet shall be in the range between 37 oC-40 oC.		
		It shall accommodate selected temperature flow rates from KVO to approx. 500 ml/min.		
		Unit shall be mobile on heavy duty castor with locking brakes. 5 Accessories, spares and consumables		
		All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer. Bidders		
		must specify the quantity of every item included in their offer (including items not specified above). 6 Operating Environment		
		The system offered shall be designed to be stored and to operate normally under the conditions of the user's country. The conditions include Power Supply, Climate, Temperature,		
		Humidity, etc.		
		Power supply: 220 – 240 V		
		Comprehensive warranty for 2 years.		
		CE or FDA approved device		
13		**Blood bag monitor & miatures**		
		Technical Specifications		
		Should have gentle mixing procedure and control of collection time. .Adjustable mixing cycles with max 32 cycles/min		

		Should have battery back up of minimum 8 hrs with battery status displayed at the start of procedure		
		Should have automatic tube detection system		
		Should have automatic calibration procedure with the help of software		
		Should have handy transportation shoulder carrying bag		
		Should be compatible with Computer & facility to store collection records within, with the help of inbuilt memory		
		Should have automatic counter balancing at start of procedure.		
		Should have manual and motorized working tube clamp.		
		Should be suitable for all type of blood bag in the market.		
		Measure gross or net volume with the best accuracy & max deviation level of ± 2ml		
		Automatic check on Blood flow and collection with buzzer alarm with notification of flow incidents & flow rate accuracy of ± 5ml/min		
		Continues display of collected volume, flow and time during collection.		
		Pre-programmed standard volumes of 350, 400,450,500 ml		
		Adjustable limit for low and high flow and time alarm. There should be a buzzer alarm incase blood flow rate falls below 20 ml/min and above 180 ml/min		
		Repetitive notification of completed collection very minute including gentle mixing to avoid coagulation.		
		Should be CE Marked and should have quality standards like ISO/USA FDA approval.		
		Should comply with PTC (self recovery overload protection)		
		Comprehensive warranty for 2 years.		
		CE or FDA approved device		
14		**Blood culture Machine**		
		Fully automated, walk away and continuous monitoring system.		
		System should be capable of detecting growth of the pathogenic organisms from blood and sterile body fluids.		
		Detection principle should be based on sensitive Florescence/ Colorimetric/Pressure Difference Technology.		
		System should have minimum 100 to 120 sample positions.		
		System should be able to process minimum 15 fresh samples per day.		
		Should have media with Antibiotic Neutralizing agents for optimized recovery from various patients those are under treatment.		
		System should have Auto QC facility .		
		Should have special media for Paediatric samples and low volume sterile body fluid samples.		
		Should have Anaerobic media and Media for increased detection of partially phagocytosed organisms.		
		Should have media for optimal recovery of yeasts, fungi, and mycobacterium from blood samples.		
		Media should not have any masking effect for easier interpretation of Gram Staining of the positive isolates.		
		Should have special supplement for enhanced recovery of low volume sterile body fluids.		
		Firm should provide minimum of five years warranty of the system and should provide free AMC for five years after the expiry of the warranty period.		
		Should provide following culture bottles(Free of cost) along with the system:		
		Pediatric Culture Bottle: 400.		
		Adult Aerobic culture bottle with Antibiotic Neutralising agent :400.		
		Training of the staff should be provided on site by the company with using their own consumables and reagents.		
		The company should have a team of well trained engineers who can provide the instrument service and maintenance same day support.		
		In built bar code scanner.		
		Should have audible alarm and visible display for the positive culture.		
		Must have the listed Advanced algorithms:		
		Low Blood Volume		
		Pediatric Specimens		
		Slow growing organisms such as Haemophilus and Neisseria		
		Provide Rapid Detection in Blood culture		
		Extended Delay Vial Entry Capability		
		Must be user friendly system with minimal daily, weekly, monthly, maintenance and calibration procedures. Please state times associated with		
		these procedures.		
		Must have an on-board data tracking system.		
		Should have an audible and visual alarm system to alert technologist that a positive bottle has been detected.		
		Must be supported by a complete line of media which included but not limited to resin-based (including pediatric) media, media for recovery of yeast,		
		fungi and mycobacteria..		
		Must have automated built in testing which provides continuous quality control of every well.		
		System must be compatible with Plastic Culture		
		Must not require connections or venting units, biohazard hood or special clothing.		
		Must allow direct draw sample collection for bottles.		
		Must be ergonomically designed to provide ease of access for loading and unloading of bottles.		
		Must have a Data Management System with a bar code scanning function to enter patient demographics.		

		All future software upgrades and necessary hardware to support such upgrades must be provided free of charge.		
		Must include power protection against power surges to protect equipment.		
		Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.		
		System should be supplied along with on line UPS with minimum 30 minutes back up.		
		Comprehensive warranty for 2 years.		
		CE or FDA approved device		
15		**Patient Monitor(NIBP)**		
	1	**Description of Function**		
	1.1	NIBP Monitor measures and displays Blood Pressure values with inflation of the cuffs and is non-invasive in operation.		
	2	**Operational Requirements**		
	2.1	Compatible for use in new-borns to adults.		
	3	**System Configuration**		
	3.1	NIBP Monitor light weight, portable and with all standard accessories.		
	4	**Technical Specifications**		
	4.1	The monitor must be compact in size, light weight and portable.		
	4.2	Measurement method: Oscillometric using linear deflation.		
	4.3	Pressure detection: Conductor pressure sensor		
	4.4	Continuously display of BP (systolic, diastolic, mean and pulse rate at intervals of 2, 3,5,10,15,20,30 up to 180 minutes).		
	4.5	Shall have facility of self-check system/self-test.		
	4.6	Pressure: 00 to 300 mm of Hg, Accuracy: + - 5 mm with standard deviation not greater than 8 mm of Hg.		
	4.7	Pulse range: 40 -240 /minute, accuracy: +/- 2%.		
	4.8	Patient alarms :		
		Systolic upper limit-60 -240 and lower limit 20-160 mm of Hg.		
		MAP (Mean Arterial Blood Pressure) upper limit: 60 -200 mmHg and lower limit 20 -120 mmHg.		
		DIA upper limit-50 -180 and lower limit 15-120 mm of Hg.		
		P.R upper limit-80 -220 and lower limit 40 -140/minute.		
	4.9	Memory: 400 measurement capacity.		
	4.1	Printer facility with oscillometric graph of BP and pulse level.		
	4.11	Supplied with various sizes of cuffs from neonate to paediatric ranges e.g. 2.5cm, 3.0 cm, 4.0 cm, 5.0 cm, 9 cm, 12 cm and 14 cm.		
	4.12	Auto cuff deflation in case of over pressure (140 mm of Hg in case of neonatal mode).		
	4.13	Auto zero facility.		
	4.14	Stat mode for critical situation for rapid reading for 5 minutes with a 10 second pause.		
	4.15	Self-diagnostic facility for air leak, application error, dead battery, motion, over pressure, patient alarm, time out and weak signal.		
	4.16	Display: Colour LCD display.		
	5	**Accessories, spares and consumables**		
	5.1	Shall supply adult, paediatric and infant sizes of BP cuffs two of each size.		
	5.2	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.		
	6	**Operating Environment**		
	6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.		
	6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metres in length.		
	7	**Standards and Safety Requirements**		
	7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND		
	7.2	CE (93/42 EEC Directives) or USFDA Or TUV approved product certificate.		
	7.3	Electrical safety conforms to standards for electrical safety IEC 60601-1 General requirement for Electrical safety of Medical Equipment.		
	8	User Training		
	8.1	Must provide user training (including how to use and maintain the equipment).		
	9	Warranty		
	9.1	Comprehensive warranty for 2 years after acceptance.		
	10	Maintenance Service during Warranty Period		
	10.1	During warranty period supplier must ensure corrective/breakdown maintenance whenever required.		
	11	Documentation		
	11.1	User (Operating) manual in English.		
	11.2	Service (Technical / Maintenance) manual in English.		
	11.3	List of important spare parts and accessories with their part number and costing.		
	11.4	Certificate of calibration and inspection from factory.		
16		**Patient Monitor (multi parmeter)**		
	1	**Description of Functions**		
	1.1	A bedside patient monitor to monitor physiological parameters of patients in the critical care units or operating theatres.		
	2	**Operational Requirements**		
	2.1	It shall operate on AC power supply as well as built-in battery.		

	3	**System Configurations**		
	3.1	Monitor Patient Bedside 4 chl. colour with ECG/Resp., SpO2, NIBP, Temp, 2IBP, ETCO2 , CO		
	3.2	All accessories, consumables and etc. required for monitoring of physiological parameters specified herein.		
	4	**Technical Specifications**		
	4.1	High resolution colour flat panel non-reflective screen: > 12" display size for at least 4 channel waveforms display		
	4.2	Display of up to 4 physiological parameter modules without the need for external devices		
	4.3	Display waveform: ECG, IBP, SpO2,CO, pulse wave and respiration.		
	4.4	Numeric data display: heart rate / pulse rate, respiration rate, NIBP (Systolic, Diastolic, Mean), SpO2 and current time of NIBP measurement.		
	4.5	Use interaction via integrated touch screen, press pad/button or rotary knob.		
	4.6	With storage of at least 24 hours of trend data in 30-second sampling resolution for all monitored parameters to be displayed graphically and in tabular form.		
	4.7	Data resolution shall be minimum of 30 second sampling.		
	4.8	Display of trend:		
	4.9	a) Trend tables in at least with 1, 5, 15, 30 or 60 -minute display formats; and		
	4.1	b) Trend graphs in at least 1, 2, 4, 8, 12 or 24 -hour display formats		
	4.11	With storage of events for event recalling, review and documentation. It shall be able to store and record at least 10 events.		
	4.12	The monitor shall be protected against the interference from the electric cautery and other electrical equipment.		
	4.13	Despite the technical requirements of the networking capability, the networking works shall not be included in this offer.		
	4.14	All parameters modules shall work in all monitors within the network and shall be easily interchangeable by the user. There shall be no restriction on the combination of them.		
	4.15	**Parameter required:**		
	4.16	**ECG/Respiration** with 5 system with cable (1 set) and complete reusable ECG electrodes for Adult & paediatric, 1 set each		
	4.17	ECG cable and patient cable 5 leads for disposable electrodes, 1 set		
	4.18	Disposable electrodes for adult, child and infant, 50 pcs each		
	4.19	Shall come with at least a 2-lead (channel) **ST analysis**		
	4.2	With lethal **arrhythmia detection**: at least with detection & monitoring of asystole, ventricular, fibrillation, and ventricular tachycardia and bradycardia.		
	4.21	**Pulse oximetry SpO2** with adult and child finger transducer, 1 each.		
	4.22	SpO2 reusable sensor for infant, 1pc.		
	4.23	Non-invasive blood pressure, NIBP with reusable NIBP Starter Kit		
	4.24	NIBP connection hose, 1 set		
	4.25	NIBP cuff & tubing for both adult & child (At least 2 different sizes for adult and 4 different sizes for child/ infant/ neonate)		
	4.26	Temperature: 2 type of probes required.		
	4.27	Core temperature probe adult, child & infant, 1 pc each		
	4.28	Skin Temperature probe, adult/child & infant, 1 pc each		
	4.29	Invasive blood pressure, IBP for monitoring of 2 IBP		
	4.3	Shall come with one complete set of IBP reusable accessories		
	4.31	EtCO2, preferably microstream but at least must be able to perform mainstream and side stream EtCO2 monitoring		
	4.32	Come with one complete set of EtCO2 flow sensor and accessories for mainstream and side stream monitoring, 1 set each.		
	4.33	In the case of microstream system, it shall come with one complete set of EtCO2 flow sensor and accessories for side stream monitoring, 1 set		
	4.34	Come with internal rechargeable Lithium battery complete with built-in charger		
	4.35	Monitor shall be operated by the battery for at least 60 minutes		
	4.36	Come with Alarms for all monitored parameters including: exceeding user-selectable upper and lower limits, life threatening alarms, lead/ probe/ sensor disconnection, system failure or error.		
	4.37	Alarm shall have at least 3 levels: Crisis, Warning, and Advisory		
	4.38	Alarm notification shall be given by Audible and Visual		
	4.39	With networking capability to interface with the central monitor		
	4.4	RS232 port with interface with computer		
	4.41	System architecture shall be designed such that deactivation or failure of any bedside or central station device on the network shall not disable, inhibit or degrade communication functions among any other devices in the system.		
	5	Accessories, Spare Parts and Consumables		
	5.1	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.		
	6	Operating Environment		
	6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.		
	6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metres in length.		
	7	Standards & Safety Requirements		
	7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND		
	7.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.		

	7.3	Shall meet IEC-60601-1-2:2001 General Requirements of Safety for Electromagnetic Compatibility.		
	7.4	Shall meet the safety requirements as per IEC 60601-2-27:1994—Medical electrical equipment—Part 2: Particular requirements for the safety of electrocardiographic monitoring equipment.		
	8	User Training		
	8.1	The Supplier shall conduct user training for this equipment to enable operators to use the equipment properly. The training shall include the use of all operational functions of the equipment, as well as routine checks and maintenance expected by users.		
	9	Warranty		
	9.1	Comprehensive warranty for 2 years.		
	10	Maintenance Service During Warranty Period		
	10.1	During the warranty period supplier must ensure planned preventive maintenance (PPM) along with corrective/breakdown maintenance whenever required.		
	11	Documentation		
	11.1	User (Operating) manual in English		
	11.2	Service (Technical / Maintenance) manual in English		
	11.3	List of important spare parts and accessories with their part numbers and costing.		
	11.4	Certificate of calibration and inspection from factory.		
17		**Patient Monitor(vital sign monitor)**		
	1	**Description of Function**		
	1.1	NIBP/Vital Sign Monitor is used to continuously monitor the vital parameters including NIBP of critically ill patients.		
	2	**Operational Requirements**		
	2.1	Capability of storage of patient data and printing of patient reports.		
	2.2	Capability to integrate with the HIS and transfer the data through LAN / Wireless LAN to any other monitoring room / doctor's desk. Must be HL-7 compatible for transmitting and receiving data to/from LAN/HIS		
	3	**System Configuration**		
	3.1	NIBP/Vital Signs Monitor with complete accessories.		
	4	**Technical Specifications**		
	4.1	Monitoring parameters;- ECG, respiration,NIBP,SPO2 and temperature		
	4.2	Digital and 6 waves / traces display on minimum 9 inches TFT/LCD Display Screen.		
	4.3	Monitor must have audible and visual alarms capability. Alarms must have three distinct audible alarm tones to distinguish alarm levels as under. Also monitor must permit automatic viewing of alarming parameter waveform and numeric from any bedside in alarm as and when connected in a network.		
	4.4	Must include hemodynamic calculations and vital sign and graphic trends. Trends must be automatically stored for at least 24 hours in at least one minute intervals.		
	4.5	Numeric monitored data shall be viewable and recordable in a patient chart type format in at least 1, 5, 15, 60 minutes intervals.		
	4.6	Convenient handle for carrying the same		
	4.7	Able to fix with bed/trolley.		
	4.8	Inbuilt rechargeable battery for minimum 3 hours of operation.		
	5	**Accessories, spares and consumables**		
	5.1	**Accessories:**		
		Patient cable -01 no.		
		Adult Cuff – 01 no.		
		Paediatric Cuff -01 no.		
		Adult Probe SPO2 -02 nos.		
		Paediatric Probe SPO2 -02 nos.		
		Skin Temp Probe -02 nos.		
	5.2	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.		
	6	**Operating Environment**		
	6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.		
	6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.		
	7	**Standards and Safety Requirements**		
	7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND		
	7.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.		
	7.3	Shall meet IEC-60601-1-2:2001 General Requirements of Safety for Electromagnetic Compatibility or must comply with 89/366/EEC; EMC directive.		
	7.4	Shall meet the safety requirements as per IEC 60601-2-27:1994—Medical electrical equipment—Part 2: Particular requirements for the safety of electrocardiographic monitoring equipment.		
	8	**User Training**		
	8.1	Must provide user training (including how to use and maintain the equipment).		
	9	**Warranty**		
	9.1	Comprehensive warranty for 2 years from acceptance.		
	10	Maintenance Service During Warranty Period		
	10.1	During the warranty period supplier must ensure planned preventive maintenance (PPM) and corrective/breakdown maintenance whenever required.		
	11	**Documentation**		
	11.1	User (Operating) manual in English		

	11.2	Service (Technical / Maintenance) manual in English		
	11.3	List of important spare parts and accessories with their part number and costing.		
	11.4	Certificate of calibration and inspection from factory.		
18		**Centrifuge**		
	1	**Description of Function**		
	1.1	Centrifuges are required in the laboratory to separate various components of Blood for analysis.		
	2	**Operational Requirements**		
	2.1	Aerodynamic compact construction for vibration free performance.		
	3	**System Configuration**		
	3.1	Centrifuge with complete accessories, adaptors.		
	4	**Technical Specifications**		
		Volume of tube: 15 ml.		
		Rotor Type: Fixed OR swing-out to take 6x15ml - 12x15ml tubes		
		Speed Range: 4000 - 6000 rpm (or higher)		
		Drive Motor: Brushless motor.		
		Digital display and control for speed and time.		
		Stainless Steel Chamber.		
		LID Lock.		
		Line voltage: 220 ± 20 % 50 Hz.		
	5	**Accessories, spares and consumables**		
		Aerosol-resistant caps for buckets / lid for rotor		
		Adapters for 15 ml tubes		
		All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.		
	6	**Operating Environment**		
	6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.		
	6.2	Power supply: 220-240V/ 50 Hz AC Single phase with appropriate plug .The power cable must be minimum 3 Meter		
	7	**Standards and Safety Requirements**		
	7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND		
	7.2	CE (93/42 EEC Directives) or USFDA approved product certificate.		
	7.3	Must comply with IEC/TR 61010-3-020 :Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 3-020: Conformity verification report for IEC 61010-2-020:1992 Particular requirements for laboratory centrifuges"		
	8	**User Training**		
	8.1	Must provide user training (including how to use and maintain the equipment).		
	9	**Warranty**		
	9.1	Comprehensive warranty for 2 years after acceptance.		
	10	**Maintenance Service During Warranty Period**		
	10.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.		
	11	**Installation and Commissioning**		
	11.1	Supplier must accomplish proper installation and commissioning of the equipment on site.		
	12	**Documentation**		
	12.1	User (Operating) manual in English		
	12.2	Service (Technical / Maintenance) manual in English		
	12.3	List of important spare parts and accessories with their part numbers and costing.		
	12.4	Certificate of calibration and inspection from factory.		
19		**C Arm**		
	No.	Item Specifications		
	1	**1 Description of Function**		
	1.1	This equipment is used in orthopaedic fractures for imaging of bone pathology or fractures on display monitor during operation/ reduction of fractures.		
	2	**Operational Requirements For continuous fluoroscopy, image storage and retrieval The system offered shall be a general fluoroscopy/radiology system, it should be a non-digital; non-DICOM compatible type.**		
	3	System Configuration		
	3.1	X-ray C-Arm Mobile with complete accessories		
	4	**Technical Specifications**		
	4.1	X-Ray Generator		
		Microprocessor based, high frequency inverter generator		
		Generator Output: not less than 2kW at 100kV		
		Fluoroscopic/ Radiographic KV range		
		Lower limit shall not exceed 40 KV		
		Higher limit shall not be less than 120 KV		
		Fluoroscopic mA range		
		Lower limit shall be ~0.1 mA		
		Upper limit shall be ~9 mA		
	4.2	X-Ray Tube		
		Rotating anode type		
		Single focal spot, shall not be more than 0.6 mm		

		Nominal voltage: 110 kV		
		Anode heat storage capacity not less than 300 KHU		
		Inherent filtration should be at least 3 mm Al eq		
	4.3	Collimator		
		Operator controlled automatic collimation		
	4.4	C-Arm		
		· Focus - I.I. Distance shall be at least 100 cm		
		· Depth shall be ~ 75cm		
		· Horizontal travel at least 200mm		
		· Vertical travel at least 450 mm		
		· Orbital movement shall be ~125°		
		· Swivel range shall be ~12°		
		· Rotation about horizontal axis shall be more than +/-180°		
	4.5	Image Intensifier		
		· At least 23 cm input screen with direct coupling with camera		
		· Shall be at least 52 lp/ cm		
		· Noise reduction, scattered light trap for high contrast dynamics		
		· CCD camera technology with ABC and AGC control		
	4.6	TV Monitor		
		· 2 units LCD monitor side by side for live and reference image		
		· Shall be at least 43 cm with automatic brightness control		
	4.7	Image rotation		
		· Shall be at least 625 scanning lines at 50 Hz		
		· Trolley for 2 display screens and with the alphanumeric keyboard included		
		· High resolution and anti glare		
	4.8	Imaging Modes		
		· Fluoroscopy mode shall have the following facilities:		
		· Continuous fluoroscopy with last image hold		
		· Last image hold with at least two frames image memory		
		· Continuous fluoroscopy with image acquisition rate: about 20 frame/second.		
		· Hard disk with image storage capacity of at least 30000 images		
		· RAM Memory of 256 images		
		· Mosaic display of 16 images		
		· Zoom (x 2)		
		· Measures: at least distances,angles		
		· Come with CD/DVD/RW drive		
	4.9	Video printer for B/W thermal printing on paper, size 20 x 25 cm, resolutions about 300 dpi; The video printer can be placed on the monitor trolley		
	4.1	Indicate here other features and software functions included in this offer		
	5	**System Configuration Accessories, spares and consumables**		
	5.1	Video printer for B/W thermal printing 01 no.		
	5.2	Sterilizable textile cover and clips, for the X-ray tube and the Cassette holder for 24 x 30 cm		
	5.3	All standard accessories/consumables/parts required for the proper operation of the above item shall be included in the offer.		
	6	**Operating Environment**		
	6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.		
	6.2	Should work on 220-240V/ 50 Hz AC Single phase fitted with appropriate plugs and sockets.		
	7	7 Standards and Safety Requirements		
		The unit offered shall be certified to meeting the relevant requirements of TUV, CE mark (MDD), FDA and/ or any equivalent quality and safety standards.		
		Certificates showing the compliance of this unit offered with any relevant quality and safety standards MUST be submitted with this TSF.		
	8	**User Training**		
	8.1	On site operational training till the familiarity of the system and satisfaction of end user shall be provided.		
	9	**Warranty**		
	9.1	Comprehensive warranty for 2 years.		
	10	**Maintenance Service During Warranty Period**		
	10.1	Preventive & Corrective Maintenance:		
		During the warranty period supplier must ensure planned preventive maintenance (PPM) at least 3 nos. in a year along with corrective/breakdown maintenance whenever required.		
	11	**Installation, Inspections and Commissioning**		
	11.1	Supplier must accomplish proper installation and commissioning of the equipment on site.		
	11.2	Inspections to verify the compliance of the offered equipment as per the specifications		
	12	**Documentation**		
	12.1	User (Operating) manual in English		
	12.2	Service (Technical / Maintenance) manual in English		
	12.3	List of important spare parts and accessories with their part numbers and costing.		
	12.4	Certificate of calibration and inspection from factory.		
	12.5	Log book with instruction for daily,weekly, monthly and quarterly maintenance checklist.		
20		**cath lab**		

	No.	Item Specifications		
	1	**Description of Functions**		
	1.1	Multi-axis Single plane System		
	2	**Operational Requirements**		
	2.1	Flat Panel Detector 30 x 30 cm.		
	2.2	Floor mounted C-Arm Support.		
	2.3	It shall operate on AC power supply.		
	3	**System Configurations**		
	3.1	Flat panel digital subtraction Angiography X-ray system, 1 unit.		
	3.2	CD recording and archival, 1 unit.		
	3.3	Integrated 3D Angiography workstation, 1 unit.		
	3.4	Adjustable Lead glass shielding at tableside, 1 unit.		
	3.5	Hemodynamic physiology monitor for DSA use, 1 unit.		
	3.6	Automatic injector suitable for angiography procedures including aortography, 1unit.		
	3.7	DICOM dry laser camera minimum 600 dpi resolution, 1 unit.		
	3.8	Suitable UPS for digital system & for the complete lab, 1 unit.		
	3.9	Lead glass 100cm X 150 cm of 2mm Lead equivalence with suitable frame, 1 piece.		
	3.1	Lead apron, 10 pieces.(lead apron one piece → 5 Pcs , lead apron tow pieces → 5 Pcs)		
	3.11	Thyroid shield, 10 pieces.		
	3.12	Lead goggles, 5 pieces.		
	3.13	Bidder shall indicate brand and model information here and provide technical data document for major components specified above.		
	4	**Technical Specifications**		
	4.1	Bidders shall offer the most recent advanced high end models from the leading manufacturer only. Any deviation in this regard would make the bid to be rejected technically.		
	4.2	**Gantry:**		
	4.2.1	Floor mounted gantry providing full body coverage without repositioning of patient. Gantry must have 0, 90, -90 deg. working positions for easy operation from 3 sides of the patient.		
	4.2.2	Facility for motorized positioning/rotation of stand from the floor pivot by +/-90 degrees for improved workflow and for ease of operation from both left and right side of the patient in addition to zero degree normal head end position. Patient access must be possible from either left or right side. 25 deg. /sec or higher rotation speed with non-contact sensing mechanism (no collision protection switches). Gantry rotation/ angulation +/- 120 deg. and +/- 90 deg.respectively.		
	4.2.3	The system must have capability of memorizing at least 2 positions for easy recall of gantry positions for PTAs (Percutaneous transluminal angioplasty or intervention).		
	4.2.4	The throat depth of the gantry must be 100cm or more for better groin access.		
	4.3	**Table:**		
	4.3.1	Motorized up/down, free floating 4 way table top, least radiation attenuation, at least 200 kg + at least 100kgs of additional weight for resuscitation in the metal free overhang area without having to retract the table back on its base.		
	4.3.2	Table must have tilt facility to enhance the accuracy and efficiency of gravity-oriented procedures.		
	4.3.3	At least +/- 15deg. tilt must be possible.		
	4.4	**Detector:**		
	4.4.1	A 30 x 30cm detector that can be rotated by 90 degrees for better flexibility and projection angles depending upon area of interest.		
	4.5	**Image processing**		
	4.5.1	– Spatial filter processing		
	4.5.2	– Gray-scale processing		
	4.5.3	– Scattered radiation correction processing		
	4.5.4	– Negative/positive reversal		
	4.5.5	– Display gamma function		
	4.5.6	– Image magnification (desired magnification ratio: 1.0 to 5.0 times), panning		
	4.5.7	– Summed average (mask/live addition for up to 64 frames (maximum))		
	4.5.8	– Subtraction		
	4.5.9	– Landmarking		
	4.5.10	– Scanned image inversion (Fluoroscopic/Fluorographic images can be inverted in the up/down and left/right directions)		
	4.5.11	– Auto-windowing		
	4.5.12	– Image reversal (Simple left/right or up/down inversion)		
	4.5.13	– Image rotation		
	4.5.14	– Shutter display		
	4.6	**Image storage**		
	4.6.1	**– CD-R recording**		
	4.6.1.1	· Images: Dynamic images, still images		
	4.6.1.2	· Related information: Patient information, study infor-mation, physiological waveform		
	4.6.1.3	· Recording method: Compliance with DICOM 3.0. (5122 or 10242, 8/10/12 bits, JPEG loss-less compression)		
	4.6.1.4	· Recording image		
	4.6.1.5	frame: 4800 images maximum (assuming 5122, 8 bits)		
	4.6.1.6	· Recording operation: Manual or automatic back-ground recording can be per-formed after fluorography.		
	4.6.2	**– DVD±R recording**		
	4.6.2.1	· Images: Dynamic images, still images		

	4.6.2.2	· Related information: Patient information, study infor-mation, physiological waveform		
	4.7	**X- ray Generator and X-ray Tube:**		
	4.7.1	The system must have microprocessor controlled 100KW high frequency inverter generator.		
	4.7.2	Tube Voltage range :40 to 125KV		
	4.7.3	Tube Current range : Maximum 1000 mA		
	4.7.4	Nominal Power: at least 100kW.		
	4.7.5	Pulsed X-ray for (subtracted) acquisition up to 6 frames/sec. for vascular applications.		
	4.7.6	Fluoroscopy must be possible in low frame rates up to 3.75fr/sec.		
	4.7.7	A noise-free, oil cooled, dual focus rotating anode x-ray tube with spiral groove bearing technology and fluid lubricant for faster cooling must be provided.		
	4.7.8	Minimum Anode Heat Capacity: 1.8 MHU or more.		
	4.7.9	Cooling rate or Anode Heat Dissipation of x-ray tube must be more 500 kHU.		
	4.7.10	X-ray tube must have secondary grid switching.		
	4.7.11	System must be capable of delivering minimum 3200W continuous fluoro power.		
	4.7.12	Additional beam filtration of at least 1.0 mm Cu equivalent. Different filter sizes and types to be freely selectable at the table side for any patient weight for maximum radiation safety to staff and patients.		
	4.7.13	Virtual collimation of shutters and filters on the last image to reduce extra radiation for positioning of shutters.		
	4.7.14	System must have road mapping facility wherein subtracted roadmap is superimposed on live fluoroscopy. It must be possible to select different roadmap protocols depending upon the anatomy and procedure type.		
	4.7.15	Overlaying of live fluoroscopy image over reference image with fade-in and fade-out capability.		
	4.7.16	Parallel display of live and roadmap image for optimal guide-wire navigation.		
	4.8	**Monitors:**		
	4.8.1	Two monitors of at least 18" size TFT/LCD or Better live reference and subtracted image with high resolution flicker free display must be provided in the examination room . The monitor carriage in the exam room must move over a wide range longitudinally and transversally for better viewing.		
	4.8.2	A motorized up-down movement of the monitor carriage will be preferred.		
	4.8.3	An at least 18" TFT/LCD slave monitor must be provided in the console room for live images.		
	4.8.4	Additional monitor for patient database is must for user friendly patient entry without inhibiting live fluoroscopy viewing on slave monitor.		
	4.8.5	All intervention tools necessary for Radiology shall be included. Bidder must indicate all such tools which have been included in the offer here.		
	4.8.6	3D rotational angiography system shall be included.		
	4.8.7	System must have an integrated 3D workstation to for reconstruction of images in 3D and display of 3D images and control in examination with following advanced features:		
		? Reconstructive zoom		
		? Automated vessel analysis		
		? Virtual stenting		
		? Aneurysm analysis		
		? Catheter tip shaping		
		? Calci View		
		? Spine View		
	4.8.8	Soft Tissue Imaging: CT option to visualize soft tissue by rotational scan of the cathlab gantry. The CT 3D volume can be viewed in control room and examination room also.		
	4.8.9	Contrast resolution for soft tissue imaging must be up to 5HU.		
	4.8.10	Subtracted Bolus Chase: For visualisation of lower peripheral vessel structures wherein the contrast bolus is followed interactively by a motorized table scan movement.		
	4.8.11	Better Stent Viewing HW and SW or equivalent to significantly improve localized stent visibility in addition to inbuilt software for stent visibility improvement.		
	4.8.12	Stent Boost must have capability of showing fade in-fadeout of lumen for better stent visibility in relation to coronary artery wall.		
	4.8.13	3D road mapping to reduce contrast and time, must allow overlay of real-time 2D fluoro images on the 3D vessel image to see the advancement of the guide wire, catheter and coils on the 3D volume in real time.		
	4.8.14	System must have software to Percutaneous needle guided biopsies, drainages etc. by creating virtual paths on CT datasets. It must be possible to overlay live fluoro in real time on CT image to see the progression of the needle to the target area.		
	4.8.15	It must be possible to do automatic dual axis rotation wherein both rotation and angulation movements are combined in one single scan trajectory to reduce the x-ray dose and contrast required for doing an angio procedure.		
	4.8.16	Electrophysiology tools with the following functions shall be included:		
	4.8.16.1	The system must be capable of providing 3D image of the heart based on both techniques i.e. from pre interventional CT image and also from an actual 3D rotational angiography acquisition in the cathlab.		
	4.8.16.2	The 3D segmentation of different heart structures must be automatic. It must be possible to select the 3D anatomy like left atrium and overlay it on live fluoroscopy image. The 3D image must move in real time and in sync with the x-ray system gantry rotation to help viewing the best projection.		
	4.8.17	CD recording and archival, 1 unit		
	4.8.17.1	DICOM 3.0 based CD recording for recording on CD. CD review of DICOM CD's.		
	4.8.17.2	System must have ability to record DSA runs on the CD and the embedded viewer must support review of these DSA runs at referring physicians PC.		
	4.8.18	Angiography workstation, 1 unit		
	4.8.18.1	The workstation provided must have the ability to view CT and MR images also.		

	4.8.19	Adjustable Lead glass shielding at tableside, 1 unit.		
	4.8.20	Hemodynamic physiology monitor for DSA use, 1 unit		
	4.8.20.1	The monitoring system capable of monitoring 2 invasive pressures and 3 lead ECG. Other functions must include NIBP, SPO2 measurements.		
	4.8.21	Automatic injector suitable for angiography procedures including aortography, 1unit.		
	4.8.22	DICOM dry laser camera minimum 600 dpi resolution, 1 unit		
	4.8.23	Suitable UPS for digital system & for the complete lab, 1 unit.		
	5	**Accessories, Spare Parts and Consumables**		
	5.1	All standard accessories/consumables/parts required for the proper operation of the above item shall be included in the offer. Bidders shall specify, in a separate Excel worksheet, the quantity and details of any items included in this offer which have not been specified in this Technical Specifications Form.		
	5.2	All standard Maintenance tools and cleaning /lubrication materials where applicable shall be included. Bidders shall specify, in a separate Excel worksheet, the quantity and details of any items included in this offer which have not been specified in this Technical Specifications Form.		
	6	**Operating Environment**		
	6.1	Power supply: 220 – 240 VAC, 50Hz Single Phase or 380-415VAC 3 phase 50Hz fitted with appropriate plug. The power cable must be at least 3 metres in length.		
	7	**Standards & Safety Requirements**		
	7.1	Must submit ISO 13485:2003/AC: 2007 and CE (93/42 EEC Directives) or USFDA approved product certificate.		
	7.2	**Shall meet:**		
	7.2.1	IEC 60601-1-3 - Part 1: General Requirements for safety - Collateral Standard: General Requirements for Radiation Protection in Diagnostic X-Ray Equipment.		
	7.2.2	IEC 60601-2-7 - Part 2-7: Particular Requirements for the Safety of High-Voltage Generators of Diagnostic X-Ray Generators.		
	7.2.3	IEC 60601-2-28- Part 2-28: Particular Requirements for the Safety of X-RAY Source Assemblies and X-RAY Tube Assemblies for Medical Diagnosis.		
	8	**Warranty**		
	8.1	Comprehensive warranty for 2 years.		
	8.2	Maintenance Service During Warranty Period		
	8.3	Preventive & Corrective Maintenance:		
	8.3.1	During the warranty period supplier must ensure planned preventive maintenance (PPM) at least 3 nos. in a year along with corrective/breakdown maintenance whenever required.		
	9	**Installation, Inspections and Commissioning**		
	9.1	Supplier must accomplish proper installation and commissioning of the equipment on site.		
	9.2	Inspections to verify the compliance of the offered equipment as per specifications will be conducted by the technical team appointed by the user.		
	10	**Documentation**		
	10.1	User (Operating) manual in English.		
	10.2	Service (Technical / Maintenance) manual in English.		
	10.3	List of important spare parts and accessories with their part numbers and costing.		
	10.4	Certificate of calibration and inspection from factory.		
	10.5	QC and software Kits		
	10.6	Log book with instruction for daily, weekly, monthly and quarterly maintenance checklist.		
	10.7	The job description of the hospital technician and company service engineer should be clearly spelt out		
	10.8	Manufacturing Date must be less than 6 months before delivery		
21		**Chemistery analyzer**		
	1	The Fully-automated Biochemistry Analyzer measures biochemical indexes by analyzing blood and other body fluid, then combines		
		with other clinical information, to help diagnose disease, evaluate organs function, identify disease gene and determine		
		the norm for future therapy.		
		Automatic Analyzer		
		random continuous access		
		Sample Tray : >=80 samples, continuous loading, positive sample identification		
		Not less than 200 test / hr		
		Automatic calibration		
		Sample Tray: capacity of >=80 patient sample Separate access to		
		refrigerated area for on-board calibrators and controls.		
		Reagent Storage Area:		
		Refrigerated storage for >=40 one- or two-reagent chemistries plus open system capability –		
		Calibration stability more than 10 days		
		documentation on CD		
		Host interface : bidirectional		
		Auto-dilution : Automatic dilution from the original sample		
		Auto-repeat : Automatic repeat testing from the original sample		
		Automatic Clot Detection		
		Sample Volume : from 1-5 µL		
		Running cost details important and all start up kits neede for operation and calibration		
	2	**Operating Environment**		
		The unit shall be capable of operating continuously in ambient temperature of 10 -40deg C and relative humidity of 15-90%		

		The unit shall be capable of being stored continuously in ambient temperature of 0 -50deg C and relative humidity of 15-90%		
	3	**Power supply**: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.		
		Suitable UPS with maintenance free batteries for minimum 30 min. back-up shall be supplied with the system.		
	4	**Standards and Safety Requirements**		
		Must submit ISO13485:2003/AC:2007 for Medical Devices AND		
		Should be FDA/CE/BIS approved product.		
		Shall meet internationally recognised for Electromagnetic Compatibility(EMC) for electromedical equipment: 61326-1.		
		Certified to be compliant with IEC 61010-1, IEC 61010-2-281, 61010-2- 101 for safety.		
	5	**User Training**		
		Must provide user training (including how to use and maintain the equipment).		
	6	**Warranty**		
		Comprehensive warranty for 2 years from acceptance.		
	7	**Maintenance Service During Warranty Period**		
		During the warranty period supplier must ensure planned preventive maintenance (PPM) and corrective/breakdown maintenance whenever required.		
	8	**Installation and Commissioning**		
		The bidder must arrange for the equipment to be installed and commissioned by certified or qualified personnel; any prerequisites for installation to be communicated to the user in advance, in detail.		
	9	**Documentation**		
		User (Operating) manual in English Should provide 2 sets(hardcopy and soft-copy)		
		Service (Technical / Maintenance) manual in English Should provide 2 sets(hardcopy and soft-copy)		
		List of important spare parts and accessories with their part number and costing.		
		Certificate of calibration and inspection from factory.		
22		**Coagulometer**		
	1	Semi-automatic 4 channels		
		Twin channel coagulometer for routine tests: PT, a PTT, TT, Fibrinogen and clotting factors.		
		To have 30 sample capacities 37 deg C dry incubation block.		
		To have automatic counter, to grig off when starter reagent is added to sample and to stop when clot is formed.		
		Results to be displayed and printed.		
		To have recorder output for platelet aggregation		
		Measuring system Photometric		
		Beam source Infra-red LED		
		Incubation 37 deg C + 0.2 deg C		
		Capacity 30 cuvette and 3 reagent bottles		
		Display twin 3 digit 00.0 to 99.9 seconds.		
		Keyboard 6 keys		
		Printer 20 column, 64 characters.		
	2	**Operating Environment**		
		The unit shall be capable of operating continuously in ambient temperature of 10 -40deg C and relative humidity of 15-90%		
		The unit shall be capable of being stored continuously in ambient temperature of 0 -50deg C and relative humidity of 15-90%		
	3	**Power supply**: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.		
		Suitable UPS with maintenance free batteries for minimum 30 min. back-up shall be supplied with the system.		
	4	**Standards and Safety Requirements**		
		Must submit ISO13485:2003/AC:2007 for Medical Devices AND		
		Should be FDA/CE/BIS approved product.		
		Shall meet internationally recognised for Electromagnetic Compatibility(EMC) for electromedical equipment: 61326-1.		
		Certified to be compliant with IEC 61010-1, IEC 61010-2-281, 61010-2- 101 for safety.		
	5	**User Training**		
		Must provide user training (including how to use and maintain the equipment).		
	6	**Warranty**		
		Comprehensive warranty for 2 years from acceptance.		
	7	**Maintenance Service During Warranty Period**		
		During the warranty period supplier must ensure planned preventive maintenance (PPM) and corrective/breakdown maintenance whenever required.		
	8	**Installation and Commissioning**		
		The bidder must arrange for the equipment to be installed and commissioned by certified or qualified personnel; any prerequisites for installation to be communicated to the user in advance, in detail.		
	9	**Documentation**		
		User (Operating) manual in English Should provide 2 sets(hardcopy and soft-copy)		
		Service (Technical / Maintenance) manual in English Should provide 2 sets(hardcopy and soft-copy)		
		List of important spare parts and accessories with their part number and costing.		
		Certificate of calibration and inspection from factory.		
23		**Community Health Worker Kit**		

		Content of the following items:		
	1	Bag - Qty. 1		
	2	Bandage - Qty. 5		
	3	Boiler - Qty. 1		
	4	Clinical record sheet - Qty. 1		
	5	Cotton wool - Qty. 5		
	6	Dissecting set - Qty. 1		
	7	Education flip chart - Qty. 1		
	8	Gauze swabs - Qty. 5		
	9	Kidney dish - Qty. 1		
	10	MUAC strip - Qty. 2		
	11	OSR preparation set - Qty. 1		
	12	Plaster surgical - Qty. 2		
	13	Plastic sheet - Qty. 2		
	14	Puncher - Qty. 1		
	15	Referral form - Qty. 2		
	16	Sphygmomanometer - Qty. 1		
	17	Stapler - Qty. 1		
	18	Stethoscope - Qty. 1		
	19	Tap adhesive - Qty. 5		
	20	Thermometer - Qty. 1		
	21	Timer - Qty. 1		
	22	Vaccine carrier - Qty. 1		
	23	Wash bowl - Qty. 1		
	24	**Warranty:**		
	24.1	Comprehensive warranty for 2 years from acceptance.		
	25	CE or FDA approved device		
24		**Continuous Renal Replacement Therapy (CRRT) Machines**		
	1	Description of Function		
	1.1	CRRT is indicated in any patient who meets criteria for haemodialysis therapy but cannot tolerate		
		intermittent dialysis due to hemodynamic instability. CRRT is better tolerated by hemodynamically		
		unstable patients because fluid volume, electrolytes and pH are adjusted slowly and steadily over a		
		24 hour period rather than a 3 – 4 hour period.		
	2	Operational Requirements		
	2.1	The system must be compatible with Universal Haemodialysis/ Hemofiltration.		
	3	System Configuration		
	3.1	Continuous Renal Replacement Therapy (CRRT) machine with complete accessories.		
	4	Technical Specifications		
	4.1	Must be light weight and portable.		
	4.2	Easy to handle and maintain.		
	4.3	Microprocessor/microcontroller controlled user interactive menu with operating and malfunction		
		removal instructions on display screen.		
	4.4	Four pumps, one each for Blood, Dialysate, Replacement fluid and Effluent/filtrate.		
	4.5	Able to perform SCUF, CVVH, CVVHD, CVVHDF & PLASMA EXCHANGE.		
	4.6	Clear touch screen TFT/LCD Monitor.		
	4.7	Blood pump speed of approx. 10-450 ml/min.		
	4.8	Close blood circuit to prevent air to blood interface.		
	4.9	Short preparation and priming program and ready to start treatment within 10-20 minutes.		
	4.1	Arterial pressure range :(-) 250 mmHg +/- 50 mmHg.		
	4.11	Venous pressure range :(+) 350 mmHg +/- 50 mmHg.		
	4.12	Pre Filter Pressure: 50mmHg to -500 mmHg.		
	4.13	Effluent Pressure: 350 mmHg+/- 50 mmHg.		
	4.14	Programmable Substitution solution flow rate: 0-5000 mL/Hr.		
	4.15	Dialysate flow rate: 0-2500 mL/Hr.		
	4.16	Programmable Effluent Flow Rate : 60-10000 mL/Hr.		
	4.17	Integrated heparin pump with flow rate of 0. 0.5 ml-5 mL/Hr. Bolus facility range 0.5mL-5mL.		
		Bolus frequency immediate 1-24 hrs.		
	4.18	Capable of changing therapies.		
	4.19	Three weighing scales to control system with balancing accuracy of less than 1 % of total turnover		
		in normal conditions and weighing capacity of at least 0-20 kg.		
	4.2	Fluid/Blood warmer for blood/dialysate warming temp range app 33-40 (+/- 3).		
	4.21	Ultrasonic air bubble detector.		
	4.22	Alarm in case of blood leak, air in line, pressure limit violation, empty dialysate/ replacement bag,		
		full effluent bag and advisory alarms in case of excessive TMP and filter clotting.		
	4.23	RS232/USB/RS485 output for Printer, PC connectivity and Data acquisition must be there.		
	5	Accessories, spares and consumables		
	5.1	Accessories:		
		⍰ Blood line set – 250 nos.		
		⍰ Hemofilters – 250 nos.		
		⍰ Ultra-filtrate bags – 250 nos.		
	5.2	All standard accessories, consumables and parts required to operate the equipment, including all		
		standard tools and cleaning and lubrication materials, to be included in the offer. Bidders must		

		specify the quantity of every item included in their offer (including items not specified above).		
	6	Operating Environment		
	6.1	The product offered shall be designed to be stored and to operate normally under the conditions of		
		the user's country. The conditions include Power Supply, Climate, Temperature, Humidity, etc.		
	6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least		
		3 metre in length.		
	6.3	Suitable UPS with maintenance free batteries for minimum 30 min. back-up shall be supplied with		
		the system.		
		Standards and Safety Requirements		
		Comprehensive warranty for 2 years from acceptance.		
		CE or FDA approved device		
25		**Cortical EEG**		
		Item Specifications		
	1	**Description of Function**		
	1.1	An electroencephalograph uses electrodes placed on a patient's scalp to measure, amplify, display in graphic form, and record the weak electrical signals generated by the brain. Electroencephalography is useful in observing and diagnosing a variety of neurologic conditions, including epilepsy, related convulsive disorders, and brain death. It can also be used to evaluate psychiatric disorders and differentiate among various psychiatric and neurologic conditions. In addition, electroencephalographic studies can assist in localizing tumours or lesions on or near the surface of the brain.		
	2	**Operational Requirements**		
	2.1	EEG System completes with software for acquisition, review and the compatible computer with necessary interface and printer is required.		
	3	**System Configuration**		
	3.1	32 Channel Digital EEG Systems for Neurology with complete accessories.		
	4	**Technical Specifications**		
		Hardware:		
	4.1	? Must be PC based with minimum following PC specifications: Core 2 duo / Corei5, 2GB DDR RAM, 300 GB HDD, CD/DVD RW, 21" LCD TFT Display, Key Board, Mouse and UPS of suitable ratings with minimum 30 min. back-up.		
		? Number of EEG Channels must be 32 with colour coding, and another eight channels for Polygraph. Also any two channels can be configured as Bipolar, AC or DC through software.		
		? Facility for simultaneous sampling of all EEG channels and multiple sampling rates.		
		? Photic Stimulator with software programmable for manual or automatic sequences.		
		? Networking facility.		
		? DICOM compatible.		
	4.2	CMRR must be > 110 dB or better.		
	4.3	Noise < 2uV peak to peak.		
	4.4	Input Impedance > 100 Mohm.		
	4.5	16 bit ADC resolution voltage of 0.153 uV.		
	4.6	**Acquisition Software:**		
		? Facility to combine all users defined settings into templates or protocol, for use in different applications.		
		? Facility for individual channel control, customization of montages, along with reportage capabilities.		
		? Must display a graphical view of the current montage during the EEG recording.		
		? Facility to define new sensors must be possible as standard i.e. assign to amplifier inputs, define traces in a mintage, define calculated channels (Average, Source/Laplacian), or define trends.		
		? Facility to click any point to display corresponding traces & Slide pointer to change displayed duration of the overview.		
		? Facility for sortable list of all events placed in the recording, both automatically and manually.		
		? Facility to review and add events to recorded traces.		
		? Facility for automatic time counters and event insertion during hyperventilation.		
		? Facility to controlled display Sensitivity for User defined value.		
		? Facility to choose low & high cut filters along with facility to enter any user defined value.		
		? Facility to file zip.		
		? Facility of configurable time base.		
		? Spike & seizure software.		
		? Trend analysis software.		
	4.7	**Review Software:**		
		? Paging facility as automatic paging, Mouse controlled paging and/ or Keyboard paging.		
		? Playback of EEG for one or more channels.		
		? Facility for zoom/ magnify EEG trace.		
		? Facility for copy & paste of EEG or trends to reports and presentations.		
		? Facility for Automatic generation of reports.		
		? Facility for viewing several recordings in tiled or cascading windows.		
	4.8	**Patient Administration Software:** Network supported patient and test management software, archive to CD or DVD, powerful search, patient folder, workspaces.		
	4.9	Must have an option of upgrading the digital EEG to Video EEG with day/night camera using MPEG-2 3rd generation technology.		
	5	**Accessories, spares and consumables**		
	5.1	Accessories:		
		? Compatible Laser Printer with 600 DPI resolution and A4 size printing facility – 01 no.		

		⍰ Patient cable and connectors with electrodes and papers for at least 1000 EEG exams and all the necessary power cables and other interfaces.		
		⍰ Optional requirements components for video EEG up gradation.		
	5.2	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.		
	6	**Operating Environment**		
	6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.		
	6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.		
	6.3	Suitable UPS with maintenance free batteries, voltage regulation and spike protection for minimum 30 min. back-up shall be supplied with the system.		
	7	**Standards and Safety Requirements**		
	7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND		
	7.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.		
	7.3	Shall be certified to be meeting the safety standards IEC- 60601-2-26 PART 2: Particular requirements for safety of EEG Systems.		
	8	**User Training**		
	8.1	Must provide user training (including how to use and maintain the equipment).		
	9	**Warranty**		
	9.1	Comprehensive warranty for 2 years.		
	10	**Maintenance Service during Warranty Period**		
	10.1	During warranty period supplier must ensure preventive maintenance and corrective/breakdown maintenance whenever required.		
	11	**Installation and Commissioning**		
	11.1	The bidder must arrange for the equipment to be installed and commissioned by certified or qualified personnel; any prerequisites for installation to be communicated to the user in advance, in detail.		
	12	**Documentation**		
	12.1	User (Operating) manual in English.		
	12.2	Service (Technical / Maintenance) manual in English.		
	12.3	List of important spare parts and accessories with their part numbers and costing.		
	12.4	Certificate of calibration and inspection from factory.		
26		Craniotomy Set		
		Foerster Dressing forcep 25cm,serrated	2	
		Bakhaus Towel Forcep13cm	12	
		Standatd Scalpel-Handle no.3/12,5cm	1	
		Standatd Scalpel-Handle no.4,solid	1	
		Standatd Scalpel-Handle no.7, solid	1	
		CT-ORO mayo Scissor17cm,straight	1	
		CT-ORO mayo Scissor17cm,curved	1	
		CTOROmetzenbaumfinoDissect.scis.18cmCurved,b1/bl	1	
		Schmieden-Taylor Dura Scissor17cm	1	
		Standard Scissor 15cm,straght,sh/b1	1	
		Adson forceps Dress.12cm	2	
		Adson forcep tiss.12cm,1:2Teeth	2	
		Kocher Artery fcp.14cm.1:2T,str.delicate	2	
		Cushing forcep Dress.17cm, straight	2	
		Cushing Tissue forcep17cm,straight	2	
		Halsted-mosquito Artery forcep12cm,str	18	
		Halsted-mosquito Artery forcep12cm,curv	18	
		Dandy Artery forcep14cm,curved	24	
		Luer Bone Rongeur forcep 17cm curved	1	
		Lempert Bone Rongeur forcep 19cm,cvd.	1	
		Zaufal-Jansen Bone Rongeur forcep18cm,Slightly curved,5mm	1	
		Stille-Luer Bone Ronger Forcep 22cm,str	1	
		Stille-Luer Bone Ronger Forcep 22cm,cvd	1	
		Gruenwald(spurling)Ronger 15,5cm/4mm,straight	1	
		Gruenwald Rongeur 15,5cm/3mm,curved up	1	
		Oldberg Pituitary Rongeur 18cm,7mm	1	
		Weitlaner Retractor20cm3:4 Teeth,shap	2	
		Jansen Retractor 10cm,3:3teeth,blunt	2	
		Cushing Retractor,24cm,large14mm	2	
		Aachen pattern Brain Spatul.20cm/7+8mm	1	
		Aachen pattern Brain Spatul.20cm/13+14mm	1	
		Aachen pattern Brain Spatul.20cm/19+20mm	1	
		Brain Spatula 25cm/12mm,malleable,cross serrated	2	
		Langenbeck periost.Raspatory 19cm/16/mm	2	
		Pennybacker Dissctor+probe 23cm	1	
		Watson-cheyne Dissctor,18cm	1	
		Spinal Bone Curette 20cm,fig.1	1	
		Spinal Bone Curette 20cm,fig.2	1	
		Spinal Bone Curette 20cm,fig.3	1	

		Spinal Bone Curette 20cm,fig.000	1	
		Spherical Burr Ø 16,0mm	1	
		Hudson Hand Drill , brace only	1	
		Extension Piece	1	
		Gigli Hook Handle for Wire Saws	2	
		Martell Guiding instr.for wire saws 35cm flexible	2	
		Yasargil Galea Hook 410mm,Spring Ø 9mm	6	
		Thin Footplate Punch 18cm/3mm,130°,upbiting	1	
		Frazier Dura-Hook 13cm,sharp	2	
		Dandy Nerv Hook 20cm	2	
		Frazier Suction Tube,19cm (WL 100mm),Ch.6,angled 30	2	
		Frazier Suction Tube,19cm (WL 100mm),Ch.8,angled 30	2	
		Frazier Suction Tube,19cm (WL 100mm),Ch.10,angled 30°	2	
		Frazier Suction Tube,19cm (WL 100mm),Ch.12,angled 30°	2	
		Frazier Ventriculopuncture Cannula 3mm	2	
		Micro-Needle Holder 18cm/Ø 9mm,str,jaws 0,3mm,without ratchet	1	
		Micro-Needle Holder 18cm/Ø9mm,curved,jaws 0,3mm,without ratchet	1	
		Micro-Forceps18cm/Ø8mm(Rhoton),Curved,jaws smooth0,7mm,tyingPlatform 6×0,7mm	1	
		Rhoton Dissector 19cm/Ø1mm,round	1	
		Rhoton Dissector 19cm/Ø2mm,round	1	
		Rhoton Dissector 19cm/Ø3mm,round	1	
		Rhoton Dissector 19cm/Ø1,0mm,spatula shap.	1	
		Rhoton Dissector 19cm/Ø1,5mm,spatula shap.	1	
		Rhoton Dissector 19cm/Ø2,0mm,spatula shap.	1	
		Rhoton Elevator 19cm/Ø1,2mm,spatula shap.	1	
		Rhoton Elevator 19cm/Ø2,8mm,spatula shap.	1	
		Rhoton Hook 19cm/90º/2mm,blunt	1	
		Penfield Dura-Dissector 17cm/fig.1	1	
		Penfield Dura-Dissector 19cm/fig.2	1	
		Penfield Dura-Dissector 19cm/fig.3	1	
		Penfield Dura-Dissector 20cm/fig.4	1	
		Adson Needle Holder18cm	1	
		Comprehensive warranty for 2 years from acceptance.		
		CE or FDA approved device		
27		**Diagnostic lens**		
		1. 90 D		
		2. 78 D		
		3. Two mirror Gonioscope.		
		4. Goldman three mirror lens		
		5. Capsulotomy Lens		
		6. Iridotomy lens.		
		Comprehensive warranty for 2 years from acceptance.		
		Must submit ISO13485:2003/AC:2007 for Medical Devices AND		
		CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.		
28		**Dressing Tray**		
		Certified Stainless steel		
		10X12Inch		
		with cover		
		Comprehensive warranty for 2 years.		
		CE or FDA approved device		
29		**Neurosurgery Drill**		
		Technical Specifications		
		1. Motor speed should be 72000 rpm or more, operating pressure between 2-8 bar (variable) , max 12 bar.		
		2. Motor should be light weight, sleek for micro neurosurgery work under operating microscope (<150 gms).		
		3. Motor should be 360 deg swivelable in either direction.		
		4. Motor should be convertible to allow operator to use the motor straight or in anglulated postion at hose connection intraoperatively		
		5. Straight and angled attachments of various lengths should be available for Cranial and Spinal surgery. The attachments should be color/ring coded.		
		6. Keyless Change of hand piece with mounted tool should be possible with safety lock.		
		7. Smaller and lighter pneumatic hose to reduce hose drag.		
		8. Sound level should be very low (less than 85db) close to the operating field.		
		9. Quick coupling attachment should be available.		
		10. Sterilization through Flash or Regular steam autoclave or ETO.		
		11. Perforator driver with cutter should be available.		
		12. Should have Saw hand piece (reciprocating, oscillating and sagittal with saw blades) with same system. Foot control for variable speed.		
		13. Shielded foot control with variable speed, to avoid accidental running in OR.		
		Foot control should have a large paddle surface, and a pressure gauge to know the correct line pressure.		

		14. System should have quick release & lock system for tools.		
		15. Compatible low noise medical grade air compressor to run the machine optimally at the Required psi.		
		16. Irrigation pump should be available .		
		C. SYSTEM CONFIGURATION ACCESSORIES, SPARES AND CONSUMABLES		
		Quote all Accessories including:		
		C1 HANDPIECES (for micro Neuro surgery):		
		1. Straight hand piece short—1 no		
		2. Straight hand piece medium—1 no		
		3. Straight hand piece long –1 no		
		4. Minimal access attachment long -1		
		5. Angled hand piece short—1 no		
		6. Angled hand piece medium—1 no		
		7. Angled handpiece long –1 no		
		8. Attachment for trans oral/ transsphenoidal surgery -1 no		
		C2. Oscillating saw attachment-1		
		C3. Reciprocating saw attachment -1		
		C4. Saggital saw attachment-1		
		C5. CRANIOTOMY ATTACHMENT:		
		1. Craniotome handpiece 02		
		2. Fixed duraguard adult 02		
		3. Fixed duraguard pediatrics 02		
		C6 . CRANIOTOME CUTTER (Bits):		
		1. Craniotome cutter (bits) pediatrics 20		
		2. Craniotome cutter (bits) adult -20		
		C7. PERFORATOR:		
		1. Perforator driver with speed reduction- 01		
		2. Cranial perforator, 9X12mm, Hudson type- 02		
		3. Cranial perforator, 6/9mm, Hudson type -02		
		4. Hudson chuck- 01		
		C8. Adjustable drill guide-1		
		C9. BURRS:		
		1. Rosen burr for medium hand piece 10		
		2. Diamond burr for medium hand piece 10		
		3. Diamond burr for large hand piece 5		
		4. Barrel burr for medium hand piece 10		
		5. Barrel burr for large hand piece 5		
		6. Acorn burr for small hand piece 10		
		7. Pin Point burr for medium hand piece 25		
		8. Twist drill for small hand piece 10		
		9. Burrs (fluted and diamond) for trans oral/ trans sphenoidal hand piece- 5 each		
		10. Saw Blade for Reciprocating Saw, for neurosurgical use-1 set		
		11. Saw Blades for Oscillating Saw for neurosurgical use-1 set		
		12. Saw Blade for Saggital Saw-1 set for neurosurgical use		
		D. STORAGE AND MAINTENANCE:		
		1. Oil spray for high speed motor and hand pieces – 6 Nos.		
		2. Oil spray for perforator – 5 Nos.		
		3. Adapter for oiling		
		4. Seal nipple for air drive		
		5. Autoclavable Perforated container with covering lid with holders for motors, all hand pieces, Hose, tools and all other accessories.		
		E. Environmental factors		
		1. Shall meet IEC-60601-1-2:2001(Or Equivalent BIS) General Requirements of Safety for		
		Electromagnetic Compatibility or should comply with 89/366/EEC; EMC-directive.		
		2. The unit shall be capable of being stored continuously in ambient temperature of 0 - 50deg C and relative humidity of 15-90%		
		3. The unit shall be capable of operating continuously in ambient temperature of 10 -40 deg C and relative humidity of 15-90%		
		F. Power Supply		
		1. Power input to be 220-240VAC, 50Hz fitted with Sudanese plug.		
		G. Standards, Safety and Training		
		1 Should be US – FDA/European CE approved product		
		2. Manufacturer should have ISO or equivalent certification for quality standards.		
		H. Documentation		
		1. User/Technical/Maintenance manuals to be supplied in English.		
		2. Certificate of calibration and inspection.		
		3. List of Equipments available for providing calibration and routine maintenance support as per manufacturer documentation ,		
		in service / technical manual.		
		4 . List of important spare parts and accessories with their part number and costing to be supplied.		
		Comprehensive warranty for 2 years.		
		CE or FDA approved device		

30		**Ear syringe**		
		Certified Stainless steel		
		150cc		
		Comprehensive warranty for 2 years.		
		CE or FDA approved device		
31		**ECG Machine**		
		ECG Machine is primary equipment to record ECG Signal in various configurations.		
		Portable 3 channel ECG with interpretive programme.		
		Digital display, at least 100 Patient data storage.		
		Automatic/ Manual operation mode.		
		Performs 12 standard leads analysis.		
		Complete digital filters.		
		Rechargeable back up battery working at least 2 hours.		
		Electrode patient cable (4 clamps + 6 suction)		
		Complete with all accessories		
		Thermal head printer , 80 mm thermal paper (Z shape and roll type).		
		A/V alarm. Power failure , paper empty , electrode off,		
		Standard speed and amplitudes		
		Full interpretive provides detailed and comprehensive reports		
		Carrying bag		
		Input power supply: 220 ± 20 % V AC , 50Hz		
		Comprehensive warranty for 2 years.		
		CE or FDA approved device		
32		**Echo Ultrsound**		
		Color Doppler Echocardiography System is required to study the anatomical abnormalities and		
		blood flow in the heart and associated vessels.		
		Ergonomic system based on cart		
		Total system dynamic range: aproximately 175 dB		
		Full digital beam former		
		Minimum 17" TFT monitor with height and lateral position adjustable		
		Backlight keyboard, English character set and keyboard layout, English or Romanian language on screen indications and functions		
		Minimum 3 active transducer ports		
		Minimum 4 selectable transmit focus		
		Digital dynamic receive focus		
		Minimum 4 user selectable 2D transmit frequencies on each probe		
		Minimum 4 user selectable Superior Harmonics transmit frequencies on each probe		
		Minimum acquisition frame rate possible: 350 frames per second		
	2	**Scanning modes on available probes:**		
		Convex array		
		Linear array		
		Phased array		
		Minimum 8 TGC controls available		
		Automatic noise reduction and edge enhancement		
		M-mode, omnidirectional M-mode (1 to 3 cursors available) in real time and "freeze" mode		
	3	**Internal memory**		
		Cine memory for dynamic loops: minimum 2000 images/loop		
		Scroll memory for M mode minimum 400 seconds		
		Integrated Software for patient data base with storage of images, measurements and reports. Images review and post processing.		
		Minimum 80 GB internal HDD		
		Measurements and calculations available on stored images		
		Dicom compatible network interface		
		CD RW for storing patient data (images and reports)		
		Saving of images in DICOM 3.0 AVI, TIFF, BMP and JPEG format		
		ECG display unit available for cardiac studies		
	4	**Measurements and Calculations**		
		Applications: Abdominal, Urological, Genital, Small Parts, Vascular, Cardiac for Adult, Pediatric and Neonatal		
		Distance at least 8 pairs of calipers		
		Aria and circumference		
		Volume		
		Angle		
		M mode measurements:		
		Time		
		Distance		
		Slope		
		Ejection fraction - manual and automatic mode calculation		
	5	**Transducer for abdominal use from 2MHz to 6MHz**		
		Applications: abdominal adult and pediatric		
		Radius of curvature: minimum 40 mm – maximum 60 mm		
		B-mode, M-mode		

		Minimum 4 user selectable 2D transmit frequencies		
		Minimum 4 user selectable Superior Harmonics transmit frequencies		
		Minimum 128 elements		
		Biopsy needle guide capability		
	6	**Transducer for small parts and vascular applications: 5 – 13 MHz**		
		Applications: Small parts, Peripheral vessels		
		Minimum 128 elements		
		Array length: minimum 40 mm		
		Minimum 4 user selectable 2D transmit frequencies		
		Minimum 4 user selectable Superior Harmonics transmit frequencies		
		Biopsy needle guide capability		
	7	**Storage and Documentation Devices**:		
		Black and White video printer		
		CD RW Drive		
		USB port		
	8	**Accessories and Consumables**		
		Thermal paper for Video printer 40 rolls		
		Ultrasound gel: 20 liters		
	9	**Power requirements**		
		Power: 220 VAC; 50 Hz		
		Uninterrupted Power Supply (UPS) for backup for approximate 30 minutes		
		Electrical power connector should meet German standard Shuko type		
		Comprehensive warranty for 2 years.		
		CE or FDA approved device		
33		**Electric Craniotome**		
		Motor speed must be at least 75,000 rpm at 8 bar pressure.		
		Motor must be lightweight (max 85g.).		
		Main motor unit must be detachable from cable.		
		Straight and angled attachments of various lengths must be available for Cranial and Spinal surgery. Change of hand piece with mounted tool must be possible.		
		Motor must be converted to an angulated position with or without an adaptor.		
		Sound level must be very low less than 65dB		
		No, intra-operative oiling of motor must be necessary.		
		Dura-guard must be detachable form Craniotome hand piece so that same hand piece can be used for paediatrics, adult and spine surgery		
		Quick coupling attachment must be available.		
		Single use and reusable burrs must be available.		
		Sterilization through Flash or Regular steam autoclave.		
		Perforator driver with cutter must be available.		
		Must be able to use Saw hand piece with same system.		
		Irrigation pump must be available. 5 Accessories, spares and consumables		
		Handpieces:		
		Straight hand piece 120mm: 01 no.		
		Straight hand piece 90mm: 01 no.		
		Straight hand piece 160mm: 01 no.		
		Craniotomy Attachment:		
		Craniotome hand piece: 01 no.		
		Fixed duraguard adult: 01 no.		
		Fixed duraguard paediatrics: 01 no.		
		Craniotome Cutter:		
		Craniotome cutter paediatrics: 20 nos.		
		Craniotome cuter adult: 60 nos.		
		Perforator: Perforator driver: 01 no.		
		Cranial perforator 9X12 mm, Hudson type: 01no.		
		Cranial perforator 6/9mm, Hudson type: 01 no.		
		Hudson chuck: 01 no.		
		Spare cutter for Perforator, 9X12mm: 01 no.		
		Spare cutter for Perforator, 6X9mm: 03 nos.		
		Burrs:		
		Rosen burr D 3.1mm for 120mm hand piece: 10 nos.		
		Diamond burr D 3.1mm for 120mm hand piece: 10 nos.		
		Diamond burr D 4.0mm for 160mm hand piece: 05 nos.		
		Barrel burr D 4.0mm for 120mm hand piece: 10 nos.		
		Barrel burr D 4.0mm for 160mm hand piece: 05 nos.		
		Neuro cutter D 2.3mm for 120mm hand piece: 05 nos.		
		Neuro cutter D 3.1mm for 120mm hand piece: 10 nos.		
		Neuro cutter D 3.1mm for 160mm hand piece: 10 nos.		
		Acorn burr D 6.0mm for 90mm hand piece: 10 nos.		
		Pin Point cutter D 1.0mm for 120mm hand piece: 25 nos.		
		Twist drill D 1.5mm for 90mm hand piece: 10 nos.		
		Micro Sagittal Saw Attachment:		
		Micro Sagittal Saw pencil shape: 01 no.		

		Saw Blade for Micro Sagittal Saw (9/13/3/0.3): 04 nos.		
		Comprehensive warranty for 2 years.		
		CE or FDA approved device		
34		**Electrolyte analyzer**		
		For analysis of electrolytes in laboratories or hospital point of care		
		Units to measures electrolytes from whole blood, serum, plasma,		
		Urine dialysate or aqueous standards.		
		The machine can be configured to measure Na,K,and ionized		
		Calcium Interchangeable electrodes		
		Programmable correlation factors		
		microprocessor controlled.		
		Electrodes for **:** Sodium. Potassium, Chloride., Ionized Calcium,		
		Lithium Reference System.		
		Sample Size not more than 100 µL		
		Measurement range for **blood approx:**		
		Na+: 20 - 200		
		K+: 0.2 - 40		
		Cl-: 25 - 200		
		Li+: 0.2 - 5		
		Ca++: 0.1 - 6		
		PH: 6- 8 units		
		Measurement range for **urine approx:**		
		Na+: 25 - 1000		
		K+: 1 - 500		
		Cl-: 25 - 500		
		Sample Application syringe,sample cup,collection tube,capillary		
		Analysis Time (blood) not more than 1 min		
		Analysis Time (urine) not more than 2 min		
		Sample Rate minimum 60 sample/hour		
		Built in printer		
		Operating Environment		
		The unit shall be capable of operating continuously in ambient temperature of 10 -40deg C and relative humidity of 15-90%		
		The unit shall be capable of being stored continuously in ambient temperature of 0 -50deg C and relative humidity of 15-90%		
		Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.		
		Suitable UPS with maintenance free batteries for minimum 30 min. back-up shall be supplied with the system.		
		Standards and Safety Requirements		
		Must submit ISO13485:2003/AC:2007 for Medical Devices AND		
		Should be FDA/CE/BIS approved product.		
		Shall meet internationally recognised for Electromagnetic Compatibility(EMC) for electromedical equipment: 61326-1.		
		Certified to be compliant with IEC 61010-1, IEC 61010-2-281, 61010-2- 101 for safety.		
		User Training		
		Must provide user training (including how to use and maintain the equipment).		
		Warranty		
		Comprehensive warranty for 2 years from acceptance.		
		Maintenance Service During Warranty Period		
		During the warranty period supplier must ensure planned preventive maintenance (PPM) and corrective/breakdown maintenance whenever required.		
		Installation and Commissioning		
		The bidder must arrange for the equipment to be installed and commissioned by certified or qualified personnel; any prerequisites for installation to be communicated to the user in advance, in detail.		
		Documentation		
		User (Operating) manual in English Should provide 2 sets(hardcopy and soft-copy)		
		Service (Technical / Maintenance) manual in English Should provide 2 sets(hardcopy and soft-copy)		
		List of important spare parts and accessories with their part number and costing.		
		Certificate of calibration and inspection from factory.		
35		**EMG**		
		Item Specifications		
		Technical Specifications		
		1) Minimum 4 channel system with optical isolation with Ethernet connection for connecting to either to desktop system or		
		laptop system for portable use.		
		2)Motor NCV with automatic marking		
		3)Sensory NCV with automatic marking		
		4)F wave with split screen display with automatic marking of F responses showing the Max F, Min F and % F values.		
		5)H reflex & Blink reflex		
		6)Repetitive nerve stimulation		

		7)Insertional/Spontaneous EMG recording for minimum 600 secs on hard disk or unlimited buffer storage		
		8)EMG replay of minimum 600 sec of stored data from hard disk with audio and store in AVI format for review on any		
		Windows Media Player PC.		
		9)Single Motor unit Analysis.		
		10)Sympathetic skin response		
		11)Somato sensory evoked potentials (Upper, lower , Dermatomes)		
		12)RR Interval program with programs for stand/sit/supine position & Heart rate variability calculations		
		13)Auditory evoked potentials: BAER , AEP programs		
		14)The software should have facility to measure the Patient Hearing Threshold before running the BERA test.		
		15)The software should be capable of Grand averaging of the responses for better signal quality for BERA recordings.		
		16)Auditory headphones with clicks, bips and tones		
		17)Visual evoked potentials: Pattern reversal VEP		
		18)16" VEP monitor for visual evoked potential		
		19)Common mode input impedance > 1000Mohm		
		20)Low filter to be varied from 0.05 Hz - 500Hz or Higher		
		21)High filter to be varied from 30Hz - 5KHz or Higher		
		22)Gain to be varied from 0.5 ms/div to 1000 ms/div		
		23)Constant current stimulator with current variable from 0 to 100mA with increments of 0.5mA and pulse duration to be		
		varied from 50µs - 1000µs with 50µs increments.		
		24)Software adjustable notch filter		
		25)The electrical stimulator should have controls for stimulus delivery, intensity, store, reverse polarity button and two		
		programmable buttons preferred by user		
		26)The base unit of the system should provide all the controls for performing the test, switching to other test protocols and		
		review of the test with control knobs for sensitivity, gain, marking cursors, pulse width etc.In-built comprehensive nerve/muscle		
		directory		
		27)Automatic report generation and grammatically frame the sentences and print in the report.		
		28)The software should be supplied with Normative data for computation and online comparison with test values		
		29)The software to have facility to quickly review the complete summary of the all the acquired traces and tabulate the		
		results without need to go in each and every test protocol.		
		30)The software should have also facility for Left vs Right comparison in NCV,F,H and Evoked potential tests.		
		31)The software should have Live monitor window to view the raw signal of the data before acquiring or storing on the system.		
		32)The system should be supplied with branded Pentium Core 2 Duo Processor 2.7 GHz, 512 MB RAM, 120 GB Hard Disk,		
		15" flat panel TFT /LCD monitor, DVD Writer, Laser Printer, UPS and CVT, Trolley & Electrode starter kit.		
		32)The system should have Quantitative EMG with Multi MUP, Interference pattern with online cloud plot, Single fiber		
		EMG with Histograms, Motor unit number estimation, P300, Reflex hammer, Skin temperature probe.		
		Environmental factors		
		The unit shall be capable of operating continuously in ambient temperature of 10 -40deg C and relative humidity of 15-90%		
		The unit shall be capable of being stored continuously in ambient temperature of 0 -50deg C and relative humidity of 15-90%		
		The equipment has a protective earth connection, and must be connected to a wall outlet with protective earth contact.		
		Type BF (including Circuplodes)		
		Power Supply		
		Power input to be 220-240VAC, 50Hz		
		UPS of suitable rating with voltage regulation, spike protection and maintenance free batteries for 60 minutes back up.		
		Standards, Safety and Training		
		Product should be FDA/CE or ISI approved		
		Manufacturer should be ISO certfied for quality standards		
		Electrical safety conforms to standards for electrical safety IEC-60601-1 General Requirements		
		Should have local service facility .The service provider should have the necessary equipments recommended by the manufacturer		
		to carry out preventive maintenance test as per guidelines provided in the service/maintenance manual.		
		Degree of Protection Against Electric Shock Type BF -Should incorporate insulated patient attachment for light source.		

		Certification to meeting Biocompatibility as per ISO 10993-1, "Biological evaluation of medical devices-Part 1: Guidance		
		on selection of tests"		
		Certified to meet the current leakage requirement of IEC 60601-2-18 or equivalent standard for Medical Equipment particular		
		Comprehensive warranty for 2 years		
		Documentation		
		User Manual in English		
		Maintenance Manual in English		
		Certificate of Calibration and inspection from the factory		
		List of important spares and accessories with their part number and costing.		
		Log book with instructions for daily, weekly, monthly and quarterly maintenance checklist.		
		The job descriptin of the hospital technician and company service engineer should be clearly spelt out.		
		List of Equipments available for providing calibration and routine maintenance support as per manufacturer		
		documentation in service / technical manual		
36		**Endo leser**		
		Laser wavelength: 10543nm		
		Mode: Gufer Gaussian. Ophtical breakdown: 2.5m J in air. Pulse		
		duration: Less then 4ng (2.3ns).		
		Max Laser energy: Single pulse : 10 mj		
		Double pulse: 23 mj		
		Triple Pulse : 37 mj		
		Energy Level: 22 levels		
		Frequency : 2.5Hz		
		Focus Dia : 10 em		
		Angle of Exit apertex : 16 degree		
		Aiming Beam : Laser diode 670 nm Power 5 uw. Apoint aiming beam		
		Focus shift: 0- 150 um		
		Electric connection : 100- 240V		
		Illumination : 12V, 30 W halogen lamp		
		Magnification: 5,8,12,20,32 X 10 eye piece.		
		Tube : Parallel		
		Slit adjustment- width 0- 14mmPhysician safty fitter: Colour tidelity		
		Item must have CE or US FDA certificate		
		Comprehensive warranty for 2 years.		
		CE or FDA approved device		
37		**Examination Tray**		
		Certified Stainless steel		
		10X14Inch		
		with cover		
		Item must have CE or US FDA certificate		
		Comprehensive warranty for 2 years.		
38		**Plasma Extractor**		
		Mechanical		
		Powerful spring		
		Manual system (accepts all kind of blood bags)		
		Stainless steel frame and construction.		
		Transparent plate for visual control		
		Easy to use .		
		Item must have CE or US FDA certificate		
		Comprehensive warranty for 2 years.		
39		**Real time PCR anaylzer**		
		The machine should be single bay Cycler to hold different blocks like 96well ,dual block of 48x48x0.2ml etc		
		Temp Range:0 Deg C -105 Deg C		
		Dynamic Gradient facility for accurate Temp and Time optimization		
		Machine should have Dual Blocks for 48 x 48 for 0.2 ml, and 96well block for 0.2 ml		
		Ramping rate : 3 Deg C/Second		
		Thumbwheel adjustable and temperature programmable heated lid.		
		Program Restart option after power failure at least for 4 hrs.		
		Program capacity at least 400 programmes with password protected folders.		
		Multizone feedback control to optimize Thermal profiles		
		System should be networkable.		
		Future upgradability to dual 16x16 insitu block,384 well plate block,dual block with 0.2& 0.5ml tubes simultaneously &		
		real time block		
		Operating should be done in between 4 deg to 32 deg c.		
		Input power supply: 220 ± 20 % V AC , 50Hz		
		Sample preparation unit		
		Item must have CE or US FDA certificate		
		Comprehensive warranty for 2 years.		

40		**General Ultrasound**		
		Ergonomic, compact design.		
		Alpha numeric key board with illuminated function key and status display		
		Suitable for examination and diagnosis of abdomen, gynecology, OB/GYN and small parts		
		The system should have a full field digital scan converter capable of supporting two or more probes		
		Standard automatic focusing.		
		Transducers technology with connectivity of two/three transducers simultaneously.		
		Should be micro processor controlled with high resolution image matrix.		
		High resolution integrated monitor 9" or more with tilt and swivel facility		
		Number of discrete channels: 256 (minimum) CINE loop		
		Should have realtime zooming facility dynamic range enlargement and freeze facility.		
		Facility to magnify specific region of image. Scrolling facility should be possible after magnification		
		Should be portable/have handle for transporting machine/should have integrated trolley which is light weight fitted		
		with wheels which can be easily locked.		
		The new technology should allow easy and user friendly and special user set up.		
		B Mode, Dual B Mode/M Simultaneous Mode.		
		memory, facility for possible up gradation..		
		Convex array abdominal transducers of 3.5 MHZ (preferably multifrequency probe from 2-5 MHZ)		
		Highest frequency up to 12MHz or more		
		Standard video in/out.		
		USB ports . Multi-language function. . Multi-frequency transducer		
		Full DICOM 3.0 compliant (DICOM send/receive, query/retrieve, print, work list).		
		Image archiving on CD/ Thermal print.		
		With convex array 3.5/6 MHz . Transducers		
		B/W Printer		
		Input power supply: 220 ± 20 % V AC , 50Hz		
		Item must have CE or US FDA certificate		
		Comprehensive warranty for 2 years.		
41		**Fully Automated Haematology Analyser (3 Parts Differential)**		
	1	**Description of Function**		
	1.1	Automated haematology analyser or complete blood cell counter is used to count various types of blood cells in the blood.		
	2	**Operational Requirements**		
	2.1	Fully automated 3 parts differential haematology analyser.		
	3	**System Configuration**		
	3.1	Fully Automated Haematology Analyser, complete unit with all standard reagents, consumables and accessories.		
	4	**Technical Specifications**		
	4.1	Determination of 18 to 19 parameters, with 3-part differential, for routine haematology.		
	4.2	Shall have fully automatic, open system.		
	4.3	Sample volume: < 30ul.		
	4.4	Throughput: approx. 50 samples per hour, 24h power on, with dormancy and wake function.		
	4.5	Determination of: Red blood cell(RBC), White blood cell(WBC), Haemoglobin(HGB), Haematocrit(HCT), Mean cell volume(MCV), Mean cell haemoglobin(MCH), Red cell distribution(RDW-SD and RDW-CV), Platelets(PLT),Platelet distribution(PDW-SD and PDW-CV), Mean platelet volume(MPV), differential leucocytes (LYM, LYM%, MID, MID%, GRA, GRA%).		
	4.6	Method: Photometry and impedance technology, cyanide-free colorimetry for haemoglobin counting.		
	4.7	Calibration: independent automated calibration and manual calibration for minimum two test modes.		
	4.8	Typical counting time: approximately 60 seconds for differential.		
	4.9	Shall have with self-test capability.		
	4.1	Display: LCD screen.		
	4.11	Indication of self-test failures and assistance messages, sample ID, date and time are reported with test results.		
	4.12	Supplied complete with dedicated data analysis and data management software.		
	4.13	Results are reported on external laser printer.		
	4.14	Shall have built-in RS232, USB2.0 or equivalent, for allowing data transfer and network capability via LIS.		
	4.15	On board memory for about 100-150 tests records.		
	4.16	Shall quote rates for reagents & consumables, calibrators & controls, printer paper, separately and it must be valid for at least 3 years.		
	5	**Accessories, spares and consumables**		
	5.1	Reagents & consumables, calibrators & controls, printer paper to be supplied for 1000 samples.		
	5.2	Shall provide compatible laser printer, 1 no.		
	5.3	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer. Bidders must specify the quantity of every item included in their offer (including items not specified above).		
	6	**Operating Environment**		
	6.1	The product offered shall be designed to be stored and to operate normally under the conditions of the purchaser's country. The conditions include Power Supply, Climate, Temperature, Humidity, etc.		
	6.2	Power supply: 220-240VAC, 50Hz fitted with appropriate plug type D (3 pins). The power cable must be minimum 3 meters long.		

	6.3	Suitable UPS with maintenance free batteries, voltage regulation and spike protection for minimum		
		30 min. back-up for the entire system including computer and printer shall be supplied with the		
		system.		
	7	**Standards and Safety Requirements**		
	7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND		
	7.2	CE (93/42 EEC Directives) or USFDA approved product certificate.		
	7.3	Shall meet IEC 61010-2-081 safety requirements for electrical equipment for measurement, control,		
		and laboratory use - Part 2-081: Particular requirements for automatic and semi-automatic laboratory		
		equipment for analysis and other purposes.		
	8	**User Training**		
		Must provide user training (including how to use and maintain the equipment).		
	9	**Warranty**		
	9.1	Comprehensive warranty for 2 years after acceptance.		
	10	**Maintenance Service During Warranty Period**		
	10.1	During the warranty period supplier must ensure preventive maintenance and corrective/breakdown		
		maintenance whenever required.		
	11	**Installation and Commissioning**		
	11.1	The bidder must arrange for the equipment to be installed and commissioned by certified or qualified		
		personnel; any prerequisites for installation to be communicated to the purchaser in advance, in		
		detail.		
	12	**Documentation**		
	12.1	User (Operating) manual in English.		
	12.2	Service (Technical / Maintenance) manual in English.		
	12.3	List of important spare parts and accessories with their part numbers and costing.		
	12.4	Certificate of calibration and inspection from factory.		
42		**Holter Monitor**		
		Holter ECG Monitoring		
		System Having		
		Following Features:		
		FEATURES :		
		24 hours continuous ECG examination in		
		2 or 3 channels from 5,7 lead.		
		2 or 3 channels recording.		
		Removable PCMCIA-ATA flash card.		
		Prints complete narrative and quantitative reports, as well as 24 hours of full disclosure.		
		ST analysis and reporting is independent for all 3 channels.		
		- Analysis classifications include :		
		Maximum, minimum and average Heart Rate,		
		Bradycardia, Tachycardia, Ventricularn Ectopics,		
		VE Pairs, Ventricular Runs, Bigeminy, Pauses,		
		Supraventricular Ectopics, SVT's, ST Elevation,		
		ST Depression. Patient and recorder		
		Must submit ISO13485:2003/AC:2007 for Medical Devices AND CE (93/42 EEC Directives) or USFDA approved product certificate.		
		Comprehensive warranty for 2 years after acceptance.		
43		**Hot air oven**		
	1	**Description of Function**		
	1.1	Hot Air Oven is required for heating a sample under controlled conditions.		
	2	**Operational Requirements**		
	2.1	Microprocessor based system with PID-temperature controller with integrated auto diagnostic system with fault indicator.		
	3	**System Configuration**		
	3.1	Microprocessor based Hot Air Oven.		
	4	**Technical Specifications**		
	4.1	External: Stainless Steel Casing: w x h x d: Approx.600 x 600 x 600 mm, insulated stainless steel door with locking and rear zinc-plated steel.		
	4.2	Interior: w x h x d: Approx. 400mm x 400mm x 400mm. Easy to clean, interior made of stainless steel, with supports on the three sides for three adjustable perforated stainless steel shelves.		
	4.3	Forced air circulation by quiet air turbine/Fan to ensure uniform temperature.		
	4.4	Fitted with load indicator and safety thermostat take over indicator lamp. LCD/LED indicator.		
	4.5	Temperature Variation +/- 1.		
	4.6	Temperature Range- ambient to 250 oC		
	4.7	Output available for data acquisition.		
	4.8	Hot Air Oven shall be mounted on suitable epoxy powder coated support stand having 4 robust 360 deg. swivel lockable castor wheels for easy movement and repositioning.		
	5	**Accessories, spares and consumables**		
	5.1	All standard accessories/consumables/parts required for the proper operation of the above item shall be included in the offer.		
	6	**Operating Environment**		
	6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.		

	6.2	Power supply: 220-240V/ 50 Hz AC Single phase fitted with appropriate plugs. The power cable must be at least 3 metres long.		
	7	**Standards and Safety Requirements**		
	7.1	Must submit ISO 9001 or ISO 13485:2003/AC: 2007 AND		
	7.2	CE or USFDA or TUV approved product certificate.		
	8	**User Training**		
	8.1	User training must be provided onsite		
	9	**Warranty**		
	9.1	Comprehensive warranty for 2 years after acceptance.		
	10	**Maintenance Service During Warranty Period**		
	10.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.		
	11	**Installation and Commissioning**		
	11.1	Supplier must accomplish proper installation and commissioning of the equipment on site.		
	12	**Documentation**		
	12.1	User (Operating) manual in English.		
	12.2	Service (Technical / Maintenance) manual in English.		
	12.3	List of important spare parts and accessories with their part number and costing.		
	12.4	Certificate of calibration and inspection from factory.		
44		**Hydrocephalus Shunt Set**		
		Standard Scalpel –Handle no.3/12,5cm,soli	2	
		Standard Scalpel –Handle no.7,soli	1	
		Mayo Dissecting Scissor 14 cm ,Straight	1	
		Metzenbaum – Fino DissectSCI14cm,Str.,blunt/blunt	1	
		Micro –Adson Forsep Tiss.12cm,1:2 Teeth	2	
		Adson-Brown Forsep Tiss .12cm,with Teeth	2	
		Taylor Forcep dress.17cm	2	
		Taylor Tissue Forcep 17 cm,str.,1:2 T	2	
		Gerald Forcep Dress 18cm,straight	2	
		Frazier Suction Tube ,19 cm (Wl 100mm)ch .10	1	
		angled 30		
		Mayo-Hegar Needle Holder 16 cm	1	
		Dietrich Bulldog clamp 5cm/8mm,angled	1	
		Halsted-Mosquito Artery Forcep12 cm, str	6	
		Halsted-Mosquito Artery Forcep12 cm, Curv	6	
		Crile Artery Forcep 14cm ,straight	1	
		Crile Artery Forcep 14cm ,curved	1	
		Kocher-Ochsner Art.Fcp,14cm,1:2 teeth,str	1	
		Backhaus Towel Forcep 8cm	6	
		Forester dressing Forcep 18 cm ,serrated	4	
		Senn-Mueller _Retractor 16 cm , sharp	2	
		Alm Retractor 7cm,4:4 teeth,sharp	1	
		Jansen retractor 10 cm ,3:3 Teeth ,blunt	2	
		Adson Retractor 20 cm ,3:4 teeth ,sharp	1	
		Bruns Bome Curette 23cm,Fig.4,straight	1	
		Jansen Bone Rongeur Forcep 18cm,curved	1	
		Allis Tissue-and Organ Hol.fcp.15cm,5:6T	6	
		PenfieldDura-Dissector 19cm/fig.3	1	
		Penfield Dura-Dissector 20cm/fig.4	1	
		Cushing Retractor,20cm	2	
		Raney Hemostasis Clips(50pieces)	1	
		Raney Applying and Removing forcep	1	
		Bunnell Hand Drill16cm,longitudinally	1	
		Bored,with three-jaw-chuck and key		
		Opening up to4mmØ		
		CE Or USFDA or TUV approved product certificate.		
		Comprehensive warranty for 2 years after acceptance.		
45		**ICU bed**		
	1	Description of Function		
	1.1	ICU Beds are required in the Intensive Care for comfort of the patient and to facilitate comfortable transfer to and fro emergency/OT/Wards etc. It is also required to carry out point of care procedures including radiological procedures at the bedside.		
	2	Operational Requirements		
	2.1	The system should be electrically operatable and adjustable for heights, trendelenburg etc.		
		It should also be having radiotransluscent top		
	3	System Configuration		
	3.1	Electrically and pneumatically operated ICU bed with mattress.		
	4	Technical Specifications		
	4.1	Should have four section mattress base		
	4.2	Should have X-Ray translucent back section made up of high pressure laminate.		
	4.3	Should have X-Ray cassette holder underneath the back section & should allow insertion of X-Ray cassette from either side of the bed.		

	4.4	Base frame & support frame should be made up of steel for long life & prevention from rusting.		
	4.5	4.5 Should have step less electrical adjustment for the following :-		
		Height : 450-840 mm		
		Back section : 0- 50 degrees		
		Leg Section : 0-30 degrees		
	4.6	Should have step less pneumatic adjustment for Trendelenburg (25° approx.), antitrendelenburg (15° approx.)		
	4.7	Should have a manual quick release mechanism for back section adjustment during emergency situation		
	4.8	Should be equipped with four articulated half-length tuck away side rails		
	4.9	Should be equipped with large castors (diameter 150 mm) with central braking and steering facility.		
	4.10	Mattress of the Bed should be made up of high density foam with Anti-Microbial agent incorporated into all components that assists in Prohibiting growth of bacteria & fungi and easy to clean.		
	4.11	Mattress should be fully Radiolucent for ease in performing portable X-Rays.		
	4.12	4.12 Should have bumpers at all four corners and place for fixing accessories		
	4.13	Dimensions of bed (approx.) :		
		Length : 2200 -2290 mm		
		Width : 850 -1020mm		
		Mattress Size : appropriate as per bed size		
	5	Accessories, spares and consumables		
	5.1	Accessories:		
		· I.C.U Bed Mainframe -01		
		· Bed Ends, detachable : 01 pair		
		· Articulated half-length tuck away side rails : 04 Nos.		
		· IV Rods: 01 No.		
		· Mattress 12 cm Thick : 01 No.		
	6	Operating Environment		
	6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.		
	6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.		
	6.3	Resettable overcurrent breaker shall be fitted for protection		
	7	Standards and Safety Requirements		
	7.1	The unit offered shall be certified to meeting the relevant quality and safety requirements of TUV, CE mark (MDD), USFDA, IEC,Radiation safety, safety of pressurised equipment and any other relevant quality and safety standards .		
	7.2	7.2 Manufacturer must have ISO certification for quality standards.		
	7.3	7.3 Certified to be compliant with IEC 60601-2-38 Medical Electrical Equipment part 2-38 Particular requirements for safety of Electrically Operated Hospital Beds.		
	8	User Training		
	8.1	On site operational training till the familiarity of the system and satisfaction of end user shall be provided.		
	9	Warranty		
	9.1	Comprehensive warranty for 2 years.		
	10	Maintenance Service During Warranty Period		
	10.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.		
	11	Documentation		
	11.1	User (Operating) manual in English		
	11.2	Service (Technical / Maintenance) manual in English		
	11.3	12.3 List of important spare parts and accessories with their part numbers and costing.		
	11.4	12.4 Certificate of calibration and inspection from factory.		
	11.5	Log book with instruction for daily, weekly, monthly and quarterly maintenance checklist.		
	11.6	CE Or USFDA or TUV approved product certificate.		
	11.7	Comprehensive warranty for 2 years after acceptance.		
46	No.	**ICU Ventilator**		
	1	**Description of Function**		
	1.1	ICU ventilator provides artificial respiratory support to the critical patients in the intensive care units.		
	2	**Operational Requirements**		
	2.1	Microprocessor Controlled ventilator with integrated facility for ventilation monitoring suitable for new-born to adult ventilation.		
	3	**System Configurations**		
	3.1	ICU Ventilator for Infant to Adult, complete unit with all standard accessories.		
	4	**Technical Specifications**		
	4.1	Imported hinged arm holder for holding the circuit.		
	4.2	Colour TFT screen, 12 Inch or more.		
	4.3	Facility to measure and display:		
		End tidal CO2 with capnography.		
		3 Waves: Pressure & Time, Volume & Time and Flow & Time.		
		3 Loops: P-V, F-V, P-F with facility of saving of 3 loops for reference.		
		Graphic display to have automatic scaling facility for waves.		
		Status indicator for ventilator mode, battery life, patient data, alarm settings, clock etc.		

	4.4	Trending facility for 72 hours with minimum 5 minutes resolution for recent 24 hours.		
	4.5	Automatic compliance & leakage compensation for circuit and ET tube.		
	4.6	Must have following settings :		
		Tidal Volume up to 2000ml.		
		Pressure (insp.).		
		Pressure Ramp.		
		Flow Pattern.		
		Respiratory rate up to 100 breaths per minute.		
		SIMV Respiratory Rate up to 40 breaths per minute.		
		CPAP/PEEP: PEEP 50cmH2O.		
		Pressure Support.		
		FIO2.		
		Pause Time.		
		Pressure & Flow Trigger: Pressure Trigger 0-20 cmH2O below PEEP, Trigger Flow 0-100%.		
		Inspiratory rise time:-0-20% of breath cycle time.		
		I:E Ratio: 1:10 to 4:1		
	4.7	Monitoring of the following parameters:		
		Airway Pressure (Peak & Mean).		
		Tidal volume (Inspired & Expired).		
		Minute volume (Inspired and Expired).		
		Spontaneous Minute Volume.		
		Total frequency.		
		FIO2 dynamic.		
		Intrinsic PEEP and PEEPi volume.		
		Plateau pressure.		
		Resistance & Compliance.		
		Use selector alarms for all measured & monitored parameters.		
	4.8	Modes of ventilation:		
		Volume controlled.		
		Pressure controlled.		
		Pressure support.		
		SIMV (pressure control and volume control) with pressure support.		
		CPAP/PEEP.		
		Inverse ratio ventilation.		
		Advanced mode like pressure controlled volume guaranteed.		
		Non Invasive ventilation.		
		APRV or equivalent.		
		PRVC or equivalent.		
	4.9	Shall have apnoea /backup ventilation		
	4.1	Expiratory block must be autoclaveable and no routine calibration is required.		
	4.11	Shall have the ability to calculate / procedure:		
		Intrinsic PEEP & Intrinsic PEEP Volume.		
		Occlusion Pressure.		
		Spontaneous breathing trial.		
		Facility to calculate lower and upper inflection point.		
	4.12	Nebulizer with capability to deliver particle size of < 3 micron & to be used in both Off and On line		
	4.13	Shall have automatic patient detection facility.		
	4.14	**Medical Air Compressor:**		
		Imported standalone medical air compressor.		
		Snap fit with the ventilator module to provide an oil free medical air.		
		Peak output flow shall be minimum 160 LPM.		
		Air quality must comply with ISO compressed air purity class.		
		Medical Air Compressor must automatically activate in the event of wall air supply loss.		
		Replacement of internal filters must be performed without removing the compressor.		
		Must have washable air filter.		
	4.15	**Reusable Face Mask & Nasal Mask:**		
		Reusable face & nasal mask with textured dual flap silicone cushion flap for easy fit.		
		Removable forehead support and pad to match the angle of patient's forehead.		
		Stability selector for easy fit and angle.		
		Ball & Socket headgear attachments.		
		Must be autoclaveable.		
	4.16	Shall have battery backup for minimum 1 hour.		
	4.17	RS 232C interface for communications with networked devices.		
	5	**Accessories, spares and consumables**		
	5.1	Adult, Paediatric and Neonatal reusable, autoclaveable silicon breathing circuits: 02 set each		
	5.2	Reusable Masks (Small, Medium, and Large): 02 set each.		
	5.3	Connecting hose with regulator/ flow meter or probe for connection to Pin index oxygen cylinder and BOC type oxygen wall outlet, 3 meter length: 01 set.		
	5.4	Humidifier: Servo controlled with digital monitoring of inspired gas temperature complete with heating wire: 01 no.		
	5.5	Filter paper for humidifier for 100 uses.		
	5.6	O2 cell with O-ring.		

	5.7	Silicone test lung adult and child size: 01 set each		
	5.8	Nipple connector 15-10 mm.		
	5.9	Flow sensors: 05 nos.		
	5.1	Inspiration bacterial filter, able to filter 99.97% of all 0.3 microns particles: 05 nos.		
	5.11	Expiration bacterial filter, able to filter 99.97% of all 0.3 microns particles: 05 nos.		
	5.12	Non corrosive imported trolley with wheels & brakes and hinged arm: 01 no.		
	5.13	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.		
	6	Operating Environment		
	6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.		
	6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.		
	7	Standards and Safety Requirements		
	7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND		
	7.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.		
	7.3	Certified to be compliant with ANS/IEC60601.2.12-01 Medical Electrical Equipment—Part 2-12; Particular Requirements for the Safety of Lung Ventilators—Critical Care Ventilators.		
	7.4	Must meet IEC 529 Level 3 (IP3X) (spraying water) for enclosure protection, water ingress.		
	7.5	Certified to be compliant with ISO-7767 for Oxygen monitoring.		
	8	User Training		
	8.1	Must provide user training (including how to use and maintain the equipment).		
	9	Warranty		
	9.1	Comprehensive warranty for 2 years after acceptance.		
	10	Maintenance Service During Warranty Period		
	10.1	During the warranty period supplier must ensure preventive maintenance and corrective/breakdown maintenance whenever required.		
	11	Documentation		
	11.1	User (Operating) manual in English.		
	11.2	Service (Technical / Maintenance) manual in English.		
	11.3	List of important spare parts and accessories with their part numbers and costing.		
	11.4	Certificate of calibration and inspection from factory.		
47		**Incubator + shaker**		
		1 Description of Function		
		1.1 Incubators are required to incubate living culture at a uniform temperature above ambient.		
		2 Operational Requirements		
		2.1 System with temperatures up to 50 deg C - specifically for incubating living cultures at 37 deg C and at 45 deg C as required.		
		3 Technical Specifications		
		3.1 Capacity: within 30L		
		3.2 Interior chamber: Stainless steel for easy cleaning and decontamination		
		3.3 Timer: 1 min. to 100 hours and hold position		
		3.4 Temp range 5 deg C above ambient to 50 deg C		
		3.5 Minimum 4 adjustable shelves should be available.		
		3.6 Internal glass door for the observation		
		3.7 Temp Accuracy +/-1% of required temp, with inbuilt Temp.Sensor		
		3.8 Adjustable safety thermostat for temp setting at 1 deg C increment		
		3.9 Minimum turbulence and no cross contamination		
		3.10 In case of total breakdown of sensor, the heating should be switched off at approx. within 3 °C above set value.		
		3.11 There should be a Membrane Keypad with LCD/LED to set and display operating parameters, current status, running		
		time and alarm conditions for time and temperature.		
		3.12 Interior lighting facility, insulated door fitted with heavy		
		4 System Configuration Accessories, spares and consumables		
		4.1 System as specified-		
		5 Environmental factors		
		5.1 The unit shall be capable of being stored continuously in ambient temperature of 0 -50deg C and relative humidity of 15-90%		
		5.2 The unit shall be capable of operating continuously in ambient temperature of 10 -40deg C and relative humidity of 15-90%		
		6 Power Supply		
		6.1 Power input to be 220-240VAC, 50Hz fitted with Sudanese plug		
		6.2 Resettable overcurrent breaker shall be fitted for protection		
		6.3 Suaitable voltage corrector/stabilizer		
		6.4 Suitable UPS with maintenance free batteries for minimum one-hour back-up should be supplied with the system.		
		7 Standards and Safety		
		7.1 Should be compliant to ISO 13485: Quality systems - Medical devices - Particular requirements for the application of ISO 9001		
		7.2 Should be FDA or CE or ISI approved product		
		7.3 Comprehensive training for lab staff and support services till familiarity with the system.		

		7.4 Attach original manufacturer's product catalogue		
		8 Documentation		
		8.1 Certificate of calibration and inspection from factory.		
		8.2 List of Equipments available for providing calibration and routine maintenance support as per manufacturer		
		documentation in service / technical manual.		
		8.3 User/Technical/Maintenance manuals to be supplied		
		8.4 List of important spare parts and accessories with their part number and costing.		
		8.5 Log book with instruction for daily , weekly, monthly and quarterly maintenance checklist.		
		Comprehensive warranty for 2 years after acceptance.		
48		**Incubator 50L**		
		1 Description of Function		
		1.1 Incubators are required to incubate living culture at a uniform temperature above ambient.		
		2 Operational Requirements		
		2.1 System with temperatures up to 50 deg C - specifically for incubating living cultures at 37 deg C and at 45 deg C as required.		
		3 Technical Specifications		
		3.1 Capacity: within 50L		
		3.2 Interior chamber: Stainless steel for easy cleaning and decontamination		
		3.3 Timer: 1 min. to 100 hours and hold position		
		3.4 Temp range 5 deg C above ambient to 50 deg C		
		3.5 Minimum 4 adjustable shelves should be available.		
		3.6 Internal glass door for the observation		
		3.7 Temp Accuracy +/-1% of required temp, with inbuilt Temp.Sensor		
		3.8 Adjustable safety thermostat for temp setting at 1 deg C increment		
		3.9 Minimum turbulence and no cross contamination		
		3.10 In case of total breakdown of sensor, the heating should be switched off at approx. within 3 °C above set value.		
		3.11 There should be a Membrane Keypad with LCD/LED to set and display operating parameters, current status, running		
		time and alarm conditions for time and temperature.		
		3.12 Interior lighting facility, insulated door fitted with heavy		
		4 System Configuration Accessories, spares and consumables		
		4.1 System as specified-		
		5 Environmental factors		
		5.1 The unit shall be capable of being stored continuously in ambient temperature of 0 -50deg C and relative humidity of 15-90%		
		5.2 The unit shall be capable of operating continuously in ambient temperature of 10 -40deg C and relative humidity of 15-90%		
		6 Power Supply		
		6.1 Power input to be 220-240VAC, 50Hz fitted with Sudanese plug		
		6.2 Resettable overcurrent breaker shall be fitted for protection		
		6.3 Suaitable voltage corrector/stabilizer		
		6.4 Suitable UPS with maintenance free batteries for minimum one-hour back-up should be supplied with the system.		
		7 Standards and Safety		
		7.1 Should be compliant to ISO 13485: Quality systems - Medical devices - Particular requirements for the application of ISO 9001		
		7.2 Should be FDA or CE or ISI approved product		
		7.3 Comprehensive training for lab staff and support services till familiarity with the system.		
		7.4 Attach original manufacturer's product catalogue		
		8 Documentation		
		8.1 Certificate of calibration and inspection from factory.		
		8.2 List of Equipments available for providing calibration and routine maintenance support as per manufacturer		
		documentation in service / technical manual.		
		8.3 User/Technical/Maintenance manuals to be supplied		
		8.4 List of important spare parts and accessories with their part number and costing.		
		8.5 Log book with instruction for daily , weekly, monthly and quarterly maintenance checklist.		
		Comprehensive warranty for 2 years after acceptance.		
49		**Infant scale**		
	No.	Item Specifications		
	1	**Description of Function**		
	1.1	Infant Weighing Scale (Pan Type) for Neonatal use and it must be mechanically operated		
	2	**Operational Requirements**		
	2.1	Pan type baby weighing scale. Suspension, trouser or hanging types as well as electronic or battery operated scales are not acceptable.		
	3	**System Configuration**		
	3.1	Infant weighing scale (Pan type), complete unit.		
	4	**Technical Specifications**		
	4.1	Large pan, approx. 450mm long and 300mm wide.		
	4.2	Pan to have flat base with lips on sides only (NOT on ends). Lip to be approx.80mm height		

	4.3	Pan preferably of Acrylic or Moulded Engineering Plastic. Metal having easy clean surface is also acceptable.		
	4.4	Scale to weigh 0 to 20 Kg in increments of 50g		
	4.5	Dial type or Danish yard-arm balance types acceptable		
	4.6	To have Tare/Zero adjustment system		
	5	**Accessories, spares and consumables**		
	5.1	Shall supply with all accessories for smooth operation of the system.		
	6	**Operating Environment**		
	6.1	The product offered shall be designed to be stored and to operate normally under Climate, Temperature,Humidity, etc. for Sudan.		
	7	Standards and Safety Requirements		
	7.1	Manufacturer must have ISO certification for quality standards.		
	8	**User Training**		
	8.1	Not applicable.		
	9	**Warranty**		
	9.1	Comprehensive warranty for 2 years after acceptance.		
	10	**Maintenance Service During Warranty Period**		
	10.1	Standard warranty conditions are applicable.		
	11	**Installation, Inspections and Commissioning**		
	11.1	Must supply preassembled unit, ready to use.		
	12	**Documentation**		
	12.1	User (Operating) manual in English.		
	12.2	Service (Technical / Maintenance) manual in English.		
	12.3	List of important spare parts and accessories with their part numbers and costing.		
	12.4	Certificate of calibration and inspection from factory.		
50	No.	**Infusion Pump**		
	1	A microprocessor controlled infusion pump unit is needed to include but not limited to the following features:		
	2	Flat hygienic touch screen.		
	3	Syringe loading sensor – with KVO (keep vein open)		
	4	Self calibrated, self diagnosis capability		
	5	Volume range from 1 –999 ml/hr or better in 1 ml increment		
	6	High accuracy rate< /- 2%		
	7	Audio visual indicators		
	8	Multi types A/V alarms to include occlusion, door open, low battery, empty, etc…		
	9	Open system using standard IV lines		
	10	Air in line/ fluid detector		
	11	Built in rechargeable battery, at least two hours operation		
	12	Clamp pole		
	13	Input power supply: 220 ± 20 % V AC , 50Hz		
	14	CE Or USFDA or TUV approved product certificate.		
	15	Comprehensive warranty for 2 years after acceptance.		
51		**Intracranial Pressure Monitor(ICU)**		
		Technical Specification of "Intracranial Pressure Monitor"		
		It should be able to monitor ICP and should have following components		
	1	Basic Unit should display mean systolic and diastolic intracranial pressure as digital display		
	2	Micro sensor transducer having gauge pressure sensor mounted in a titanium case		
	3	ICP should be displayed at digital data rather than hydrostatic column		
	4	One touch zero function		
	5	Battery backup for 2-3 hours		
	6	Facility for adult and children both		
	7	Cable to connect ICP monitor with available bed side multipara monitor should be supplied for wave form analysis		
	8	Subdural/Intraparenchymal monitoring Kit - 12		
	9	Intra Ventricular Cathetor Kit - 5		
	10	Skull Bolt Kit (Micro sensor) - 3		
	11	All its accessories like cable etc to make unit completely functional.		
		Terms and Conditions:		
	1	1. Company should be US FDA/European CE Approved		
	2	2. 5 years Warranty from the date of satisfactory installation		
	3	3. Free training to residents and technicians at site		
	4	4. Quote all items of the set essentially otherwise bid will be rejected		
52		**Kale pot(Bowl)**		
		Certified stainless steel		
		150Ml		
		with cover		
		CE Or USFDA or TUV approved product certificate.		
		Comprehensive warranty for 2 years after acceptance.		
53		**Laminectomy Set**		
		Adson forcep tiss.12cm,1:2Teeth	2	
		Weitlaner Retractor 16 cm, 3:4 Teeth, blunt	2	
		Kelly Retractor, 27 cm , 190X57mm	2	

		Parker- langenbeck Retrac. 21cm, Fig . 1+2,	1	
		Love Nerv Root Hook 19cm, straight	2	
		Adson Retractor 14cm,3:4 Teeth, semi- sharp	2	
		Foerster Dressing Forceep 25cm,serrated	2	
		Pean- Rochester Artery Forcep 18 cm,curved	10	
		Kelly Artery Forcep 14cm,straight	2	
		Allis Tissue- and Organ Hol.Fcp.22cm,5:6T	2	
		Kocher-Ochsner Art. Fcp.18cm,1:2Teeth, str	2	
		Backhaus Towel Forcep 8cm	4	
		Backhaus Towel Forcep 13cm	4	
		CT-ORO Castroviejo Needle Holder 18cm straight	1	
		micro profil, with ratchet		
		CT-ORO Crile- Wood Needle Holder 18cm	2	
		CT-ORO Crile- Wood Needle Holder 15cm	2	
		CT-ORO Castroviejo Needle Holder 14cm	2	
		Straight, smooth,with ratchet		
		Frazier Suction Tube, 19cm (WL 100mm), ch.6, angled30	2	
		Frazier Suction Tube,19cm(WL100mm)	2	
		Ch.8,angled 30		
		Frazier Suction Tube,19cm(WL100mm)	2	
		Ch.10,angled 30		
		Frazier Suction Tube,19cm(WL100mm)	2	
		Ch.12,angled 30		
		Cottle Elevator 20cm/8mm, sharp	2	
		Adson Elevator 17cm,curved	1	
		Freer Elevator 18cm,doble,4,5,mmsh/bl	1	
		Watson-Cheyne Dissector, 18cm	1	
		Leksell-Stille Bone RongeurFcp.24cm/4mm	1	
		Adson Bone rongeur Forcep 20cm/8mm,str.	1	
		Leksell-Stille Bone Rongeur Fcp.24cm/8mm	1	
		Ruskin-Liston Bone cutting Fcp 18cm/8mm	1	
		Standard Scalpel-Handle no.3/12,5cm,solid	2	
		Standard Scalpel-Handle no.7,solid	1	
		Forceps Tiss.12cm, 1:2 Teeth, medium large	2	
		Grunewald (Jansen) Dressing Forcep 20cm	2	
		Adson Forcep Tiss.12cm, 1:2 Teeth	2	
		Gerald Forcep Tiss 17cm, 1:2 Teeth	2	
		Gerald Forcep Dress. 18cm straight	1	
		Tissue Forcep 16cm,1:2cm Teeth, heavy patt	1	
		Billy I Laminectoy punch,Handle	1	
		Billy I punch, Tube-Shaft 18cm1mm,130. with ejector	1	
		Billy I punch, Tube-Shaft 20cm/2mm,	1	
		130. with ejector		
		Billy I punch, Tube-Shaft 20cm3mm,	1	
		130. with ejector		
		Billy I punch, Tube-Shaft 18cm/4mm,	1	
		130. with ejector		
		Billy I punch, Tube-Shaft 20cm/5mm,	1	
		130. with ejector		
		CT-ORO Mayo Scissor 17cm,curved		
		CT-ORO Metzenbaum-Fino Dissect.Scis.18cm	1	
		straight, bl/bl		
		Gruenwald(Cushing)Rongeur 18cm/2*10mm,	1	
		straight		
		Caspar Rongeur fenestrated,jaws with teeths	1	
		18cm/2mm,straight		
		Gruenwald(Cushing)Rongeur 18cm/2*10mm,curved up30º	1	
		Gruenwald(Cushing)Rongeur 18cm/2*10mm,curved down30º	1	
		Gruenwald(Spurling)Rongeur18cm/4*10mm Curved up30º	1	
		Caspar Exploration – and coagulation hook 240mm/Fig.1,insulated 240mm/Fig.1,insulated 240mm/Fig.1,insulated	1	
		Dandy nerv HooK 20 cm	1	
		Penfield Dura – Dissector 17 cm/Fig.1	1	
		Penfield Dura – Dissector 19 cm/Fig.2	1	
		Penfield Dura – Dissector 19 cm/Fig.3	1	
		Penfield Dura – Dissector 20 cm/Fig.4	1	
		Bruns Bone Curett 23cm,Fig.000,Curved	1	
		Bruns Bone Curett 23cm,Fig.00,Curved	1	
		Bruns Bone Curett 23cm,Fig.0,Curved	1	
		Bruns Bone Curett 23cm,Fig.1,Curved	1	
		Bruns Bone Curett 23cm,Fig.2,Curved	1	
		Bruns Bone Curett 23cm,Fig.3,Curved	1	

		Bruns Bone Curett 23cm,Fig.4,Curved	1	
		Bruns Bone Curett 23cm,Fig.5,Curved	1	
		Bruns Bone Curett 23cm,Fig.6,Curved	1	
		Stille – Lure Bone Rongeur Forcep 23 CM,cvd	1	
		CE Or USFDA or TUV approved product certificate.		
		Comprehensive warranty for 2 years after acceptance.		
54		**Length and height board**		
		UNICEF Standard		
		CE Or USFDA or TUV approved product certificate.		
		Comprehensive warranty for 2 years after acceptance.		
55		**Long Subcutaneous Guide**		
		standard		
		CE Or USFDA or TUV approved product certificate.		
		Comprehensive warranty for 2 years after acceptance.		
56		**Manual Centrifuge**		
		Manual operated / Gear system		
		4x15 ML		
		Speed : Max 3,000 rpm		
		CE Or USFDA or TUV approved product certificate.		
		Comprehensive warranty for 2 years after acceptance.		
57		**Medical Bed With Mattress**		
		Item Specifications		
	1	**Description of Function**		
	1.1	A hospital bed is a bed specially designed for hospitalized patients in need of patient ease. These beds have special features both for the comfort and well-being of the patient and for the convenience of hospital staff.		
	1.2	Mattress is to provide a comfortable platform to rest or sleep upon the bed.		
	2	**Operational Requirements**		
	2.1	The patient bed shall be made of solid steel construction with anti-corrosive and antirust treated baked hard epoxy powder coating		
	3	**System Configuration**		
	3.1	Hospital Bed epoxy powder coated		
	4	**Technical Specifications**		
	4.1	Bed base shall be anti-corrosive and antirust treated epoxy powder coated welded steel bar or epoxy powder coated 18G perforated sheet top to improve ventilation.		
	4.2	The patient bed shall be fixed height with 2 sections where the backrest section could be elevated by mechanical hand crank located at the foot-end of the bed.		
	4.3	Shall have 4 IV rod receptacles and mosquito net pole receptacles at the 4 corners		
	4.4	It shall come with one dual hook anti-corrosive and antirust treated epoxy powder coated or 304 grade stainless steel IV rod.		
	4.5	Shall have provisions to fix urinary bag on both sides.		
	4.6	All 4 legs of the locker shall be capped with heavy duty rubber footings.		
	4.7	Bedhead and foot-end panel (head and foot bows) shall be made of either between 4-6 anti-corrosive and antirust treated epoxy powder coated vertical tubular tube of not less than 30mm in diameter or epoxy powder coated steel panel		
	4.8	Both bedhead and foot-end panel shall be detachable.		
	4.9	The height of the bedhead panel: not less than 1060mm from floor.		
	4.10	The height of the foot-end panel: not less than 820mm from floor.		
	4.11	Overall approximate dimension: not less than 1980mm length, 910mm width, 600mm height		
	4.12	The mattress negotiable with hospital beds having an overall approximate dimension of not less than 1980mm length, 910mm width.		
	4.13	It shall be fire retardant antibacterial treated high density approx. 40kg/m3 PU foam mattress.		
	4.14	The mattress shall have thickness of at least 100mm.		
	4.15	Mattress with two sections shall be designed to bend with the positioning of the bed when the backrest and foot section of the bed are adjusted.		
	4.16	The weight capacity of the mattress shall be more than 100kg.		
	4.17	**Mattress Cover:**		
		The mattress shall come with a zipped fire retardant antibacterial, antistatic, acid resistance, waterproof and washable vinyl or vinylized nylon cover. It shall be designed to provide ventilating airflow over the patient's skin. The zip shall be a heavy-duty/large toothed synthetic zipper to enable inspection of the inner foam and totally covered by a flap extending over the zip to prevent ingress of fluids into the actual mattress and allow for replacement.		
	5	**System Configuration Accessories, spares and consumables**		
	5.1	All standard accessories/consumables/parts required for the proper operation of the above item shall be included in the offer. Bidders shall specify, in a separate Excel worksheet, the quantity and details of any items included in this offer which have not been specified in this Technical Specifications Form.		
	6	**Operating Environment**		
	6.1	The system offered shall be designed to store and to operate normally under the conditions. The conditions include Climate, Temperature, Humidity, etc.		
	7	**Warranty**		
	7.1	Warranty for 2 years.		
	8	**CE Or USFDA or TUV approved product certificate.**		
58		**Micro Dissection Instrument Set**		

		Rhoton Dissector 19cm/Ø1mm,round	1	
		Rhoton Dissector 19cm/Ø2mm,round	1	
		Rhoton Dissector 19cm/Ø3mm,round	1	
		1,0mm,spatula shapRhoton Dissector. 19cm/Ø	1	
		Rhoton Dissector 19cm/Ø1,5mm,spatula shap.	1	
		Rhoton Dissector 19cm/Ø2,0mm, spatula shap	1	
		Rhoton Elevator 19cm/Ø1,2mm, spatula shap,	1	
		Rhoton Elevator 19cm/Ø2,8mm, spatula shap	1	
		Rhoton Needle 19cm,semi-sharp	1	
		Rhoton Hook 19cm/90º/2mm,blunt	1	
		Rhoton Hook 19cm/90º2mm,semi-sharp	1	
		Rhoton Hook 19cm/45º3mm,semi-sharp	1	
		Rhoton Ball-pointed probe19cm/90ºangled	1	
		Rhoton Curette sharp19cm/1,0*2,0mm,oval	1	
		Rhoton Curette sharp19cm/45º/1,0*2,0mm	1	
		Rhoton Dissector 19cm/5mm,spatula shap.	1	
		CE Or USFDA or TUV approved product certificate.		
		Comprehensive warranty for 2 years after acceptance.		
59		**Microscope**		
	1	**Description of Function**		
	1.1	Compoun d microscope consists of two or more than two magnifying lenses. One can view individual cells, even living ones. It has high magnification		
	2	**Operational Requirements**		
	2.1	System co mplete with illumination system is required.		
	3	**System Configuration**		
	3.1	Binocular Microscope Compound with complete accessories		
	4	**Technical Specifications**		
	4.1	Body :Bin ocular, sturdy, stable base body with focus adjustment controls		
	4.2	Eye piece : Paired, high quality, (the image of the object as seen through the binocular eyepiece must be well defined centrally in at least 2/3 field of view), achromatic, wide field, 10x and 15x without inbuilt pointer. The eyepiece must be aplanatic and have a minimum field number of 18. Dioptre adjustment must be present on one/ both eye pieces or on the eye piece tube		
	4.3	Objective : Four 4x, 10x, 40x, 100x.		
	4.4	10x and 4 0x objectives must have numerical apertures of 0.25 and 0.65 respectively and must be of spring loaded type or otherwise.		
	4.5	100 x mu st have numerical aperture of 1.25 and must be of oil immersion and spring loaded type.		
		Suitable prominent marking must be provided on 100x for easy identification.		
	4.6	Unbreaka ble containers to be provided for storing the objectives. All objectives must be wide field, achromatic and par focal.		
	4.7	Making f or the Objectives : Each objective must be engraved with the following information:-		
		Name of the manufacturer		
		Magnification and numerical aperture, for example, 10x/0.25		
		100x objective must be engraved with the word 'Oil'		
	4.8	Nose piece: Revolving nose piece to accommodate four objectives with click stops. It must be provided with ribbed grip for easy rotation mounted on a precision ball bearing mechanism for smooth and accurate alignment. Extra ports if any must be fitted with dust proof metallic/ebonite caps.		
	4.9	Stage Un iformly horizontal, mechanical stage having dimensions of length 140 mm (+/- 20mm) with fine vermier graduations (minimum reading accuracy of 0.1 mm). the stage must be provided with spring loaded slide holder for exact positioning of specimen/ slide. It must be designed with convenient sub-stage vertical coaxial adjustment for slide manipulation. The stage must have ball-bearing arrangement to allow smooth travel in transverse directions i.e. 80 mm (+/-5mm) and front to back direction, 50mm (+/-5mm)		
	4.10	Sub-stage condenser: Abbe-type condenser, numerical aperture (N.A.) 1.25 focusable with rack and pinion arrangement incorporating a spherical lens and an iris-diaphragm. The condenser must have a filter holder and removable/ swing in/ out blue filter (suitable for bright field Microscopy).		
	4.11	Sub-stage illuminator: 1.The system must have a build-in variable light source (Illuminator). This source must have a 20 W, 6/12 V Halogen lamp. The circuitry for the light source must include a constant voltage supply. The system must be provided with a step down transformer and an on-off switch and intensity control. The lamp must be provided with a lamp socket which has the facility for easy replacement of the bulb. light		
	4.12	The Illuminator must have a build-in field diaphragm for Kohler illumination.		
	4.13	Eye piece tubes: Binocular eye piece tubes, inclined at 30 and 45 degrees, rotatable through an angle of 360 degrees, having inter-pupillary distance range of 54-74 mm or wider, covering the above mentioned range		
	4.14	Focusing knob: Co-axial coarse and fine focusing knobs capable of smooth fine focusing movement over the full range of coarse travel. The fine focusing movement must have sensitivity of two microns or less (finer) over the entire coarse focusing stop safety arrangement must be provided.		
	4.15	General 1 .All optical parts including objectives, eye pieces and prisms must have anti-reflective coating which also gives anti-fungal property.		
		All metallic parts must be corrosion-proof, acid-proof and stain-proof		
		A bottle of at least 25 ml immersion oil, a roll of lens tissue paper and lens cleaning solution (100 ml) must be provided with each microscope.		
		One no. of anti-static cleaning brush must be provided with each Microscope for cleaning purpose.		

		Each Microscope must be supplied with Blue filters. The Blue filter must be packed in the box and not fixed on the Microscopes.		
	5	**Accessories, spares and consumables**		
	5.1	Accessories:		
		100x oil immersion objective – one.		
		Halogen bulb, (6/12volts, 20w) – 6 Nos.		
		Fuses – 6 Nos.		
	5.2	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer. Bidders must specify the quantity of every item included in their offer (including items not specified above).		
	6	**Operating Environment**		
	6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.		
	6.2	Power supply: 220-240V/ 50 Hz AC Single phase fitted with appropriate plug to meet user's country requirements. The power cable must be minimum 3 metres long.		
	6.3	Voltage corrector/stabilizer of appropriate ratings meeting international standards.(Input 160-260 V and output 220-240 V and 50 Hz)		
	7	**Standards and Safety Requirements**		
	7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices ANDCE or US FDA approved product certificate.		
	8	**User Training**		
	8.1	Must provide user training (including how to use and maintain the equipment).		
	9	**Warranty**		
	9.1	Comprehensive warranty for 2 years after acceptance.		
	10	**Maintenance Service during Warranty Period**		
	10.1	During warranty period supplier must ensure corrective/breakdown maintenance whenever required.		
	11	**Installation and Commissioning**		
	11.1	The bidder must arrange for the equipment to be installed and commissioned by certified or qualified personnel; any prerequisites for installation to be communicated to the user in advance, in detail.		
	12	**Documentation**		
	12.1	User (Operating) manual in English		
	12.2	Service (Technical / Maintenance) manual in English		
	12.3	List of important spare parts and accessories with their part numbers and costing.		
	12.4	Certificate of calibration and inspection from factory.		
60		**Neurosurgery microscope**		
		MICROSCOPE BODY and OPTICS:- Should have Motorized zoom magnification system with apochromatic optics, zoom magnification factors to		
		be around the range of 0.4x to2.4x. All activation should be by handgrip, Stand Mounted LCD control panel and foot control panel, with manual override.		
		Total magnification range 2X- 18X or higher. Internal motorized fine focusing system. All activation should be by handgrip, Stand Mounted LCD		
		control panel and foot control panel, and with manual override. These should be continuously adjustable with working distance from about 200 mm		
		to 500 mm without exchange of objective lens. There should be integrated continuously variable illumination field from 60mm – 15mm or less.		
		Beam Splitter should preferably be integrated in the microscope body, without any external attachment with face to face attachment with rotatable		
		dovetail mount for fatigue free surgeries.		
		BINOCULAR TUBE: 0- 180 degree range tiltable binocular tube with focal length = 170 mm or higher. Should Graduated knob for continuous		
		adjustment of interpupillary distance from 55 mm to 75 mm		
		Auto Balance and Auto Drape – System should be capable of auto-balancing the microscope intraoperatively.		
		Autobalance should be fully computerized and should not involve any manual rotation of knobs (automatic self balancing).		
		EYEPIECES: Pair of high eyepoint widefield push-in eyepieces 10x magnification with magnetic locks, with diopter setting range from -8D to +5D		
		for spectacles wearers. The lenses should have rubberized cuffs for comfort and should preferably have antifogging coating.		
		Face to face attachment for spinal surgery. Stereo Co Observation attachment with two joints with side changer. Optics and eyepiece similar to		
		main surgeon unit.		
		ILLUMINATION SYSTEM: Coaxial xenon illumination of about 300W with back up similar rating xenon with quick-action lamp changer in case		
		of failure of main lamp should be integrated within the microscope stand. In case of electronic system failure the light should continue to work with		
		manual overdrive for optics adjustments.		
		Should have automated illumination Brightness control linked to working distance and magnification.		
		Should have automatic zoom-synchronized illumination field diameter, with manual override and reset feature.		
		HANDGRIPS: Easily maneuverable handgrips with adjustable keys for zoom and focus, Illumination & Magnetic brakes.		
		Programming for magnetic brake for control of stand & Microscope body brakes. Camera controls for video and still images should be programmable		

		on handgrips		
		FLOOR STAND: Rollable floor stand on base with lockable castors, carrier and swivel arms with large reach of 1.30 m or higher, Weight caring		
		capacity at least 18 Kg.		
		Should have free float magnetic system with Multiple magnetic brakes for Microscope body& Stand with, release of magnetic brakes by handgrips.		
		Touch screen Liquid crystal display (LCD) with user prompts, quick set up of different parameters and their activation at press of a button such as		
		automatic speed adjustment or automatic brightness setting depending on magnification.		
		System may preferably have overhead LCD display for showing important parameters to operating surgeon.		
		INTEGRATED DIGITAL VIDEO CAMERA SYSTEM: Advanced digital 3CCD HD Video camera should be attached to supply output to the		
		stand mounted colour LCD screen. In addition there should be ports for connection to PC via USB/FireWire ports, 15 pin VGA port for color		
		monitor, HDMI port +/- DVI port and preferably LAN connectivity.		
		Should be capable of doing video speed focus for impendent focusing apart from microscopic focus		
		USER PROGRAMMING: Programming for starting illumination, Magnification, working distance, Zoom speed & Focus speed for at least 8 - 9 different users.		
		VIDEO/ IMAGE DATA MANAGEMENT SYSTEM: should have attached video recording system & Still photo in the microscope stand with internal HDD of at least 1TB, and high speed DVD writer. Latest generation Macintosh based desktop computer system with video editing software for image processing and editing (video handling - atleast 2 GB harware) and auto duplex printing laser multifunction printer to be provided separately. Original display adapters for 15 pin VGA and HDMI output also to be provided with the desktop along with a 1KVA UPS.		
		VIDEO MONITOR: Medical grade 19"Touch screen Colour LCD display should be mounted on Microscope stand.		
		Fluorescence and ICG – System should be upgradeable to Intraoperative Fluorescence as well as ICG. Systems without this upgradability will not be		
		considered. Image guidance – Microscope should be fully ready for image guidance system integration.		
		Accessories : Should have HD camera with integrated HD Recording system – DVD Digital recording system, DVD burning, USB storage device.		
		Power Supply : 220-240 VAC +/-10%), 50Hz		
		Must submit ISO13485:2003/AC:2007 for Medical Devices ANDCE or US FDA approved product certificate.		
		Comprehensive warranty for 2 years after acceptance.		
61	No.	**Ophthalmic Operating Microscope**		
	1	**Description of Function**		
	1.1	Ophthalmic operating microscopes are used to magnify eye anatomy to assist during ophthalmic surgery.		
	2	**Operational Requirements**		
	2.1	A binocular stereoscopic type microscope with built in illumination provided with facility for changing the magnification without disturbing other alignments i.e. when the magnification is changed the image remains in focus.		
	3	**System Configuration**		
	3.1	Ophthalmic Operating Microscope (Floor Mounted), complete unit with all standard accessories.		
	4	**Technical Specifications**		
	4.1	Binocular optical head with coaxial illumination.		
	4.2	**Eye Piece:**		
		Wide field minimum 10 X to 12.5X individually adjustable		
		Inclined binocular tube 45 deg.		
		Must have dioptric adjustment of -5.00 to +5.00.		
		Inter-pupillary distance : 55mm to 75mm.		
	4.3	Objective Lens: focal length (f' minimum 175+/-25 & above).		
	4.4	Working Distance: To be stated for each alternative not less than 150 mm.		
	4.5	Total Magnification: 4 to 17.5X or more, if stepped, the steps to be stated.		
	4.6	Assistant Binocular Microscope: Assistant Microscope to match the focusing of main Microscope.		
	4.7	Zooming ratio if available 1:6.		
	4.8	Field of Vision: Range 40 mm to 50 mm or more (at the minimum magnification).		
	4.9	Motorized focussing.		
	4.1	Motorized foot control.		
	4.11	Intensify: 80,000 lux or more.		
	4.12	Type: Coaxial dual lamp/ by optical light guide. Halogen bulbs, no. of bulbs, voltage, wattage and secondary power source to be stated by bidder. Fan Cooling arrangement shall be available.		
	4.13	Field: Range 45 mm to 60 mm or more.		
	4.14	U.V. Filter: U.V filters switchable facility for occluding pupillary light.		
	4.15	**Construction (Mounting & Adjustments): Arms:**		
		Counter balanced spring type.		
		Horizontal lengths of Arms: To be stated not less than 800mm.		
		Range of vertical adjustment: 300 to 550 mm or more.		
		Rotation of arms: not less than 300 deg.		
		Base:		
		The base must be stable and must not topple when optical units articulated arm is fully extended.		
		Dimension of base in mm: To be stated by the Bidder.		

		Means of Mobility:		
		To be stated and stability & safety arrangements described in details by the Bidder.		
	5	**Accessories, spares and consumables**		
	5.1	**Accessories:**		
		Spare Halogen Bulbs		
		Sterilizeable & detachable caps for nobs: 2 sets		
		Dust cover for covering the microscopes: 1 no.		
	5.2	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer. Bidders must specify the quantity of every item included in their offer (including items not specified above).		
	6	**Operating Environment**		
	6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.		
	6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.		
	6.3	Suitable UPS with maintenance free batteries, voltage regulation and spike protection for minimum 30 min. back-up shall be supplied with the system.		
	7	**Standards and Safety Requirements**		
	7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND CE (93/42 EEC Directives) or USFDA approved product certificate.		
	7.2	Electrical safety conforms to standards for electrical safety IEC 60601-1 General requirement for Electrical safety of Medical Equipment.		
	8	**User Training**		
	8.1	Must provide user training (including how to use and maintain the equipment).		
	9	**Warranty**		
	9.1	Comprehensive warranty for 2 years.		
	10	**Maintenance Service During Warranty Period**		
	10.1	During warranty period supplier must ensure corrective/breakdown maintenance whenever required.		
	11	**Documentation**		
	11.1	User (Operating) manual in English.		
	11.2	Service (Technical / Maintenance) manual in English.		
	11.3	List of important spare parts and accessories with their part numbers and costing.		
	11.4	Certificate of calibration and inspection from factory.		
62	No.	**Ophthalmic table**		
	1	Mechanical Movement		
	2	The adjustable cushioned head rest comfort for operation		
	3	The adjustable wrist support provides comfort and stability while operating.		
	4	Versatile operation table for Ophthalmic surgery and certain special procedures.		
	5	:Up & Down		
		Minimum Height : 610 mm		
		Maximum. Height : 890 mm		
	6	Stroke Length : 280 mm		
	7	Tilting (Forward & Reverse) Back Rest Section 30 Leg Section 20		
	8	Weight capacity : not less than 200 kg.		
	9	,DIMENSIONS Aoprox: not less than L 1890 mm, W 690 mm		
	10	Must submit ISO13485:2003/AC:2007 for Medical Devices AND CE (93/42 EEC Directives) or USFDA approved product certificate.		
	11	Comprehensive warranty for 2 years after acceptance.		
63		**Central Medical Oxygen Supply System**		
		Centralize Manifold Room and Medical Gases Pipeline		
		Centralize Manifold Room and Medical Gases Pipeline		
		1 Description of Function		
		1.1 Centralized Manifold room is the control room in which all the medical gases are		
		stored/fed and distributed under regulated conditions to various units of hospital.		
		2 Operational Requirements		
		2.1 Fully automatic centralize manifold room and medical gases pipeline for distribution of		
		medical gases to OT, ICU, Emergency care unit, wards and other various units of hospital.		
		3 System Configuration		
		3.1 The system consists of:		
		A. Source Equipment		
		⍰ Liquid oxygen supply system		
		⍰ Fully Automatic Oxygen manifold & control panel		
		⍰ Fully Automatic N2O manifold & control panel		
		⍰ Vacuum (suction) supply system		
		⍰ Medical Compressed Air System		
		⍰ Anaesthesia Gas scavenging system (in O.T)		
		B. Distribution pipes.		
		C. Outlets including Pendants for OT, ICU and bed head panel for wards with		
		accessories(optional)		
		D. Complete Alarm system.		
		E. Accessories:		

		⍰ Oxygen flow meter with humidifier		
		⍰ Ward vacuum units		
		⍰ Theatre Suction units.		
		4 Technical Specifications		
		4.1 Oxygen System:		
		Oxygen System Shall consists of the following:		
		⍰ Liquid Oxygen System		
		⍰ Oxygen Manifold System with Automatic Control Panel		
		⍰ Oxygen Emergency supply system		
		4.1.1 Liquid Oxygen supply system:		
		⍰ Liquid oxygen will be the primary (main) supply source and the oxygen manifold will work as stand by.		
		⍰ In case of failure in liquid oxygen supply, it must automatically switch over to oxygen manifold.		
		⍰ The unit shall consist of a double walled vertical vessel (made of stainless steel and carbon steel) for outdoor installation capacity as per consumption of the institute.		
		⍰ It must be fitted with standard accessories as minimum and must have undergone standard inspection requirement. A certificate to that respect to be submitted		
		4.1.2 Oxygen Manifold:		
		⍰ Manifold shall consist of two high-pressure header bar assemblies to facilitate connection of primary and secondary cylinder supplies.		
		⍰ Each header bar shall be provided with ------ numbers (as per hospital requirement) of cylinder pigtail connections to suit cylinder valves as per IS 3224 incorporating a check valve at the header connection.		
		⍰ The high-pressure header bar shall be designed in such a manner that it can be extended to facilitate additional cylinder connections. Each header bar assembly shall be provided with a high-pressure shut-off valve.		
		⍰ The manifold must be so designed that it shall suit easy cylinder changing and positioning.		
		⍰ The cylinder must be placed with the help of cylinder brackets and fixing chains which must be zinc plated.		
		4.1.3 Fully Automatic Oxygen Control Panel:		
		⍰ The Oxygen Control Panel shall be of microprocessor based Digital Display Type. Pressure reduction shall be in two stages.		
		⍰ Panel shall be integrated with pressure gauges inside panel on downstream of pressure regulator.		
		⍰ Panel shall be fitted with standby line regulator.		
		⍰ Line regulators shall have pressure relief mechanism for testing and servicing purpose.		
		⍰ Panel shall be Fully Automatic and shall switch over from “Bank in Use” to „Reserve Bank“ without fluctuation in delivery line pressure and without the need of external electrical power.		
		⍰ After the switch–over, the “Reserve Bank” shall become the “Bank in Use” and the “Bank in Use” shall become the “Reserve Bank”.		
		⍰ The Control Panel will be powered by a microprocessor.		
		⍰ The unit shall be compact and enclosed in NEMA 1 enclosure.		
		⍰ A Microprocessor circuit board assembly shall provide a relay output to give		
		indication when or just before the manifold switches from one bank of cylinders to another.		
		⍰ The switch over shall be mechanically controlled, not electrically.		
		⍰ To avoid excess pressure being supplied to the distribution system, a pneumatically relief valve for the line regulator shall be incorporated.		
		⍰ An intermediate pressure relief valve shall be installed between the highpressure regulators and the line delivery regulators.		
		⍰ The control panel incorporates six coloured LED“s, three for the Left Bank and three for the Right Bank: Green for Bank in use, Amber for Bank ready and Red for Bank empty. Both the Left and Right bank pressures and the main line pressure must be displayed on the front door of the cabinet by means of LED's.		
		⍰ All pressure transducers, micro switches, and display LED“s shall be pre-wired to an internal microprocessor circuit board.		
		⍰ All components inside the Control Panel like Pressure Regulators, piping and control switching equipment shall be cleaned for Oxygen Service and installed inside the cabinet to minimize tampering with the regulators or switch settings.		
		⍰ The Control Panel must be made to provide Heavy Duty with a Flow Capacity of over _____ (as per requirement of the hospital) LPM.		
		⍰ Panel shall be compatible for interfacing with the Information Management System.(optional)		
		4.1.4 Emergency Oxygen System:		
		⍰ It will have emergency arrangement of one set of two-cylinder configuration		
		with Copper tail pipes, Non Return Valves & high flow regulator with pressure		
		gauges for Cylinder & line pressure and safety valve.		
		⍰ Pressure regulator shall be detachable from the manifold.		
		4.2 Nitrous Oxide System:		
		⍰ Nitrous Oxide system shall consist of the following:		
		• Nitrous Oxide main manifolds supply system		
		• Fully automatic control panel		
		• Emergency supply system		
		4.2.1 Nitrous Oxide Manifold:		
		⍰ Same as that of Oxygen Manifold but of ----------Nos. (as per requirement of		
		the hospital) cylinder capacity.		
		⍰ Fully Automatic Nitrous Oxide Control Panel		

		⍰ Same as 1c i.e. Fully automatic oxygen panel and the Control Panel will be		
		made to provide Heavy Duty and have a Flow Capacity of over ---------- LPM.		
		(as per hospital requirement).		
		4.2.2 Emergency Nitrous Oxide System:		
		⍰ Emergency system shall have arrangement of one set of Two-cylinder		
		configuration with Copper tail pipes, Non Return Valves & high flow regulator		
		with pressure gauges for Cylinder & line pressure and safety valve.		
		⍰ Pressure regulator shall be detachable from the manifold.		
		4.3 Vacuum (suction) system:		
		⍰ Vacuum system shall be stack mounted ---------- cfm capacity. (as per		
		requirement of the hospital)		
		⍰ The package shall include lubricated rotary vane vacuum pumps and associated equipment, one vertical ASME tank and one control panel.		
		⍰ The only field connections required would be system intake, exhaust and power connection at the control panel.		
		⍰ All components shall be completely pre-piped and pre-wired to single-point service connections.		
		⍰ All interconnecting piping and wiring shall be completed and operationally tested prior to shipment.		
		⍰ Provide liquid tight conduit, fittings and junction boxes for all control and power wiring.		
		⍰ The medical vacuum pumps shall be of the rotary vane air-cooled design with integral, fully recirculating oil supply with sight gauge to indicate oil level.		
		⍰ The oil separation system shall be integral and shall consist of no less than four stages of internally installed oil and smoke eliminators.		
		⍰ This system shall be capable of removing 99.9% of oil and smoke particles from the exhaust.		
		⍰ Each pump shall include a built-in anti-suck-back valve mounted at the pump inlet; and each pump shall be equipped with three non-asbestos vanes, each having a minimum life of 30,000 to 40,000 hours.		
		⍰ Each vacuum pump shall be driven by a ---------- HP motor (as per requirement of the hospital). Each pump shall have a capacity of ----------at 19 "HG (as per requirement of the hospital).		
		⍰ The system shall include the following accessories for each pump: inlet check valve, inlet isolation valve, vacuum control switch, oil temperature gauge, thermal malfunction switch and vacuum control switch.		
		⍰ Provide flexible connectors on inlet and exhaust of each pump exhaust tee with union, drip-leg with cock valve as well as copper tubing with shut-off cock for gauge and vacuum switches.		
		⍰ The system shall include a --------- liter (as per requirement of the hospital) vacuum storage tank of ASME construction.		
		⍰ The tank shall be rated for full vacuum service and shall be equipped with a valve by-pass, vacuum gauge and manual tank drain.		
		⍰ The inside of the tank shall be coated for rust protection with a two component coating which provides a hard, durable lining.		
		⍰ Provide vibration mounting as per NFPA 99.		
		⍰ The system shall include a UL listed control panel in a NEMA 12 enclosure		
		with the following accessories for each pump:		
		⍰ Externally operable fusible disconnect with door interlock, control circuit		
		transformer with fused primary and secondary coils, H-O-A switch, magnetic		
		starter with 3 leg overload protection, hour meter, motor running light and		
		minimum run timer to prevent short cycle operation.		
		⍰ Provide the panel with a plug-in type programmable controller with removable		
		terminals to allow quick and easy replacement in the field.		
		⍰ The system must be designed to function even if the programmable controller fails.		
		⍰ If one of the pumps is out of service the system control shall omit the pump		
		from the alternating cycle, automatically alternating between the remaining pumps only.		
		⍰ The system shall revert to normal alternation automatically when the condition is corrected. In addition to standard automatic alternation, the system shall be equipped with forced time alternation in the event that the pump is unable to satisfy the demand in 30 minutes.		
		⍰ The system shall be equipped with a flashing light pump failure alarm/shutdown at any of the following conditions: motor overload tripped, main disconnect is off, blown fuse, control transformer failure, starter coil failure, H-O-A is off.		
		⍰ Provide audible and visual local alarm (complete with indicating lights and individual sets of auxiliary contacts wired to the terminal strip for remote alarm indication) for the following: vacuum pump thermal malfunction and reserve vacuum pump in use.		
		⍰ Provide manual reset for thermal malfunction shut-down. All control and alarm		
		functions shall remain energized while any vacuum pump in the system remains		
		electrically on-line.		
		⍰ The lag vacuum pump shall be able to start automatically if the lead vacuum pump fails to operate.		
		⍰ An additional Vacuum reservoir with bypass arrangement (optional)		
		4.4 Air Compressors:		
		⍰ The package shall include ---------- (as per requirement of the hospital) oilless air compressors and associated equipment, one vertical ASME tank and one control panel.		
		⍰ The entire system including the receiver shall be mounted on a common structural steel stack base.		
		⍰ The only field connections required would be system intake, exhaust and power connection at the control panel.		
		⍰ All components shall be completely pre-piped and pre-wired to single-point service connections.		
		⍰ All interconnecting piping and wiring shall be completed and operationally tested prior to shipment.		

		⍰ The medical air compressors shall be of the totally oil-less reciprocating aircooled design.		
		⍰ Connecting rod and bearings shall be packed with lifetime lubrication and sealed.		
		⍰ Each compressor shall be belt driven by a ---------- HP (as per requirement of the hospital), 3 phase, 50 cycle, 415volt, ODP NEMA construction motor.		
		⍰ Slide bases for convenient belt tension adjustment and totally enclosed OSHA approved belt guards shall be provided.		
		⍰ Each air compressor shall have a capacity of ---------- (as per requirement of the hospital) at 100 PSIG.		
		⍰ The system shall include individual compressor inline intake filters, discharge check valves of bronze construction, safety relief valves, bronze intake and discharge flexible connectors, solenoid unloaders, isolation valves, air cooled after coolers for each compressor, high discharge temperature shut down switches on each cylinder, pressure control switches, as well as copper tubing with shut-off cock for gauge and switches.		
		⍰ The system shall include a ----------liter (as per requirement of the hospital) pressure storage tank of ASME construction rated for 200-PSI MWP service.		
		⍰ The tank shall be equipped with a pressure gauge, safety relief valve, 3-way bypass; gauge glass and automatic electronic tank drain with manual override.		
		⍰ The inside of the tank shall be coated for rust protection with a two component coating which provides a hard, durable lining.		
		⍰ Provide spring vibration isolators for each compressor.		
		⍰ The system shall include a UL listed control panel in a NEMA 12 enclosure		
		with the following accessories for each pump:		
		⍰ Externally operable fusible disconnect with door interlock, control circuit		
		transformer with fused primary and secondary coils, H-O-A switch, magnetic		
		starter with 3 leg overload protection, hour meter and motor running light.		
		⍰ Provide the panel with a multiple position selector switch for selection of normal operation (automatic alternation) or manual selection of lead and lag pumps if one of the pumps is taken out of service due to scheduled maintenance.		
		⍰ Provide audible and visual local alarm (complete with indicating lights and individual sets of auxiliary contacts wired to the terminal strip for remote alarm indication) for the following: compressor temperature malfunctions and reserve compressor in use. Provide manual reset for thermal malfunction shutdown.		
		⍰ All control and alarm functions shall remain energized while any compressor in the system remains electrically on-line.		
		⍰ The lag compressor shall be able to start automatically if the lead compressor fails to operate.		
		⍰ Dual desiccant air dryers, dual 0.5 micron pre-filters, dual 0.5 micron afterfilters, line pressure regulating valves, dew point monitor, CO monitor and other accessories required to meet and exceed the current code requirements shall be mounted on the compressor system base.		
		⍰ All components shall be completely pre-piped and pre-wired to single-point service connections as per latest international standards.		
		⍰ There shall be two identical banks of air treatment equipment, piped in parallel and provided with valves to by-pass either filter set for element replacement, maintenance and repair work on one of the sets while still treating medical compressed air through the other set without any sacrifice in air quality.		
		⍰ Each bank must consist of three stages of treatment.		
		⍰ The first stage is a prime efficiency coalescer with particle removal down to 0.5 micron with 99.9999% retention. This filter removes aerosols and solid particles.		
		⍰ The filter is equipped with electronic drain and element change indicator.		
		⍰ The second stage is a desiccant heatless air dryer, equipped with purge control. Built-in purge saver control will automatically minimize and adjust the amount of purge air to match the variable airflow.		
		⍰ The dry compressed air is discharged from the "on line" tower into the third stage.		
		⍰ The third stage is a prime efficiency particulate after filter with particle removal down to 0.5 micron. The after filter element is provides high particle retention, low pressure drop and long element life.		
		⍰ Downstream pressure regulators will maintain constant discharge pressure of 55 PSIG (field adjustable).		
		⍰ Digital dew point and CO monitors with alarm set points at +390F and 10 PPM are provided with dry contacts for connection to remote alarm panels.		
		⍰ A "demand check" for maintenance must as per current code requirements of latest international standards.		
		4.5 Distribution piping:		
		⍰ Copper pipes shall be solid drawn, tempered, seamless, phosphorous deoxidized, non-arsenic and degreased for oxygen service conforming to BS EN 1057:1996.		
		⍰ The chemical composition shall be as per BS-6017: 1981 Table 2, Cu-DHP grade.		
		⍰ The supply of pipes shall accompany with manufacturers test certificates for physical properties and chemical composition.		
		⍰ The supply of pipes shall be further substantiated with inspection certificates from third party inspectors like LLOYDS.		
		⍰ Each pipe shall be capped at both ends before supply.		
		Outer Dia. Thickness		
		⍰ 12mm, 0.7mm		
		⍰ 15mm, 0.9mm		
		⍰ 22mm, 0.9mm		
		⍰ 28mm, 0.9mm		

		42mm, 1.2mm		
		54mm, 1.2mm		
		76mm, 1.5mm		
		Fittings used for connecting copper tubing shall be made of Copper and brazed type connection as per BS: 864: Part 2:1983.		
		4.6 Installation and testing of piping:		
		Installation of piping shall be carried out with utmost cleanliness.		
		Only pipes, fittings and valves that have been degreased and fittings brought in polythene sealed bags will be used at site.		
		Pipes fixing clamps shall be of non- ferrous and non- deteriorating plastic suitable for the diameter of the pipe.		
		All pipe joints shall be made using inert gas using flux less silver brazing method (silver brazing).		
		Continuous purging with oil-free nitrogen to be carried out while brazing is		
		done.		
		Adequate supports shall be provided while laying pipelines to ensure that the pipes do not sag.		
		Suitable sleeves shall be provided wherever pipes cross through walls/slabs.		
		All pipe clamps shall be non-reactive to copper.		
		After erection, the pipes will be flushed with dry nitrogen gas and then pressure tested with dry nitrogen at a pressure equal to twice the working pressure or 150 psig, whichever is higher for period of not less than 24 hours.		
		All the piping system shall be tested in the presence of the site-engineer or his authorized representative.		
		Painting:		
		All exposed pipes must be painted with two coats of synthetic enamel paint and colour codification as per international standards.		
		4.7 Alarm System:		
		The master and area alarms as per required locations		
		Alarm shall be microprocessor based with individual microprocessors on each area display and sensor board.		
		The sensors shall be capable of local or remote mounting.		
		Each area display module/sensor unit shall be gas specific, with an error message display for an incorrect connection.		
		The alarms shall be field expandable with the addition of extra modules.		
		Up to six services can be accommodated per standard box		
		Each specific service shall be provided with an LED digital read out comprising of 0-250 psi for positive pressure and 0-30 inch Hg for vacuum.		
		The digital readout shall provide a constant indication of each service being measured.		
		A bar graph trend indicator shall be provided for each service indicating a green “NORMAL”, yellow “CAUTION” and a red “HIGH” or “LOW” alarm condition.		
		Under normal operation the bar graph display shall move up and down in the		
		green range depending on service usage.		
		If an alarm occurs, the “RED” alarm light will flash and the audible alarm will sound.		
		Pushing the “ALARM SILENCE” button will cancel the audible alarm but the unit will remain in the alarm condition until the problem is rectified.		
		The default set points shall be +/- 20% variation from normal condition.		
		In the calibration mode the following parameters shall be field adjustable:		
		• High/Low set points		
		• imperial/Metric Units		
		• Repeat alarm enable/disable		
		Set points shall be adjustable by two on board push buttons.		
		In addition “PUSH TO TEST” & “ALARM SILENCE” buttons shall be easily accessible to operate and test the unit.		
		Combination master/area alarms shall have no moving parts and shall require no maintenance after initial installation.		
		4.8 Pendants (Imported) with Provision for connection to Networking of all facilities		
		4.8.1 Anaesthetist Pendant (Retractable type):		
		Anaesthetist pendants shall be retractable with vertical adjustment of 500mm.		
		Pendant shall be Vacuum operated with following details:		
		Pendant shall be fitted with Gas outlets:-7nos.(i. e. O2 -2, N2O – 1, MA (CA		
		4) - 1, Vac 2 & AGSS1)		
		6/15 Amp. Electrical Sockets without switches: - 8 Nos.		
		Infusion Management System :- 1set		
		Heavy duty ceiling fixture :- 1Set		
		Provision to fix Data Point :- 2Nos.		
		4.8.2 Surgeon Pendant:		
		Surgeon pendant shall be Single arm with Horizontal movement with shelves as per following details:		
		Horizontal arm system -01		
		Weight carrying capacity- 155kg		
		Head 1000mm -01		
		Electrical sockets without switches - 6 Nos.		
		Shelf with side rails, one with drawer 2 Nos.		
		Provision to fix Gas outlets (i.e. O2-1, N2O-1, MA-1, SA-1& Vac-2) -6 Nos.		
		Gas interface set for interface plate -01		

		⍰ Ceiling mounting system for interim ceiling up to 1000 -01		
		⍰ Interface plate with electrical fittings -01		
		⍰ Ceiling cover for interim ceiling - 01		
		4.8.3 ICU Pendant:		
		Each ICU pendant shall be Single arm with Horizontal movement with shelves etc. as per following details:		
		⍰ Horizontal arm system -01		
		⍰ Weight carrying capacity -155kg		
		⍰ Head 1100mm -1		
		⍰ Electrical sockets without switches -8		
		⍰ Shelf with side rails -02 Nos.		
		⍰ Shelf with Drawer system -1 Nos.		
		⍰ Provision to fix Gas outlets -5 Nos.		
		⍰ Notes rack -01		
		⍰ One Basket for suction catheter& one basket for monitor cables 1		
		⍰ Examination Lamp -01		
		⍰ Quadruple Infusion Management System -1set		
		⍰ Gas interface set for interface plate -01		
		⍰ Ceiling mounting system for interim ceiling---1		
		⍰ Interface plate with electrical fittings -01		
		⍰ Ceiling cover for interim ceiling -01		
		4.9 Horizontal Bed Head Panels (HBHP):		
		⍰ Efficient, safe &. Robust design in extruded aluminium section		
		⍰ Smooth curved surfaces, and choice of base colour and fascia plates.		
		⍰ Unit must have integrated rail system to mount accessories& UL Listed.		
		⍰ The headwall system must be constructed of aluminium extrusions joined together to form a carcass to suit the particular application. Unit shall be factory assembled for electrical and mechanical components.		
		⍰ Segregation of services i.e. Low voltage supplies, High Voltage supply and Medical gases shall be maintained throughout.		
		⍰ Front fascia plate must be removable individually to access for respective service.		
		⍰ Bed space management system with optional equipment rail.		
		⍰ With all Equipment Rail mount Accessories.		
		⍰ All Down drops shall be installed at one end preferably & Vertical drop installed at one end must be covered with Aluminium boxing with matching colour.		
		⍰ Entire pipe line shall run in continuous horizontal panels with no break for each unit & length as per area where it has to be installed		
		⍰ Medical gas pipe line outlets as per table		
		⍰ Facility per unit as under;		
		⍰ 6/15 Amp Modular Electrical Sockets with switches = 2 sets		
		⍰ IV Pole = 2nos		
		⍰ Vacuum slide = 1no.		
		⍰ Sliding blocks = 2nos.		
		⍰ Nurse call system module = 1No.		
		4.10 Gas Outlets:		
		⍰ Outlets shall be manufactured with a 165 mm long Copper inlet pipe stub which is silver brazed to the outlet body.		
		⍰ The inlet pipe must be capable of swivelling by 360 degrees for enabling the same to be connected to the pipeline system.		
		⍰ Outlet shall be equipped with a primary and secondary check valve and the secondary check valve shall be rated at minimum pressure of 200 p s i. In the event the primary check valve is removed for maintenance there must not be any leakage (on-line maintenance must be possible w/o disrupting the functioning of other outlets).		
		⍰ Outlet bodies shall be gas specific by indexing each gas service to a gas specific dual pin indexing arrangement on the respective identification module.		
		⍰ There must be a push button release mechanism for disconnecting apparatus accessible from top, bottom and side of outlets.		
		⍰ A large color-coded front plate shall be used for ease of gas identification and aesthetic appeal.		
		⍰ With the back rough in mounted the outlet shall adjust up to 25 mm variation in wall thickness.		
		⍰ The latch valve assembly must accept only corresponding gas specific adaptors.		
		⍰ All outlets shall be cleaned and degreased for medical gas service, factory assembled and tested.		
		4.11 Valve Boxes:		
		⍰ Each recessed zone valve box shall consist of the following components: A steel valve box which can house single or multiple shut-off ball valves with tube extensions, a three piece design Valve, an aluminium frame, and a pull-out removable window.		
		⍰ The valve box shall be constructed of 18 gauge steel complete with a baked enamel finish.		
		⍰ The doorframe assembly shall be constructed of anodised aluminium and shall be mounted to the back box assembly by screws as provided.		
		⍰ The removable front shall consist of a clear window with a pull out ring premounted to the centre of the window.		
		⍰ Access to the zone shut-off valves shall be by merely pulling the ring assembly to remove the window from the doorframe.		

		⍰ The window can be reinstalled without the use of tools only after the valve handles have been returned to the open position.		
		⍰ The window shall be marked with the following:		
		CAUTION: MEDICAL GAS CONTROL VALVE CLOSE ONLY IN EMERGENCY		
		⍰ Valves shall be a 4-bolt design, bronze body, double seal, union ball-type, with Teflon (TFE) seats and Viton seals, "O" ring packing, and ball which seals in both directions, blow-out proof stem, with a pressure rating of 2760 kPa (400 psig).		
		⍰ Valves shall be operated by a lever-type handle requiring only a quarter turn from a fully open position to a fully closed position.		
		⍰ All valves shall be equipped with type "K" washed and degreased copper pipe stub extensions of sufficient length to protrude beyond the sides of the box.		
		⍰ The entire valve body and pipe stubs shall be plated to a minimum of 25 mm (1") beyond the sides of the back box, but in no instance shall the plating be extended to the ends of the pipe stubs.		
		⍰ All pipe stub extensions shall be supplied with suitable plugs or caps to prevent contamination of the assembly prior to installation.		
		⍰ Each valve shall be supplied with an identification bracket bolted directly onto the valve body for the purpose of applying an approved medical gas		
		identification label.		
		⍰ A package of labels shall be supplied with each valve box assembly for		
		application by the installer.		
		⍰ Valves shall be available with line pressure gauges, as required. Gauges shall be		
		51 mm (2”) diameter, with metal case and ring.		
		⍰ Pressure gauges shall read 0-700 kPa (0-100 psig) for all gases except nitrogen,		
		which shall read 0-2000 kPa (0-300 psig), and vacuum, which shall read -100-0		
		kPa (0-30" Hg).		
		4.12 Hospital Information System:		
		⍰ Hospital Information system must be microprocessor based medical device		
		polling network.		
		⍰ It shall continuously scan all connected medical devices in the hospital and		
		display the topology and clone images of end devices on a central PC.		
		⍰ Must support Master Alarm, Area Alarm, Manifolds, Medical Compressed Air		
		system, Medical Vacuum System.		
		⍰ Any alarm condition shall be displayed on PC as they occur.		
		⍰ Basic system must consist of the following:-		
		One network interface card in each device		
		One computer of reputed make		
		One computer card and HIS Software.		
		Computer must be accessible to Hospital LAN network. System must be able to		
		accommodate max of 256 devices. Each device must be connected in series.		
		⍰ User must have ability to input information in to PC in order to customize		
		display for particular application.		
		4.13 Nurse call System:		
		Must consist of the following:		
		⍰ Bed Side Unit with wired remote of negligible voltage, housed one in each bed		
		⍰ Central station		
		Bed side Unit(BSU):		
		⍰ The main electronics unit present at every bed side. covered by the Network		
		⍰ Must send the information of Call and audio-visual Alarms to the Nurses‟		
		station		
		⍰ Call/ alarm reset facility at BSU.		
		⍰ Safe for patient use as per recommended standards		
		4.14 Electrical Panel :		
		Panel shall be wall mounted and fabricated from16/14 SWG CRCA Sheet duly powder		
		coated. Panel shall incorporate isolators for the following equipment.		
		⍰ Isolator for Medical Compressed air system.		
		⍰ Isolator for Medical Vacuum System		
		⍰ Isolator for AGSS System.		
		Panel shall have following instrumentations for easy monitoring purpose:-		
		⍰ Incoming power supply indications of each Phase		
		⍰ Mains indication for mains supply on for each Phase.		
		⍰ Mains shall have digital metering.		
		⍰ Each circuit shall have digital meter.		
		⍰ Mains and each circuit shall be with MCCB only.		
		5 Accessories, spares and consumables		
		5.1 Flow meter with Humidifier - Imported		
		Back Pressure Compensated flow meter will be of accurate gas flow measurement with		
		following features:		
		⍰ Control within a range of 0 – 15 Lpm.		
		⍰ It will meet strict precision and durability standard.		

		⍰ The flow meter body must be made of brass chrome plated materials.		
		⍰ The flow tube and shroud components must be made of clear, impact resistant		
		polycarbonate.		
		⍰ Flow Tube must have large and expanded 0 – 5 lpm range for improved		
		readability at low flows.		
		⍰ Inlet filter of stainless steel wire mesh to prevent entry of foreign particles.		
		⍰ The humidifier bottle is made of unbreakable & Reusable of polycarbonate		
		material and autoclaveable at 134 degree centigrade.		
		5.2 Ward Vacuum Units (Imported)		
		⍰ Ward vacuum Unit shall be wall mounted and shall consists of the following		
		with same make:		
		⍰ Suction Controller/ Regulator (Digital Type)		
		⍰ Collection bottle 1000ml with mounting arrangement.		
		⍰ The vacuum regulator will be step-less adjustable and have large vacuum gauge		
		providing digital indication of the suction supplied by the regulator.		
		⍰ Safety trap shall be provided inside the jar to safeguard the regulator from		
		overflowing. Different colour options must be available.		
		⍰ The unit will be consisting of reusable 1000 ml shatter resistant bottle, each		
		made up of poly carbonate material and fully autoclaveable at 134 degree		
		centigrade.		
		5.3 Theatre Vacuum Units:		
		⍰ The vacuum regulator will be step-less adjustable and have large vacuum gauge		
		providing digital indication of the suction supplied by the regulator.		
		⍰ Safety trap will be provided inside the jar to safeguard the regulator from		
		overflowing.		
		⍰ Different colour options must be available.		
		⍰ The unit will be consisting of two reusable 2000 ml shatter resistant bottle, each		
		made up of poly carbonate material and fully autoclaveable at 134 degree		
		centigrade.		
		5.4 All the above items must be mounted on a Trolley having free moving castor wheels.		
		5.5 All standard accessories, consumables and parts required to operate the equipment,		
		including all standard tools and cleaning and lubrication materials, to be included in the		
		offer. Bidders must specify the quantity of every item included in their offer (including		
		items not specified above).		
		6 Operating Environment		
		6.1 The system offered shall be designed to be stored and to operate normally under theconditions of the user's country. The conditions include Power Supply, Climate,Temperature, Humidity, etc.		
		6.2 Power supply: 220 – 240 VAC, 50Hz single phase or 380-400V AC, 50Hz three phase		
		fitted with appropriate plug. The power cable must be at least 3 metre in length.		
		6.3 Suitable Servo controlled Stabilizer/CVT.		
		6.4 UPS of suitable rating shall be supplied for minimum 30 min. backup for computer		
		system.		
		7 Standards and Safety Requirements		
		7.1 Must submit ISO13485:2003/AC:2007 for Medical Devices AND		
		7.2 CE (93/42 EEC Directives) or USFDA approved product certificate.		
		7.3 Electrical safety conforms to standards for electrical safety IEC-60601.		
		7.4 Certified to meet NEMA and NFPA Guidelines wherever applicable.		
		7.5 Colour codification shall be as per international standards.		
		8 User Training		
		8.1 Must provide user training (including how to use and maintain the equipment).		
		9 Warranty		
		9.1 Comprehensive warranty for 2 years after acceptance.		
		10 Maintenance Service During Warranty Period		
		10.1 During the warranty period supplier must ensure planned preventive maintenance		
		(PPM) along with corrective/breakdown maintenance whenever required.		
		11 Installation and Commissioning		
		11.1 The bidder must arrange for the equipment to be installed and commissioned bycertified or qualified personnel; any prerequisites for installation to be communicated to the user in advance, in detail.		
		12 Documentation		
		12.1 User (Operating) manual in English		
		12.2 Service (Technical / Maintenance) manual in English		
		12.3 List of important spare parts and accessories with their part numbers and costing.		
		12.4 Certificate of calibration and inspection from factory.		
64		Pediatric Surgical Set		
		standard		
		Must submit ISO13485:2003/AC:2007 for Medical Devices ANDCE or US FDA approved product certificate.		
		Comprehensive warranty for 2 years after acceptance.		
65		Plasma sterilizer		
		Sterilization of Operation Theatre instruments using state-of-art Hydrogen peroxide Gas Plasma Technology and cost effective.		

		The sterilization process must confirm to the sterilization standards accepted internationally and confirmed by various (Physical/chemical/biological) indicators.		
		The temperature of sterilization must be in the range of 30-60o C and of low-moisture sterilization process.		
		The process should be rapid enough to provide high throughput with the cycle time of 50-75 minutes. The cycle time to processing should be programmable to best match the Operation Theatre instruments and load configuration. The size of the sterilizer should be 160 – 180 liter with a usable volume of 100-120 liters.		
		There should be no toxic residuals with primary byproducts being water vapor and oxygen and it should be safe for patient, staff and environment.		
		The technology should be such that it required no costly engineering requirements for installation and functioning. The equipment should not require connection other than an electrical power code.		
		The equipment must have microprocessor control and LCD display on the exterior for continuous information of the process. It should be equipped with sturdy wheels permitting easy maneuverability.		
		The system should have adjustable feet at the front of the unit to enable leveling, if required. Should be FDA, EPA approved, having liquid crystal display with print out of process confirmation.		
		With all necessary accessories like sterilant cassettes, indicator strips/tape, biological indicators, trays, boosters and poly-propylene/tyvek paper wraps.		
		Must submit ISO13485:2003/AC:2007 for Medical Devices ANDCE or US FDA approved product certificate.		
		Comprehensive warranty for 2 years after acceptance.		
66		**Portable blood gas analyzer**		
		Automated analyzer		
		Compact system for measuring pH, pCO2, pO2, -HCO3 & five Electrolytes like Na, K, Li, Ca and Cl in blood		
		Fast and accurate result of test made available in about 60 seconds.		
		May have provision of modular platform for further up gradation to include glucose, lactate & hemoglobin.		
		Built in printer		
		Barcode reader for reagents and other consumables, patient ID and quality control data		
		Automatic aspiration from syringe or capillary Sample size: approximate 250ul – 50ul		
		Easy-to follow computer assisted guidance for operator		
		Sample type: whole blood, serum, plasma		
		All parameters must be measured from a single sample		
		Approximate time for analysis: around 2 minutes		
		Automatic calibration, programmable 1 and 2 point calibration; in case of non-automatic calibration,		
		Please provide the calibration kit.		
		Data storage: approximate 500 patients		
		Ambient temperature:18 - 30 °C		
		Reagents and waste level detection by software		
		Save mode		
		Measurable parameters (approximate measurable ranges):		
		ph 6.5 - 7.8		
		pCO2 10 - I50 mmHg		
		pO2 10 - 700 mm Hg		
		Na+ 100 - 200 mmol/l		
		K+ I -10 mmol/l		
		Cl- 50 - 140mmol/l		
		Ca++ 0.5 - 5 mmol/l		
		Gluc 20 - 500 mg/dl or better		
		tHb 5 - 25 g/dL and/or Hct 15-60%		
		ctHb mmol/l 0.5 – 16.5		
		sO2 0 – 100%		
		fO2Hb 0 – 100%		
		fCOHb 0 – 100%		
		fMetHb 0 – 100%		
		fhHb 0 – 100% optionally		
		Calculated parameters (approximate calculated ranges):		
		HCO3 0 - 100mmol/L		
		BE-30 - 30 mmol/L		
		tCO2 0 - 100mmol/L		
		pH(T) 6.5 - 7.8		
		RI 0-10		
		O2SAT 15-100%		
		Connection to PC at least RS 232		
		Self diagnosis system		
		No maintenance required for the electrodes		
		Consumables:		
		Consumables fluids, gases and electrodes for 2 year (with a usage rate of min 10 tests/day)		
		sensor cards (box)		
		Must submit ISO13485:2003/AC:2007 for Medical Devices ANDCE or US FDA approved product certificate.		
		Comprehensive warranty for 2 years after acceptance.		

67		**portable ventilator**		
		Unit to be used for adult, child and infant ventilation during cardiopulmonary resuscitation		
		and for ventilation during transportation when necessary.		
		To have frequency control 4 to 100 breaths per minute,		
		Tidal volume control 20 - 2000 ml,		
		Inflation pressure monitor 0 to 100 cm H2O,		
		Air mix control zero to 70% air mixture,		
		Adjustable relief pressure with audible alarm 20 to 80 cm H2O		
		Add on PEEP facility 0 to 10 or 20 cm H2O.		
		To be supplied with a sling to enable the user to carry the unit easily and a patient circuit 1.25m		
		long 15mm single bore silicone hose		
		Autoclavable		
		With built in cpmpressor / turbine		
		Input power supply: 220 ± 20 % V AC , 50Hz		
		Must submit ISO13485:2003/AC:2007 for Medical Devices ANDCE or US FDA approved product certificate.		
		Comprehensive warranty for 2 years after acceptance.		
68		**Salter Scale**		
		Weighing scale (balance), spring type, tubular hanging model,.		
		Capacity-25 kg/100 g,		
		color coded, zero adjustment device, compact lightweight.		
		Material- aluminum, with hook suspension ring and rustproof firm grip handle		
		with trouser		
		Must submit ISO13485:2003/AC:2007 for Medical Devices ANDCE or US FDA approved product certificate.		
		Comprehensive warranty for 2 years after acceptance.		
69		**Sensitive balance**		
		Digital Control balance		
		Provided with glass cage		
		Capacity: 50-200 gm		
		Readability: 0.01 mg		
		Repeatability, (s): ± 0.01 mg		
		Linearity: ± 0.02 mg		
		Stabilization time: 5-10 seconds		
		Operating temperature: 10-30°C		
		Fully automatic Internal – calibration with built in instrument should be there		
		Electronic –with Biult in Battery		
		Input power supply: 220/240 volt AC , 50Hz Schuko plug		
		Must submit ISO13485:2003/AC:2007 for Medical Devices ANDCE or US FDA approved product certificate.		
		Comprehensive warranty for 2 years after acceptance.		
70		**Sims Retractor**		
		Certified stainless steel		
		Sims Vaginal Retractor, Medium 3" x 1-1/4" Blade		
		Must submit ISO13485:2003/AC:2007 for Medical Devices ANDCE or US FDA approved product certificate.		
		Comprehensive warranty for 2 years after acceptance.		
71		**Stress ECG**		
		1. Description of functions:		
		In this system, the patient exercises on a treadmill according to a standardized protocol and the cardiac abnormalities can be studied under stress		
		conditions which we may miss under resting		
		2. Operational requirements		
		2.1 The treadmill stress test system should be complete with acquisition of resting and stress ECG, Treadmill unit with interface with all the protocols and		
		provision of printing the resting as well as stress ECG and analyzing the same		
		2.2 Should be able to be interfaced to hospital information systems / LAN/WLAN		
		3. Technical specifications		
		1. System should have telemetry module (Blue tooth based) between patient and machine		
		2. USB connectivity for high speed data transfer from acquisition device to PC.		
		3. Should have integrated automatic programmable stress test NIBP measurement module with Bi-directional data transfer (compatible with the stress		
		test system)		
		4. Repairable and generic patient cables and TMT/ECG accessories should be used		
		5. Should have software inbuilt online support system for controlling system through internet for providing online support.		
		6. Company should make spares available for the entire life of the system.		
		7. Service response time should be quick and service personnel should be able to attend the call within 48 hours (working days).		
		8. Quality certifications like ISO-9001:2008, ISO-13485:2012 or equivalent		
		9. Should have certification from USFDA and/or valid CE certificate from notified body.		
		Specification for Acquisition Software		

		1. Should acquire data from 12 Lead simultaneously		
		2. Should have frequency response from 0.05 – 150 Hz		
		3. Should have notch filter around 50 Hz		
		4. Should have sampling rate of at least 4500 samples/Second		
		5. Should have rejection ratio (CMRR) more than 100 dB		
		6. Should have internal Defib protection		
		7. Should have less than 10 uAmp patient leakage		
		8. Should have input impedance of more than 100 MOhms		
		Specification for stress test software		
		1. Should be capable of displaying real-time or stored ECG tracings.		
		2. Should display and regularly update ECG 12 leads, 12 medians, 1 expanded median, HR, BP, METS, Stage time, test time, protocol name,		
		stage name, speed and grade of treadmill.		
		3. Should be able to give standard ECG report including standard ECG analysis.		
		4. Should have automatic stage print out facility at the end of each exercise		
		5. Median complexes of all 12 leads with rhythm leads with different formats should be available		
		6. Should have capability to display real-time ST running trend		
		7. Should have ability to display trend graph for HR, BP, ST level, ST slope and J amplitude		
		8. Should have automatic detection, display, storage and review of rhythm events		
		9. Should be able to display ECG in various formats like 3 Lead + 12 Median; 6 Lead + 12 Median; 12 Lead + 12 Median		
		10. Should have controllable display sweep speeds ranging from 5.0 to 100 mm/Sec		
		11. Should have display sensitivities ranging from 0.25 to 8.0 cm/mV		
		12. Should have base line correction (BLC) for stable baseline during test		
		13. Should run various test protocols like Bruce, Modified Bruce, Balke, Ellested, Naughton and user defined protocols.		
		14. Acquisition and analysis softwares should be upgradable to latest version free of cost.		
		15. Should have capability to import patient data from HIS and also manually edit/add data of patient		
		16. Raw data from software should be made available in standard formats for further analysis with softwares like MATLAB.		
		17. Should be able to print report in PDF format.		
		18. Should able to print reports with standard Laser printers on A4 Plain sheets.		
		Specifications for treadmill		
		Treadmill should have:		
		1. Fully interfaced and controllable from software		
		2. Controllable speed of 9-20 Km/H		
		3. Variable inclination (grade) from 0 – 22%		
		4. Adequate walking area ~ 1500 mm X 500 mm		
		5. Controlled by optically isolated RS 232 or USB		
		6. AC motor capable of running on inverter/UPS		
		7. Emergency stop feature		
		8. Power requirement 230 V,50 Hz, 15 A		
		Specification for computer		
		System should be supplied with Trolly mounted branded all in one PC which should have:		
		1. i5 processor, 4 GB RAM, 2TB Hard Disk, DVD/CD Drive, ~ 19" touch screen LED display.		
		2. Windows 7 (64 bit) Operating System (or later).		
		3. Laser Printer for printing on A4 Sheets.		
		4. 6 KVA online UPS for entire system backup for at least one hour.		
		Should be supplied with required standard accessories:		
		1. Disposable standard chest electrodes - 100 Pcs		
		2. Reusable ECG electrodes – 2 sets		
		3. Extra Patient cable - 01		
		4. Spike protector (with 5 sockets) - 01 No		
		5. Earthing cord – 1 No		
		6. L-N Key set		
		7. ECG jelly – 2 No		
		8. A4 Sheet Ream – 1 No.		
		9. Fuse (1.5 Amp and 10 Amp) – 10 each		
		10. User Manual – 01 No.		
		11. Cuff motion sensor – 01 No.		
		12. NIBP Module – 01 No.		
		13. Wrist strap of NIBP cable – 01 No.		
		14.Must submit ISO13485:2003/AC:2007 for Medical Devices ANDCE or US FDA approved product certificate.		
		15.Comprehensive warranty for 2 years after acceptance.		
72		**Suction Machine**		
	1	**Description of Function**		
	1.1	To extract fluid from the body during surgery or emergency treatment.		
	2	**Operational Requirements**		
	2.1	Shall operate on mains AC supply .		
	3	**System Configuration**		
	3.1	The system consists of:		

		⍰ Suction machine with 2 Jar.		
		⍰ Suction tubing.		
		⍰ Two bottles.		
	4	**Technical Specifications**		
	4.1	The machine shall be portable on four wheels and with a handle for transportation.		
	4.2	The vacuum pump must be totally oil-free diaphragm type. Must have maintenance free pumps of international design for continuous use.		
	4.3	Motor shall be of Class "F" insulation to operate in ambient temperature to withstand up to 50 oC, with thermal cut-outs.		
	4.4	To facilitate maintenance, the cover of the machine must be easy to open from the top & sides.		
	4.5	The suction machine must be capable of producing minimum vacuum of approx. 700 mm Hg and which must be adjustable and monitored by vacuum gauge of suitable range. The suction capacity must be 25 litres per minute and can be regulated.		
	4.6	It must have two bottles of 2L each . Each made of unbreakable polycarbonate with ABS Lid with float (over flow control device).The jars must be graduated (in cc levels). The suction bottles shall be autoclaveable.		
	4.7	On/Off Switch and power indicator must be available.		
	4.8	Shall provide foot switch.		
	4.9	**Body material:**		
		Base, top & panel made of rust proof and corrosion resistant moulded ABS.		
	5	**Accessories, spares and consumables**		
	5.1	**Accessories:**		
		⍰ Spare bottle: 02 nos.		
		⍰ Lids: 02 nos.		
		⍰ Rubber Seals: 02 nos.		
		⍰ Blades: 02 nos.		
		⍰ Suction tubing set at least 5 metres: 02 nos.		
		⍰ Spare fuse: 01 set.		
		⍰ Bacterial filter : 05 nos.		
	5.2	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.		
	6	**Operating Environment**		
	6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.		
	6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.		
	7	**Standards and Safety Requirements**		
	7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND		
	7.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.		
	7.3	Electrical safety conforms to standards for electrical safety IEC 60601-1 General requirement for Electrical safety of Medical Equipment.		
	8	**User Training**		
	8.1	Must provide user training (including how to use and maintain the equipment).		
	9	**Warranty**		
	9.1	Comprehensive warranty for 2 years after acceptance.		
	10	**Maintenance Service During Warranty Period**		
	10.1	During warranty period supplier must ensure corrective/breakdown maintenance whenever required.		
	11	**Documentation**		
	11.1	User (Operating) manual in English.		
	11.2	Service (Technical / Maintenance) manual in English.		
	11.3	List of important spare parts and accessories with their part numbers and costing.		
	11.4	Certificate of calibration and inspection from factory.		
73		**Syring pump**		
	1	**Description of Function**		
	1.1	The Syringe Infusion Pump provides uniform flow of fluid by precisely driving the plunger of a syringe down its barrel. It provides accurate and continuous flow rate for precise delivery of I.V. medication in critical medical care.		
	2	**Operational Requirements**		
	2.1	The syringe pump must be programmable, user friendly, safe to use and must have battery backup and comprehensive alarm system. This must be able to integrate in the HIS.		
	3	**System Configuration**		
	3.1	Syringe infusion pump with battery backup alarm and with complete accessories.		
	4	Technical Specifications		
	4.1	Flow rate programmable from 0.1 to 200 ml/hr. or more in steps of 0.1 ml/hr. with user selectable flow set rate option. SAVE last infusion rate even when the AC power is switched OFF.		
	4.2	Bolus rate must be programmable to 400 – 500 ml/hr. or more with infused volume display. Reminder audio after every 0.5 ml delivered bolus. SAVE last Bolus rate even when the AC power is switched OFF.		
	4.3	Display of Drug Name with a provision of memorizing 10~15 names by the operator		
	4.4	Keep Vein Open (KVO) must be available 1.0 ml/hr. or set rate if lower than 1.0 ml. User must have choice to disable KVO whenever desired.		
	4.5	Selectable Occlusion pressure trigger levels selectable from 300/500/900 mmHg		

	4.6	Must Work on commonly available 20, 50/60 ml Syringes with accuracy of minimum of +/-2% or better.		
	4.7	Automatic detection of syringe size & proper fixing. Must provide alarm for wrong loading of syringe such as flanges out of slot; disengaged plunger, unsecured barrel etc.		
	4.8	Anti-bolus system to reduce pressure on sudden release of occlusion		
	4.9	Must have comprehensive alarm package including: Occlusion limit exceed alarm ,Near end of infusion pre-alarm & alarm, Volume limit pre-alarm & alarm, KVO rate flow, Low battery pre-alarm and alarm, AC power failure, Drive disengaged and preventive maintenance.		
	4.1	Rechargeable Battery having at least 5~6 hour backup for about 5ml/hr. flow rate with 50ml syringes. Larger battery life and indication of residual life will be preferred.		
	5	**Accessories, spares and consumables**		
	5.1	**Accessories:**		
		Mounting device/ Docking Station for two or four pumps as per requirement so as to enable to power up to 2-4 pumps with one power cord when mounted on IV pole. -01 pc.		
	5.2	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer. Bidders must specify the quantity of every item included in their offer (including items not specified above).		
	6	**Operating Environment**		
	6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.		
	6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.		
	7	**Standards and Safety Requirements**		
	7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND		
	7.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.		
	7.3	Certified for meting IEC60601-2-24:Particular requirements for the safety of infusion pumps and controllers		
	7.4	Must meet IEC 529 Level 3 (IP3X) (spraying water) for enclosure protection, water ingress.		
	8	User Training		
	8.1	Must provide user training (including how to use and maintain the equipment).		
	9	**Warranty**		
	9.1	Comprehensive warranty for 2 years.		
	10	Maintenance Service During Warranty Period		
	10.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.		
	11	**Documentation**		
	11.1	User (Operating) manual in English.		
	11.2	Service (Technical / Maintenance) manual in English		
	11.3	List of important spare parts and accessories with their part number and costing.		
	11.4	Certificate of calibration and inspection from factory.		
	11.5	Must submit ISO13485:2003/AC:2007 for Medical Devices ANDCE or US FDA approved product certificate.		
	11.6	.Comprehensive warranty for 2 years after acceptance.		
74		**Transphenoid sectomy Instrument Set**		
		Standard Scalpel-Handel no.3/12,5cm,soli	2	
		Standard Scalpel-Handel no.4,solid	1	
		CT-ORO metzenbaum Scissor 11cm,curved	1	
		Standard Scissor 14cm,straight,sh/sh	1	
		Forcep Dress14cm,fine model	1	
		Standard forcep Tiss.13cm,1:2Teeth	1	
		Adson forcep Dress 12cm	1	
		Adson forcep Tiss.12cm,1:2Teeth	1	
		Mini-Adson forcep Tiss.12cm1:2T.cross serration	1	
		Gruenwald(Jansen)Dressing forcep20cm	1	
		Yasargil Suction Tube 21cm/150*2,0mm	2	
		Yasargil Suction TubeWL220mm,Ø2,0mm	2	
		21cm/150*3,5mmYasargil Suction Tube	2	
		Yasargil Suction Tube WL 220mm,Ø3,5mm	2	
		CT-ORO Halsey Needle Holder 13cm,mini pr	2	
		Hartmann Artery forcep 10cm,curved	2	
		Halsted-Mosquito A rtery forcep12cm,curv	4	
		Baby-Mixter Artery forcep14cm, curved	2	
		Backhanus Towel forcep11cm	6	
		Foerster Dressing Forcep 25cm,smooth	2	
		Foerster Dress.forcep25cm,cvd.,smooth	2	
		Senn-Mueller Retractor 16cm,sharp	2	
		Retractor eith 3prong,16cm,blunt	2	
		BILLY I Laminectomy punch,Handle	2	
		Billy I Punch,tube-shaft 18cm/1mm,130°,with ejector	1	
		Billy I Punch,tube-shaft 18cm/1mm,130°,with ejector	1	
		Billy I Punch,tube-shaft 20cm/3mm,130°,with ejector	1	
		Gruenwald(Cushing)Rongeur 18cm/2*10mm,straight	1	
		Gruenwald Rongeur18cm/3*10mm,straight	1	

		Gruenwald Rongeur18cm/3*10mm,straight	1	
		Gruenwald(Spurling)Rongeur 18cm/4*10mmstraigt	1	
		Gruenwald(Spurling)Rongeur 18cm/4*10mm	1	
		Curved down 30º	1	
		Oldberg pituitary Rongeur 18cm,6mm	1	
		BrainSpatula malleable,200*17mm	1	
		Hardy micro-Dissector 24cm,curved right blunt	1	
		Landolt pituitary Rong.blunt 20cm/9mm	1	
		Hardy Implant Fork 24cm	1	
		Hardy Curette malleable 26m/Ø6mm	1	
		Nicola Curette 22mmØ6,5mm,right side cutting	1	
		Nicola Curette 22mm /Ø6,5mm,left side cutting	1	
		Nicola Curette 22mm /Ø6,5mm,angled up	1	
		Cushing- Landolt Speculaf.transsphenoid.70X15mm	1	
		Landolt Curette malleable 26cm	1	
		Cushing-Landolt Specula f.transsphenoid.90X15mm	1	
		Cushing-LandoltSpeculaf.transsphenoid.110X15mm	1	
		Landolt Curette malleable 26cm	1	
		Landolt Spreading forceps 21cm f . Specula U157.xx	1	
		Landolt- Reulen Dissector 26cm /Ø2mm,rigid	1	
		Landolt- Reulen Raspatory 26cm /Ø3,2mm,rig	1	
		Yasargil Pituitary Rongeur 18cm,3,5mm	1	
		Nicola Micro Scissors 16cm, straight	1	
		Fahlbusch Micro Scissors 165mm,curved,horizontal	1	
		cutting		
		Cottle chisel 18cm /4 mm, obligue cut	1	
		Cottle Mallet 19cm /240 g/ Ø30mm,flat/conve	1	
		Handle for Pituitary Mirrors	1	
		Pituitary Mirror only Ø8mm	1	
		Pituitary Mirror only Ø10mm	1	
		Must submit ISO13485:2003/AC:2007 for Medical Devices ANDCE or US FDA approved product certificate.		
		.Comprehensive warranty for 2 years after acceptance.		
75		**Solar Vaccine Refrigerator**		
	No.	Item Specifications		
	1	**Description of Function**		
	1.1	This equipment is used primarily in areas without any electricity or where there is less than 8 hours of reliable electricity over a typical day.		
	2	**Operational Requirements**		
	2.1	The battery solar powered refrigerator and freezer will work during the day directly from the solar panel, while during nights operating from storage battery.		
	3	**System Configuration**		
	3.1	The system consists of :		
		? Solar PV Panels.		
		? Components for mounting the PV system.		
		? Earth Connection.		
	4	**Technical Specifications**		
		? Battery & Charge Regulators.		
		? Combined chest type Ice-lined Vaccine Refrigerator and Freezer.		
	4	**Technical Specifications**		
	I	**Solar PV Panels**		
	4.1	Technology:		
		Based on Polycrystalline silicon solar cells.		
	4.2	Power Rating:		
		? 500 to 540 Watt peak.		
		? In modules of 100 to 135 Wp.		
		Solar Array Peak Power, in combination with the supplied battery capacity, must be guaranteed to power the refrigerator and freezer reliably during the months of minimal solar radiation and the months of maximum temperature respectively.		
	4.3	Panel Surface:		
		Panels to be covered by anti-reflecting glass.		
	4.4	Panel frame:		
		Aluminium with stainless steel/bronze screws for fixing.		
	II	**Components for mounting the PV system**		
	4.5	Panel Mounting Support Structure:		
		Metallic frame preferably slotted anodized aluminium or stainless steel or steel angles with stainless steel screws and self-locking washers for mounting the solar panel on the rooftop or ground. Frame must allow adjustment to incline the panels towards the sun's path during mounting. Array cables must be weather shielded in case of rooftop installations or of direct burial type, in case of ground installations.		

	4.6	Array structures shall be designed to withstand loads of more than 200 Kg/m2 and shall be supplied with fixings for either ground or rooves mounting. Protection against the effect of lightning will be provided to protect the battery charge regulator and other components.		
	4.7	Electrical Mounting Accessories:		
		Electrical cables sufficient (16 to 20 meters long or as per requirements) to carry the panel currents to the system and battery without loss.		
		Additional cables for connecting the Charge regulator to system and battery.		
	4.8	Earth Connection:		
		One complete earth connection kit.		
	4.9	Quality Standard:		
		Must comply with WHO/UNICEF E3/ PV01.		
	4.10	Protection against theft:		
		Must have provision to anti-theft mechanism.		
	III	**Battery & Charge Regulators**		
	4.11	Type of Battery:		
		Maintenance free Sealed or Flooded / Gel or Tubular Lead Acid type - Deep discharge, and shall have low self-discharge.		
	4.12	Total Battery Capacity:		
		280 Ah X 4 batteries or (420-500) Ah X 2 batteries of 6 Volt.		
	4.13	Autonomy on fully charged battery:		
		Minimum 5 days without sun (autonomous days) to run the refrigerator (without icepack freezing) under the prevailing temperature conditions.		
	4.14	Battery set housing:		
		Plastic box with locking facility.		
	4.15	Miscellaneous Additional cables, plugs, connectors, fuses and other materials for complete mounting of system.		
		Battery safety kit equipment for protection of eye, hand, clothing etc.		
	4.16	Charge regulator/ controller:		
		Charge controller, as recommended 6V, 30A with LCD display of parameters like battery voltage, array amps status, load amps draw and system performance.		
		Lightning surge protection shall be provided.		
		They must be precisely set to meet the charge and temperature requirements of the selected battery They shall disconnect the load when the battery has reached a state of charge which can be repeated a minimum of 1000 cycles.		
		The battery charge regulator must meet the WHO designed specifications and Bidders shall submit the documentary evidence of compliance		
	IV	**Combined chest type Ice-lined Vaccine Refrigerator and Freezer:**		
	4.17	Capacity:		
		Refrigerator:		
		? Net: 30 to 45 litres.		
		? Gross: 75 to 85 litres.		
		Freezer:		
		? Net: 20 to 25litres.		
		? Gross: 30 to 40 litres.		
	4.18	Temperature Control / Holdover Time:		
		The refrigerator shall without energy and without being opened hold a temperature in the range of +2 oC to +8oC for a period as per WHO PQS requirements and preferably higher hours in a continuous external temperature of +43 oC.		
		Bidder shall provide details of holdover time of their product.		
	4.19	Refrigerants:		
		The refrigerators& freezer shall utilize CFC (chlorofluorocarbon) free refrigerants preferably R134A.		
	4.2	Insulation:		
		Minimum 100 mm polyurethane foam.		
	4.21	Corrosion Resistance:		
		Internal and external cabinet, lid and frame shall be protected against corrosion to DIN 8985.		
	5	**Accessories, spares and consumables**		
	5.1	Accessories:		
		? Lock with key or combination lock on door.		
		? External reading thermometer.		
		? Vaccine storage baskets.		
		? Icepack storage baskets.		
	5.2	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer. Bidders must specify the quantity of every item included in their offer (including items not specified above).		
	6	**Operating Environment**		
	6.1	Must be suitable for hot zones, up to 43 0C.		
	7	**Standards and Safety Requirements**		
	7.1	Must submit ISO 9001 or ISO13485:2003/AC:2007 AND		
	7.2	Shall meet UNICEF/WHO standard E003 preferably WHO PQS certified product.		
	8	**User Training**		
	8.1	Must provide user training (including how to use and maintain the equipment).		
	9	**Warranty**		

	9.1	The minimum period of the comprehensive warranty shall be 10 years for the solar array, 5 years for the batteries and 2 years for the other components after acceptance.		
	10	**Maintenance Service During Warranty Period**		
	10.1	During the warranty period supplier must ensure preventive maintenance along with corrective/breakdown maintenance whenever required.		
	11	**Installation and Commissioning**		
	11.1	The bidder must arrange for the equipment to be installed and commissioned by certified or qualified personnel; any prerequisites for installation to be communicated to the user in advance, in detail.		
	12	**Documentation**		
	12.1	User (Operating) manual in English.		
	12.2	Service (Technical / Maintenance) manual in English.		
	12.3	List of important spare parts and accessories with their part numbers and costing.		
	12.4	Certificate of calibration and inspection from factory.		
76		**Water Treatment Plant**		
	1	**1 Description of Function**		
	1.1	1.1 Water Treatment system is required to produce pure water for dialysis.		
	2	**2 Operational Requirements**		
	2.1	2.1 The system must be sufficient for online operation of 10 machines with pure water capacity of 500		
		litres per hour.		
	3	**3 System Configuration**		
	3.1	3.1 Water Treatment System for Haemodialysis with complete accessories.		
	4	**4 Technical Specifications**		
	4.1	4.1 The system must comprise of pre-treatment modules such as sand filter, activated carbon filter, water softener, 5 micron particulate filter and deionizer before the reverse osmosis unit and post R.O.		
		Bacterial filters (1 micron) and UV light disinfection for yielding high purity water.		
	4.2	4.2 All pre-treatment modules must have programmable back wash and regeneration facility. These		
		stages must be designed to handle water flow of 1000 litres/hour.		
	4.3	4.3 R.O. Unit must be compact in sleek cabinet, housing membrane, high pressure pump and bypass		
		mechanism.		
	4.4	4.4 The control unit must be microprocessor/ microcontroller controlled.		
	4.5	4.5 A 5 micron filter shall protect the membrane.		
	4.6	4.6 The entire unit must have adequate monitoring of input and output water conductivity, feed water		
		pressure and rejection flow rate.		
	4.7	4.7 The system must have protection alarm against low feed water, high output conductivity and high		
		temperature of pump motor.		
	4.8	4.8 The system must include online water distribution to 10 machines in loop so that the unused water		
		may be feedback to R.O .Unit, thus saving on water rejection.		
	4.9	4.9 The system must have programmable disinfection /de-calcification facility using commonly available		
		disinfection / decalcification chemicals.		
	4.1	4.10 The unit must have programmable and automatic rinsing/flushing facility, at regular intervals, when		
		system is not in use, to prevent drying of filter media and R.O. Membrane.		
	4.11	4.11 The system must accept feed water with TDS up to 1500 mg/litre and hardness up to 1 dH with 0.5%		
		rejection of TDS & hardness and 99% rejection of bacteria and endotoxins.		
	4.12	4.12 The unit must be designed for maximum saving of raw water, with efficiency of 60-70%.		
	4.13	4.13 The water distribution loop, booster pump and storage water tank must be made up of stainless steel.		
		Storage water tank must have capacity of at least 3000 litres with water level controller, outlet valves		
		and easy cleaning provisions.		
	5	**5 Accessories, spares and consumables**		
	5.1	5.1 Accessories:		
		⍰ Adequate filter cartridges		
		⍰ Media or resins for 02 years		
		⍰ Booster pumps – 02 nos.		
	5.2	5.2 All standard accessories, consumables and parts required to operate the equipment, including all		
		standard tools and cleaning and lubrication materials, to be included in the offer. Bidders must		
		specify the quantity of every item included in their offer (including items not specified above).		
	6	**6 Operating Environment**		
	6.1	6.1 The product offered shall be designed to be stored and to operate normally under the conditions of		
		the user's country. The conditions include Power Supply, Climate, Temperature, Humidity, etc.		
	6.2	6.2 Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3		
		metre in length.		
	7	**7 Standards and Safety Requirements**		
	7.1	7.1 Must submit ISO 9001 / ISO13485:2003/AC:2007 AND		
	7.2	7.2 CE or USFDA approved product certificate.		
	7.3	7.3 Output water quality shall match AAMI (Association for the Advancement of Medical		

		Instrumentation) standards for Haemodialysis Water (Al < 0.01 mg/L; Ca < 2 mg/L; BACTERIA<200 CFU/ml).		
	8	**8 User Training**		
	8.1	8.1 Must provide user training (including how to use and maintain the equipment).		
	9	9 Warranty		
	9.1	9.1 Comprehensive warranty for 2 years after acceptance.		
	10	**10 Maintenance Service During Warranty Period**		
	10.1	10.1 During warranty period supplier must ensure preventive maintenance which includes chemical		
		checks, bacterial and pyrogen checks periodically and corrective/breakdown maintenance whenever		
		required.		
	11	**11 Installation and Commissioning**		
	11.1	11.1 The bidder must arrange for the equipment to be installed and commissioned by certified or qualified		
		personnel; any prerequisites for installation such as space requirements, water outlets, electrical		
		points etc. to be communicated to the user in advance, in detail. The bidder may visit the site		
		and check the water quality.		
	11.2	11.2 Plumbing works, civil works and electrical works requires for installation and commissioning will		
		have to be undertaken by the bidder. For this purpose the bidder shall inspect the site. The bidder		
		must ensure that there is no environmental damage of any kind takes place.		
	12	**12 Documentation**		
	12.1	12.1 User (Operating) manual in English.		
	12.2	12.2 Service (Technical / Maintenance) manual in English.		
	12.3	12.3 List of important spare parts and accessories with their part numbers and costing.		
	12.4	12.4 Certificate of calibration and inspection from factory.		
77		**Midwifery Kit**		
	No.	Item Specifications		
	1	**Technical Specifications**		
	1	**VMW kit container:**		
		Aluminum container with a handle on cover		
		Capacity: enough to contain the items listed below (Item No 2-28)		
		Length: 30 to 32 cm		
		Width: 23 to 25 cm		
		Depth: 16 to 18cm		
	2	**Stainless container with cover**		
		Size: enough space to place scissors and forceps below		
		Approximate Size:		
		Length 22-25cm		
		Width 10-12cm		
		Depth 5-7cm		
		Material: stainless steel		
	3	**Surgical Scissors x 2**		
		Length: 16 to 17cm		
		Material: stainless steel		
		Straight, Blunt		
		For medical use		
	4	**Artery Forceps x 2**		
		Length: 16 to 17cm		
		Indented part should be more than 4 cm to hold umbilical cord.		
		Material: stainless steel		
		Straight		
		For medical use		
	5	**Handling forceps (Cheatle Forceps)**		
		Length: 27 to 29cm		
		Curved		
		Material: stainless steel		
		For medical use		
	6	**Kidney dish**		
		Length: 24 to 26cm		
		Material: stainless steel		
	7	**Stainless bowl**		
		Diameter: 14 to 16cm		
		Material: stainless steel		
		For medical use		
	8	**Sprit lamp**		
		Diameter: 5 to 7cm		
		Material: stainless steel		
	9	**Thermometer x 2**		
		Auxiliary		
		1 x Clinical mercury thermometer & 1 x Digital		
	10	**Fetal Scope**		
		(Aluminum Pinard Stethoscope)		
	11	**Weight scale for baby**		

		Colored type		
		Capacity: up to 5kg		
		Measure every 50g		
		Spring		
		For newborn baby and infant		
	12	**Trousers for weight scale**		
		Size to fit for newborn baby		
		Length: 28 to 30cm		
		Width:33 to 35cm		
	13	**Mucus Sucking tube**		
		For newborn baby		
		Size: 12Fr-14Fr		
		Capacity: 25ml		
		Transparent graduated chamber		
		Smooth outer surface finish of the catheter		
	14	**Urine catheter**		
		Size: 16-18Fr		
		Re-usable		
		Material: Rubber		
	15	**Sphygmomanometer**		
		Aneroid		
	16	**Stethoscope (single)**		
		Binaural		
		Diaphragm		
	17	**Tape measure**		
		Length: 100 to 150cm		
		Vinyl-coated		
	18	**Urine test tube**		
		Material: Glass		
		Length: 10cm		
		Diameter: 1 to 1.5cm		
	19	**Handle for urine test tube**		
		Size to hold urine test tube for urine test		
	20	**Dropper**		
		Capacity: 1ml		
		Material: Plastic		
	21	**Plastic Sheet**		
	22	**Plastic Apron**		
	23	**brush**		
	24	**Nail clipper**		
	25	**Umbilical cord clamp box of 50 Pcs**		
	26	**baby blanket**		
	27	**LED Torch**		
	28	**Nail clipper**		
	2	**Operating Environment**		
	2.1	The system offered shall be designed to store and to operate normally under the conditions include Climate, Temperature, Humidity, etc. for Sudan		
	3	**Standards and Safety Requirements**		
	3.1	The manufacturer must have ISO certification for quality of the products.		
	4	**User Training**		
	4.1	Not applicable		
	5	**Warranty**		
	5.1	Warranty for 2 years.		
	6	**Maintenance Service During Warranty Period**		
	6.1	Standard warranty conditions are applicable.		