1 **Real Time PCR System**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
1.1	The system should be automated for both real-time PCR and post-PCR (end point) analysis using in-built Peltier based PCR machine.	
1.2	System should support applications including absolute quantitation, simultaneous analysis data for relative quantitation of Unlimited plates of 96 wells each, (4-6 color multiplexing), allelic discrimination (SNP), dissociation curve analysis as well as pathogen detection and plus/minus assay using internal positive control.	
1.3	Instrument should have 96-well sample block of 0.1ml capacity, able to run fast and standard run on the same block. It can also have 6 separate Peltier-controlled blocks with a fixed gradient with a 25 degree range.	
1.4	System should complete Fast 40 cycle protocol in less than 40 minutes and standard protocol in under 2 hours.	
1.5	**The vendor should offer a complete solution for Fast real-time PCR:**	
	Fast instruments, Fast reagents, Fast protocols and Fast assays.	
	Sample Ramp Rate: fast Mode: ±3.5ºC/sec	
	Standard Mode: ±1.6ºC/sec	
	9600 Emulation Mode: +0.8 and -1.6ºC/sec ºC/sec	
	Pear Block Ramp Rate: 5.5ºC/sec	
	Temperature range: 4ºC- 100ºC	
	Temperature Accuracy: ±0.25ºC (35ºC- 95ºC) of set point/ display temperature measured at 3 minutes after clock start	
	Temperature Uniformity: ±0.50ºC, 30 seconds after clock start	
1.6	Excitation source should be single blue LED light source or Tungsten Halogen or high intensity Xenon lamp and emission detection by photodiodes or cooled CCD camera. There should be enough excitation and emission filters to cover majority of dyes.	
1.7	System should be flexible to support 96 well plates, individual tubes and 8 strip tubes.	
1.8	System software should provide simultaneous analysis data for relative quantitation of Unlimited plates of 96 wells each.	
1.9	Normalization of reaction due to non-PCR related fluctuations such as pipetting variations, should be possible by using ROX™ or any other calibrated dye.	
1.10	System should support reaction volume 5-30 µL.	
1.11	All assays should run using Universal Thermal Cycling conditions to eliminate optimization of PCR conditions.	
1.12	The instrument software must be capable of detecting and analyzing a different gene, SNP or pathogen target in every well of the 96-well plate. The instrument software should not restrict the number of assays or targets that can be run on a single 96-well plate.	
1.13	The system should have easy door design for loading and unloading 96-well plates or individual 0.2 ml PCR tubes.	
1.14	System should collect data for all filters for all wells regardless of plate setup. The software should allow reanalysis of data so that data is never lost.	
1.15	The instrument should be pre-calibrated for at least seven dyes including the following during installation at the customer site: FAM™/SYBR® Green I, VIC®/JOE™, NED™/TAMRA™/ and ROX™. The user should be able to use any of these dyes in an experiment without needing to recalibrate the instrument. Addition of new dyes should be possible without hardware change.	
1.16	A dedicated licensed full version software for primer and probe design with comprehensive assay design and development guidelines for quantitative and qualitative real-time assays, should be provided to enable designing of custom oligo assays.	
1.17	System should be standardized for at least two homogeneous reaction chemistries including SYBR Green I and dual color TaqMan or four color hybridization probes (FRET).	
1.18	The vendor should be able to offer pre-validated and functionally tested Gene Expression Assays as well as SNP Genotyping Assays and the flexibility to design specific assays for new templates of interest.	
1.19	The instrument software should utilize a multi-componenting algorithm designed to provide precise deconvolution of multiple dye signals to enable the simultaneous detection of multiple fluorophores.	
1.20	The instrument may have display with an LCD touchscreen that is a 6.5inch, full VGA (640 x 480).	
1.21	Analysis work station should be of latest branded Pentium IV with licenced windows XP, operating system and colored laser printer.	
1.22	The vendor should clearly indicate compliance or deviation vis –a vis the tender specifications and should be highlighted in the literature or manuals.	
1.23	Reagents for 500- 1000 reaction should be provided with the instrument.	
2	**Operating Environment**	
2.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.	
2.2	Power supply: 220-240V/ 50/60 Hz AC Single phase with appropriate plug .The power cable must be minimum 3 Meter	
2.3	Suitable UPS with maintenance free batteries for minimum one-hour back-up should be supplied with the system.	
3	**Standards and Safety Requirements**	
3.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND	
3.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.	
4	**User Training**	
4.1	Must provide user training (including how to use and maintain the equipment).	
5	**Warranty**	
5.1	Comprehensive warranty for 2 years after acceptance.	
6	**Maintenance Service During Warranty Period**	
6.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.	

7	**Installation and Commissioning**	
7.1	Supplier must accomplish proper installation and commissioning of the equipment on site.	
8	**Documentation**	
8.1	User (Operating) manual in English	
8.2	Service (Technical / Maintenance) manual in English	
8.3	List of important spare parts and accessories with their part numbers and costing.	
8.4	Certificate of calibration and inspection from factory.	

2 **Cold Centrifuge**

No.	Item Specifications	Fill your Specification
1	**Technical Specifications**	
	Lid locking and holding	
	Emergency lid lock release	
	Motor overheating protection	
	Imbalance switch-off	
	Standstill indication	
	Benchtop centerifuge,refrigerated	
	Capacity 4x250ml,swing-out rotor	
	Speed/ RCF: n=15000min/RCF24400	
	temp:controlable from-20cto+40c	
2	**Operating Environment**	
2.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.	
2.2	Power supply: 220-240V/ 50/60 Hz AC Single phase with appropriate plug .The power cable must be minimum 3 Meter	
3	**User Training**	
3.1	Must provide user training (including how to use and maintain the equipment).	
4	**Warranty**	
4.1	Comprehensive warranty for 2 years after acceptance.	
5	**Maintenance Service During Warranty Period**	
5.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.	
6	**Installation and Commissioning**	
6.1	Supplier must accomplish proper installation and commissioning of the equipment on site.	
7	**Documentation**	
7.1	User (Operating) manual in English	
7.2	Service (Technical / Maintenance) manual in English	
7.3	List of important spare parts and accessories with their part numbers and costing.	
7.4	Certificate of calibration and inspection from factory.	

3 **Blood culture Machine**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
1.1	Fully automated, walk away and continuous monitoring system.	
1.2	System should be capable of detecting growth of the pathogenic organisms from blood and sterile body fluids.	
1.3	Detection principle should be based on sensitive Florescence/ Colorimetric/Pressure Difference Technology.	
1.4	System should have minimum 100 to 120 sample positions.	
1.5	System should be able to process minimum 15 fresh samples per day.	
1.6	Should have media with Antibiotic Neutralizing agents for optimized recovery from various patients those are under treatment.	
1.7	System should have Auto QC facility .	
1.8	Should have special media for Paediatric samples and low volume sterile body fluid samples.	
1.9	Should have Anaerobic media and Media for increased detection of partially phagocytosed organisms.	
1.10	Should have media for optimal recovery of yeasts, fungi, and mycobacterium from blood samples.	
1.11	Media should not have any masking effect for easier interpretation of Gram Staining of the positive isolates.	
1.12	Should have special supplement for enhanced recovery of low volume sterile body fluids.	
1.13	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.	
1.14	Should provide following culture bottles(Free of cost) along with the system:	
1.15	Pediatric Culture Bottle: 400.	
1.16	Adult Aerobic culture bottle with Antibiotic Neutralising agent :400.	
1.17	Training of the staff should be provided on site by the company with using their own consumables and reagents.	
1.18	The company should have a team of well trained engineers who can provide the instrument service and maintenance same day support.	
1.19	In built bar code scanner.	
1.20	Should have audible alarm and visible display for the positive culture.	
1.21	**Must have the listed Advanced algorithms:**	
1.21.1	Low Blood Volume	
1.21.2	Pediatric Specimens	
1.21.3	Slow growing organisms such as Haemophilus and Neisseria	
1.21.4	Provide Rapid Detection in Blood culture	
1.21.5	Extended Delay Vial Entry Capability	
1.21.6	Must be user friendly system with minimal daily, weekly, monthly, maintenance and calibration procedures. Please state times associated with	

1.21.7	these procedures.	
1.21.8	Must have an on-board data tracking system.	
1.21.9	Should have an audible and visual alarm system to alert technologist that a positive bottle has been detected.	
1.21.10	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,	
1.21.11	fungi and mycobacteria..	
1.21.12	Must have automated built in testing which provides continuous quality control of every well.	
1.21.13	System must be compatible with Plastic Culture	
1.21.14	Must not require connections or venting units, biohazard hood or special clothing.	
1.21.15	Must allow direct draw sample collection for bottles.	
1.21.16	Must be ergonomically designed to provide ease of access for loading and unloading of bottles.	
1.21.17	Must have a Data Management System with a bar code scanning function to enter patient demographics.	
1.21.18	All future software upgrades and necessary hardware to support such upgrades must be provided free of charge.	
1.21.19	Must include power protection against power surges to protect equipment.	
2	**Operating Environment**	
2.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.	
2.2	Power supply: 220-240V/ 50/60 Hz AC Single phase with appropriate plug .The power cable must be minimum 3 Meter	
2.3	Suitable UPS with maintenance free batteries for minimum one-hour back-up should be supplied with the system.	
3	**Standards and Safety Requirements**	
3.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND	
3.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.	
4	**User Training**	
4.1	Must provide user training (including how to use and maintain the equipment).	
5	**Warranty**	
5.1	Comprehensive warranty for 2 years after acceptance.	
6	**Maintenance Service During Warranty Period**	
6.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.	
7	**Installation and Commissioning**	
7.1	Supplier must accomplish proper installation and commissioning of the equipment on site.	
8	**Documentation**	
8.1	User (Operating) manual in English	
8.2	Service (Technical / Maintenance) manual in English	
8.3	List of important spare parts and accessories with their part numbers and costing.	
8.4	Certificate of calibration and inspection from factory.	

4 **Capillary Electrophoresis**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
	a) Capillary Electrophoresis (CE) system	
	Capillary electrophoresis platform for protein and peptide identification and quantification where the configuration can be modified with automation kits and upgradable.	
	The characteristics shall be the following:	
	· For our specific purposes, the system shall be capable of performing different techniques in particular for our applications :	
	Capillary isoelectric focusing (cIEF)	
	Sodium Dodecyl Sulfate Molecular Weight separation (SDS-MW)	
	· Integrated UV detector that can operate at typical wavelengths for proteins (200, 214, 254, 280 nm)	
	· Integrated Diode Array detector that can operate in the range from 190 to 600 nm.	
	· Integrated Laser Induced Fluorescent Detector with laser at 488 nm	
	· The system must be software monitored (see section d).	
	· Electrophoretic conditions : Voltage : up to 30 kV, current : up to 300 µA.	
	· Sample temperature control : 4-60 °C	
	· Capillary temperature control : 10-60 °C	
	· Injection modes shall include pressure and electrokinetic	
	b) CE-MS coupling	
	The CE system is intended to be coupled to mass spectrometry detection:	
	· The compatibility with the two MS present in our laboratory (Applied Biosystem 4000 QTrap and ThermoScientific XT Vantage) shall be demonstrated.	
	c) Consumables	
	Consumables kit shall include at least:	
	Sample trays	
	Sample vials : 500 vials	
	Buffer trays	
	Buffer vials and caps	
	Capillary cassettes	

	A set of capillaries corresponding to our main applications (protein analysis with or without MS coupling).	
	Capillary cutter	
	d) Analysis software	
	Analysis software capable of fast and efficient control of all the monitored parameters during protein measurement which shall be able to generate high-quality analysis results.	
	The software shall enable a real-time control of the CE system based on a dedicated controller interface with a computer based graphical user interface where methods and operation sequences could be fully programmed by the end user.	
	Functions to be included:	
	· Real-time flow scheme.	
	· Display of all monitor values.	
	· Method Logbook for full documentation.	
	· Method start protocol.	
	· Note books for pre-run, run, and post-run notes.	
	· Calibration curves calculation with post-run quantification of unknown samples.	
	· Method handling with full flexibility.	
	· Backup of the different methods.	
	e) Workstation for handling	
	A PC controller that enables easy communication with the workstation and peripheral devices via an external USB communicator. The controller must include the Windows XP operating system or equivalent, the Capillary Electrophoresis application software, a QWERTY keyboard, a mouse, and a high-resolution flat-panel monitor.	
2	**Operating Environment**	
2.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.	
2.2	Power supply: 220-240V/ 50/60 Hz AC Single phase with appropriate plug .The power cable must be minimum 3 Meter	
3	**Standards and Safety Requirements**	
3.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND	
3.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.	
4	**User Training**	
4.1	Must provide user training (including how to use and maintain the equipment).	
5	**Warranty**	
5.1	Comprehensive warranty for 2 years after acceptance.	
6	**Maintenance Service During Warranty Period**	
6.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.	
7	**Installation and Commissioning**	
7.1	Supplier must accomplish proper installation and commissioning of the equipment on site.	
8	**Documentation**	
8.1	User (Operating) manual in English	
8.2	Service (Technical / Maintenance) manual in English	
8.3	List of important spare parts and accessories with their part numbers and costing.	
8.4	Certificate of calibration and inspection from factory.	

5 **Automatic cell washing system for serological testing**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
1.1	Automatic cell washing system for serological testing	
1.2	Max capacity : 24 standard tube (10 x 75 mm or 12 x 75 mm)	
1.3	Max speed RPM : 3,500	
1.4	**Running time of the individual washing cycle :**	
	1 Sec - 9 min : 59 sec	
2	**Operating Environment**	
2.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.	
2.2	Power supply: 220-240V/ 50/60 Hz AC Single phase with appropriate plug .The power cable must be minimum 3 Meter	
2.3	Suitable UPS with maintenance free batteries for minimum one-hour back-up should be supplied with the system.	
3	**Standards and Safety Requirements**	
3.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND	
3.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.	
4	**User Training**	
4.1	Must provide user training (including how to use and maintain the equipment).	
5	**Warranty**	
5.1	Comprehensive warranty for 2 years after acceptance.	
6	**Maintenance Service During Warranty Period**	
6.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.	
7	**Installation and Commissioning**	
7.1	Supplier must accomplish proper installation and commissioning of the equipment on site.	
8	**Documentation**	
8.1	User (Operating) manual in English	
8.2	Service (Technical / Maintenance) manual in English	
8.3	List of important spare parts and accessories with their part numbers and costing.	
8.4	Certificate of calibration and inspection from factory.	

6 **Automatic immunoassay Chemiluminescence analyzer**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements**	
1.1	The equipment should be fully automated, random access, closed-system. With facility to process various body fluids like serum, plasma and urine. (Critical)	
1.2	The equipment operation must not require any user interaction except sample loading, reagent loading and programming examinations during routine operation of equipment. The through-put of the system must be minimum 100 . (Critical)	
1.3	The equipment manufacturer must supply all reagents and consumables required for all tests. All such reagents must be manufactured by the equipment manufacturer. (Critical)	
1.4	The containers for reagents must be suitable for direct use in the equipment (i.e. system pack of suitable size). It must not require transfer of liquid from one container to other for any test. However, IQC sample may be aliquoted as advised by manufacturer.(Critical)	
1.5	Reagent container (system packs) shall have barcoding sufficient to prevent reagent mishandling.(Critical)	
1.6	The laboratory may use secondary sample containers for all samples; minimum 500 shall be provided by the supplier Such supply of secondary container must include required low-volume special secondary containers (100 Nos for pediatric patient sample). The bidder must provide quotations for the cost of secondary container as well as special secondary container along with the bid document. (Critical)	
1.7	The supplier must demonstrate bidirectional equipment interfacing at any one installation place of their choice or at manufacture's facility at supplier's own cost. Such interfacing must demonstrate sample-barcode scan-> pulling test request from LIS → pushing test results to LIS without any user intervention. If any middleware is required to communicate equipment with LIS, it must be suppled with equipment with all necessary hardware and software, at no extra cost to purchaser during contract period. During installation, the supplier must provide necessary technical support for equipment interfacing with propritory and oper-source LIS used at user laboratory (Critical).	
1.8	Equipment must have physical or electronic user-manual, service manual and manual describing LIS communication protocols in details sufficient for their meaningful use.(Critical)	
1.9	Input water available at user facility shall be used for DI water production. DI plant suitable to provide good quality DI water as necessary for optimum functioning of the equipment (as mentioned in manufactures instructions) shall be installed and maintained by the supplier at their own cost. Required pumps for removal of liquid waste shall be provided and maintained by the supplier as part of contract period.(Critical)	
2	**Quality Assessment**	
2.1	Only reagents manufactured by the equipment manufacturer are accepted. Any reagent shall not be used beyond expiry.(Critical)	
2.2	The supplier must provide method validation data as required by various national and international guidelines during initial purchase and when ever asked during contract period. Availability and acceptability of such data will be made .(Critical)	
2.3	The supplier must perform equipment calibration as required by latest ISO 15189 and NABL 112 and the records of such calibration must be made available to the laboratory, including certificate of calibration. (Critical)	
2.4	The method will be calibrated by users using manufacturer provided calibrators and as required by latest ISO 15189 and NABL 112. The calibrator may not be produced by equipment manufacturers, however the assigned value for the supplied equipment must be available for such calibrator. Such calibrators must have same matrix as sample type used analysis for patient.(Critical)	
2.5	IQC sera fulfilling latest ISO 15189 and NABL-112 requirement shall be supplied by manufacturer in sufficient quantity to perform IQC testing at latest ISO 15189 and NABL-112 recommended frequency. Such IQC sera need not be from the equipment manufacturer. The supplier may choose to instruct the laboratory to increase frequency of testing IQC at their own cost as part of their quality management guidance.(Critical)	
2.6	The equipment may be used for performing other tests . Reagent cost for such additional tests will be the born by the purchaser, but no extra payment will be made to the supplier for performing such tests for extra use of other consumables like washing solutions/cuvettes, calibrators etc. (Critical)	
2.7	EQAS provider and its cost shall be borne by user. However, EQAS reconstitution and testing will be done by the authorized technical personnel of the manufacturer/supplier using required DI water and glassware supplied by the manufacturer/supplier. EQAS result unacceptability criteria to be used by user laboratory resulting in stopping of test are as follows. (Critical)	
2.8	More than 2SDI or -2SDI equipment/method group EQAS result for three consecutive months will result in stopping of test till the EQAS results are acceptable.(Critical)	
2.9	More than 2SDI or -2SDI equipment/method group EQAS result for three months in any six month period will result in stopping of test till the EQAS results are acceptable.(Critical)	
2.10	Tests stopped due to unacceptable EQAS results will be considered for downtime calculation. However, EQAS testing will be continued to find when the results of EQAS are acceptable. The concerned test will be restarted when EQAS is acceptable for one cycle.(Critical)	
2.11	IQC result unacceptability criteria to be used by user laboratory resulting in stopping of test are as follows(Critical)	
2.12	SD of last 20 results of any QC level beyond SD of peer method/ peer equipment group of last EQAS report.(Critical)	
2.13	Any IQC result breaking 1(3S), 2(2S) and R4S rules. The rules will be applied within and across QC levels and across batches.(Critical)	
2.14	When IQC results are unacceptable, manufacturer technical support will be contacted and testing will be stopped. After necessary action/instructions from technical support, the acceptability of correction will be made if all levels of IQC in use are not breaking 1(3S), 2(2S) and R4S rules when performed once in a batch. Such IQC testing is not counted in total tests payable.(Critical)	
2.15	Tests stopped due to unacceptable IQC results will be considered for downtime calculation.(Critical)	
2.16	Quoted System must be US FDA certified and the certificate must be submitted along with the bid. (Critical)	
3	**Operating Environment**	
3.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.	

3.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.	
4	**Standards and Safety Requirements**	
4.1	Must submit ISO13485:2003/AC:2007 for Medical Devices **AND**	
4.2	CE (EEC Directives) or USFDA or TUV approved product certificate.	
4.3	Electrical safety conforms to standards for electrical safety IEC 60601-1 General requirement for Electrical safety of Medical Equipment.	
5	**User Training**	
5.1	Must provide user training (including how to use and maintain the equipment).	
6	**Warranty**	
6.1	Comprehensive warranty for 2 years after acceptance.	
7	**Maintenance Service during Warranty Period**	
7.1	During warranty period supplier must ensure corrective/breakdown maintenance whenever required.	
8	**Documentation**	
8.1	User (Operating) manual in English.	
8.2	Service (Technical / Maintenance) manual in English.	
8.3	List of important spare parts and accessories with their part number and costing.	
8.4	Certificate of calibration and inspection from factory.	

7 **Class III Biological Safety Cabinets with Isolators**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
	Class III Biological Safety Cabinets / Isolators	
2	**Operating Environment**	
2.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.	
3	**Standards and Safety Requirements**	
3.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND	
3.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.	
4	**User Training**	
4.1	Must provide user training (including how to use and maintain the equipment).	
5	**Warranty**	
5.1	Comprehensive warranty for 2 years after acceptance.	
6	**Maintenance Service During Warranty Period**	
6.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.	
7	**Installation and Commissioning**	
7.1	Supplier must accomplish proper installation and commissioning of the equipment on site.	
8	**Documentation**	
8.1	User (Operating) manual in English	
8.2	Service (Technical / Maintenance) manual in English	
8.3	List of important spare parts and accessories with their part numbers and costing.	
8.4	Certificate of calibration and inspection from factory.	

8 **CO2 Incubator**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
1.1	CO2 Incubator with work chamber volume approximately within range of 150-190 liters	
1.2	Air jacketed heating system (not direct and not water jacketed heating system) with temp. control by Microprocessor.	
1.3	CO2 range 0-20%, with ±0.1% accuracy	
1.4	Temperature range: ambient to 55°C with temp accuracy: ±0.1°C	
1.5	System should have interactive control to access rapidly important information for each critical parameter in the incubator	
1.6	Temperature, CO2 and humidity recovery time should be very fast	
1.7	System should have built-in moist or dry heat decontamination (sterilization) facility to remove bacteria, fungi, spores, mycoplasma etc. without the need of removing sensor, fan or any other fitting.	
1.8	Validation certificate of the decontamination routine from any accredited agency such as FDA, CAMR etc should be enclosed.	
1.9	At least 3 nos. stainless steel perforated shelves should be supplied .	
1.10	It should be supplied with access port to allow any cable, plug or tubing to be easily inserted into or out of the chamber.	
1.11	Interior chamber should be made of stainless steel with electropolish finish to have highest quality of inner surface with rounded corners on all sides for easy cleaning. The shelves and fan impeller also should be made of stainless steel and should not have nuts or bolts for shelf supports to reduce the scope of growth of contamination. No plastic should be inside to avoid volatile organic compounds (VOC).	
1.12	Unit should have appropriate filter (HEPA etc.) to eliminate biological organisms/contaminants and VOCs.	
1.13	Built-in audible and visual water level alarm should be available when the water reservoir needs to be refilled to ensure a constant high level of humidity and to prevent Page-16/19 cultures from drying out.	
1.14	Water Tray/ Pan less system is preferred to avoid slow Humidification and Contamination.	
1.15	Independent electronic over temp. protection with separate sensor should be available for sample protection.	
1.16	The system should have large digital display for both Temp. & CO2 simultaneously.	
1.17	System should have at least two doors, one main door and one glass doors .	
1.18	Suitable for 230V, single phase 50 Hz operation .	

1.19	Suitable servo voltage stabilizer with high voltage low voltage cut off circuit, auto reset with delay timer and spike eliminator etc., Double stage CO2 pressure regulator with stainless steel diaphragm and 18 Kg CO2 cylinder filled with CO2 gas 99.5% or better purity required for operation of CO2 Incubator should also be quoted.	
1.20	20. Servo voltage stabilizer should be included in the offer	
1.21	Optional item : Oxygen control accessory with 3 nos. Interior gas tight split doors should be quoted.	
1.22	User list & some performance certificates from users in Eastern region including Bhubaneswar should be provided, Prompt & efficient after-sales service should be available.	
1.23	Minimum 10 similar model should be available in more than one reputed Institutes in Eastern region.	
1.24	Infrared (IR) CO2 Sensor (5 units); TCD sensor (10 units). Those 5 units equipped with IR based CO2 sensor should be able to adjust baseline automatically	
1.25	48-72-Hour Data Storage for CO2 concentration, temperature, alarms and door openings. Stable Memory to guarantee data storage, irrespective of time or frequency of power failure	
1.26	Built-In System Diagnostics. Password Protection for system settings	
1.27	Incubator should be stackable on the top of another incubator. Stacking kit to stack two units one upon another is essentially required.	
1.28	All deliveries at Jatni campus of NISER after the SBS facility is officially handed over	
1.29	Warranty: 3 year including parts and labour	
1.30	Warranty starts from day of installation	
1.31	Should include compliance with the specs in tabular format for each technical specification point	
1.32	Should provide list of national institutes where the models quoted is installed along with number of units of each model installed/per institute.	
2	**Operating Environment**	
2.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.	
3	**Standards and Safety Requirements**	
3.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND	
3.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.	
4	**User Training**	
4.1	Must provide user training (including how to use and maintain the equipment).	
5	**Warranty**	
5.1	Comprehensive warranty for 2 years after acceptance.	
6	**Maintenance Service During Warranty Period**	
6.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.	
7	**Installation and Commissioning**	
7.1	Supplier must accomplish proper installation and commissioning of the equipment on site.	
8	**Documentation**	
8.1	User (Operating) manual in English	
8.2	Service (Technical / Maintenance) manual in English	
8.3	List of important spare parts and accessories with their part numbers and costing.	
8.4	Certificate of calibration and inspection from factory.	

9 **Automated Cytogenetics**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
1	**General Specifications**	
	System should consist of upright manual/motorized microscope with epi-fluorescent attachment, image acquisition unit (digital camera) and workstation computer with data collection & processing software modules.	
2	**Manual/ motorized upright microscope**	
	1. Manual/motorized Research microscope stand with 10 nm or better Z-resolution, with adjustable height stop and torque of focusing. The stand should have inbuilt TFT monitor to display all microscope parameters and controls including the motorized functions. Enable single click on TFT to change between different contrasts techniques like Bright field & Fluorescence.	
	2. Revolving nosepiece of minimum 6 positions with inward tilt.	
	3. Objectives for i) 10x Plan Apochromat, ii) Semi Plan Apochromat 40x/0.75,	
	4. iii) Plan Apochromat 60/63x/1.4 oil and iv) Plan Apochromat 100x/1.4 Oil	
	5. Binocular phototube with inclination between 15° and 25° (inclusive) and a high field of view of 25mm.	
	6. Diopter setting on both the eye piece of 10X/25mm	
	7. Achromat Aplanatic Condenser with neutral density & Blue Filters.	
	8. Motorized scanning stage for X & Y movement of 8 slides at a time is desirable.	
	9. Power supply for 100W halogen lamp, stabilized for transmitted light path	
	10. All necessary interfaces (TCP/IP interfaces, RS232 and USB for smooth complete microscope system and its controlling via workstation	
3	**Epi-fluorescent attachment**	
	1.Epi fluorescence light path should be apochromatically corrected for high contrast fluorescence illumination and have a motorized shutter and motorized 6-10 position reflector turret.	
	2.Multi color Fluorescence filters set for DAPI, DEAC, FITC, Sporange,Texas Red and Cy5 should be offered.	
	3.A 100/130W self-aligning mercury illumination source for fluorescence excitation should be offered.	
4	**Digital Camera**	
	12 Bit High resolution Monochrome Cooled Camera with resolution of 1360X 1024 pixels, 2/3" CCD chip size, pixel size of 6.45 µm X 6.45 µm, frame rate of 15 fps @ full resolution, full well capacity: 17000 e, exposure time of 80 µs to 270 secs, USB Interface	
5	**Data Collection and processing unit**	
	Branded Pentium IV Core 2 Duo, With, 2 GB Ram, DVD Writer, 640 GB HDD, 19" TFT Color Monitor, Multimedia Kit Along With UPS And Color Laser Printer.	

	Software licenses should be institutional, valid for the lifetime of equipment and should include free upgrades whenever upgrades are available.	
6	**Karyotyping software**	
	Image Acquisition	
	It should be integrated to automated stage capable of capturing metaphase from atleast 8 slides sequentially unattended.	
	It should have One-click image acquisition of G-, R-, Q-, and DAPI-banded metaphases, or of metaphases with other staining patterns.	
	It should have a Focusing aid for automated best focus acquisition	
	Image Enhancement	
	It should have image filter tools for banding enhancement, Unlimited undo, processing steps list, and any-time access to original image	
	Chromosome Separation	
	- Automated, semi-automated, and manual separation of chromosomes	
	- Separation of chromosome clusters with the chromosome brush tool	
	- Image zoom function on the mouse wheel	
	Karyotyping	
	- Automated and manual assignment of chromosomes	
	-4 modes of separating the touched chromosomes and 3 modes for separating the overlapping chromosomes, most of the operation should be controlled by mouse buttons.	
	-All separated chromosomes should be shown with different colored contour for easy	
	identification	
	-The software should have more than 100 Karyoforms available for choice. User should be able to easily import any new karyoforms into the system	
	- Classification of chromosomes in the metaphase	
	- Ideograms with different resolutions, flexible annotation function & karyogram	
	form editor	
	- Karyogram comparison and partial karyograms with aberrant chromosomes	
7	FISH Software	
	Image Acquisition	
	It should have one click image acquisition of fluorescence images with up to	
	6-12 color channels based on automated integration time adjustment.	
	Image Enhancement	
	-Easy automated, or semi-automated, enhancement of images, individually	
	for each color channel, and with unlimited undo functionality.	
	-User should be able change the size, the stain and/or the intensity of either the complete set of chromosome, or the selected chromosomes.	
	-Simple automatic background, lower threshold and upper threshold adjustable by a single key click.	
	-Local thresholding to generate homogeneously stained images	
	-Powerful chromosome banding and signal enhancement filters	
	Color Display Modes	
	-Single color channel display as color, grayscale, or inverted grayscale image	
	-Various pseudo color display modes (modified color mode,	
	merged color mode, primary false color mode) with editable look-up tables	
	-Comprehensive image annotation with unlimited colors and fonts	
	-Various measurement functions including fluorochrome profile evaluation	
8	**Product support**	
	The product should ideally have 1 year of manufacturer-pledged complete warranty, followed by 2 years limited warranty and 2 years of AMC. The manufacturer should support the product for minimum 10 years of operation. The supplier would be required to provide comprehensive training to the CUP users on the instrument operation and data analysis, and should provide similar training upon request subsequently.	
9	**Other applications to be supported**	
	1. Multicolor FISH (M-FISH)	
	2. Quantitative FISH (Q-FISH)	
	3. Multicolor Chromosome Banding (mBAND)	
	4. Comparative Genomic Hybridization (CGH)	
	5. Color karyotyping	
	6. Telomere analysis	
10	**Power requirements**	
	230V AC; 50Hz; 20A	
	Standard make true online UPS with at least 3 hours of backup (to complete 8-10 slides)	
11	**Comet-FISH assay software (Optional)**	
	1. Software package for acquisition and analysis of comet-FISH images and tail moments	
	2. Interactive position and evaluation	
	3. Automatic determination of comet and nucleus contours	
	4. Capable of annotation	
	5. Data and file management in standard formats as well as for third party formats	
12	**Operating Environment**	
12.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.	
13	**Standards and Safety Requirements**	
13.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND	
13.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.	
14	**User Training**	
14.1	Must provide user training (including how to use and maintain the equipment).	
15	**Warranty**	
15.1	Comprehensive warranty for 2 years after acceptance.	
16	**Maintenance Service During Warranty Period**	
16.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.	

17	**Installation and Commissioning**	
17.1	Supplier must accomplish proper installation and commissioning of the equipment on site.	
18	**Documentation**	
18.1	User (Operating) manual in English	
18.2	Service (Technical / Maintenance) manual in English	
18.3	List of important spare parts and accessories with their part numbers and costing.	
18.4	Certificate of calibration and inspection from factory.	

10 **Electric Operating Table**

No.	Item Specifications	Fill your Specification
1	**Description of Functions**	
1.1	Hydraulic operating tables are simple tables for performing surgical procedures and it works with electrical power.	
2	**Operational Requirements**	
2.1	OT Table is required for general surgery and shall have X-Ray translucent tops.	
3	**System Configuration**	
3.1	Operating Table Hydraulic with complete accessories.	
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:**	
	□ Padded arm rest with straps: pair with damps.	
	□ Anesthesia screen with clamps.	
	□ Side supports: pair with clamps.	
	□ Knee crutches: pair with damps.	
	□ X-ray cassette tray.	
	□ Kidney bridge.	
	□ SS bowl with clamps.	
	□ Infusion rod with clamp.	
	□ Legs Support.	
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	
7.2	CE (93/42 EEC Directives) or USFDA 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.	

11 **ELISA (Reader + Washer) with External Printer**

#	ELISA Reader	
No.	**Item Specifications**	**Fill your Specification**
1	**Description of Function**	
1.1	ELISA Reader is required to Read the Color Density known as OD (Optical Density) in ELISA (Enzyme Linked Immuno-Sorbent Assay.) Plates.	
2	**Operational Requirements**	
2.1	ELISA Reader complete with Printer is required.	

3	**Technical Specifications**	
3.1	Should have 8-12 measuring channel & reference channel	
3.2	Should have wave length range of 340- 750 nm 6 filters 340, 405. 450, 492, 540, 630nm with provision for fitting any additional filters	
3.3	Should have an absorption range of 0-4.000A	
3.4	Should have a resolution of 0.001A	
3.5	Should read within 6-8 seconds	
3.6	The control panel should have soft color touch screen display, capable of showing graph etc.	
3.7	Should have external & internal programmable time & speed shaking	
3.8	Should be able to read all types of plates	
3.9	Should have a single halogen lamp with save features as light source	
3.10	Should have user defined programs 30 or more.	
3.11	RS232/USB output for Printer, PC connectivity and Data acquisition should be there	
3.12	Should have data memory of 300 plates.	
3.13	Should have external printer, capable of printing complete results & graphs etc. from Elisa system	
4	**System Configuration Accessories, spares and consumables**	
4.1	System as specified.	
4.2	Halogen Lamps : 2	
4.3	External Printer	
4.4	Dust Cover -01	
4.5	Set of pipettes consisting of single channel variable volume color pipettes 0.5-10 ul, 5-40 ul, 40-200 ul,200-1000 ul	
4.6	8 channel variable volume color multi-channel pipettes 5-50 ul and 50-300 ul.	
5	**Operating Environment**	
5.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.	
5.2	Power supply: 220-240V/ 50/60 Hz AC Single phase with appropriate plug .The power cable must be minimum 3 Meter	
6	**Standards and Safety Requirements**	
6.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND	
6.2	CE (93/42 EEC Directives) or USFDA approved product certificate.	
6.3	Must comply with IEC 61010 Safety requirements for electrical equipment for measurement, control, and laboratory use	
7	**User Training**	
7.1	Must provide user training (including how to use and maintain the equipment).	
8	**Warranty**	
8.1	Comprehensive warranty for 2 years after acceptance.	
9	**Maintenance Service During Warranty Period**	
9.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.	
10	**Installation and Commissioning**	
10.1	Supplier must accomplish proper installation and commissioning of the equipment on site.	
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.	
#	**ELISA Washer**	
No.	**Item Specifications**	**Fill your Specification**
1	**Description of Function**	
1.1	A washer for microtitre plates designed to ensure thorough washing of reagents between Enzyme-Linked Immunosorbent Assay (ELISA) steps.	
2	**Operational Requirements**	
2.1	8 channel.	
3	**System Configuration**	
3.1	ELISA Washer, automatic, complete unit with complete accessories.	
4	**Technical Specifications**	
4.1	8-channel strip manifold, open system.	
4.2	Rinse & prime programme.	
4.3	Wash parameters include: 16-character assay name, number of cycles, wash volume, flow rate and variable soak times.	
4.4	Dispense only and aspirate only modes for reagent addition and removal.	
4.5	Shall have built-in multi-speed shaker for improved CVs and reduced assay backgrounds.	
4.6	Shall have crosswise aspiration/double aspiration of flat bottom micro-plates for reduced residual liquid.	
4.7	Bottom wash mode for rapid dilution of reagent.	
4.8	Shall have built-in vacuum & pressure pump assembly.	
4.9	Bottles for waste rinse and wash.	
4.10	Accommodates flat, U or V-shaped bottom plates.	
4.11	Wash cycles: Between1-10.	
4.12	Dispensing volumes from 25 to 3000ul.	
4.13	Soak time 1-600 seconds.	
4.14	Fluid flow rate in 150 to 1000ul/well/second to accommodate cellular assays.	
4.15	Spill-over protection & electronics isolated from fluidics.	
4.16	Optional automatic buffer switch in flip out aerosol cover or similar.	
5	**Accessories, spares 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. 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 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 meter 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 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**	
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 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.	

12 **Falcon Tube Centrifuge**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
	□ Temperature range from -4 to 40°C or better	
	□ Fast and stand by cooling option	
	□ Max. speed: 20,000 × g (14,000 rpm)	
	□ 10 acceleration/braking ramps	
	□ Built-in rotor identification system	
	□ Vibration free quiet operation	
	□ Ability to spin 15ml, 30ml, 50ml, 500ml tubes, Cryotubes (vials and flow cytometry tubes), Micro Titre Plates (MTP) Deep well plates and Tissue Culture Plates	
	□ Rotors to be supplied:	
	1. Fixed angle rotor for 6 or more 15ml and 50ml falcon tubes and U-shaped tubes.	
	2. Swing bucket One rotor to be supplied for : a) 4x500ml bottles b) 20 or more 50ml tubes/falcons c) 45 or more 15ml tubes/falcons d) 16 MTPs ; 4DW or culture plates	
	□ Digital display of time and speed	
	□ Automatic lid opening at the end of the run	
2	**Operating Environment**	
2.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.	
2.2	Power supply: 220-240V/ 50/60 Hz AC Single phase with appropriate plug .The power cable must be minimum 3 Meter	
3	**Standards and Safety Requirements**	
3.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND	
3.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.	
4	**User Training**	
4.1	Must provide user training (including how to use and maintain the equipment).	
5	**Warranty**	
5.1	Comprehensive warranty for 2 years after acceptance.	
6	**Maintenance Service During Warranty Period**	
6.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.	
7	**Installation and Commissioning**	
7.1	Supplier must accomplish proper installation and commissioning of the equipment on site.	
8	**Documentation**	
8.1	User (Operating) manual in English	
8.2	Service (Technical / Maintenance) manual in English	
8.3	List of important spare parts and accessories with their part numbers and costing.	
8.4	Certificate of calibration and inspection from factory.	

13 **FLOW CYTOMETER**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
	Fluidics	
	□ The system should have a Micro capillary based fluidics requiring no sheath fluid.	
	□ Flow cell should be user replaceable.	
	□ Minimum sample volume should be 50µL and system should be capable of working with as low as 10-500 cells/ul.	
	□ The system should be an open system and should be compatible with a wide variety of sample tubes including 1.5 ml eppendorf tubes and 96 well plates.	

	□ System should measure volume of sample aspirated in order to calculate absolute cell counts without the use of added counting beads.	
	□ System should have automated cleaning and decontamination cycles.	
	□ System should contain high pressure purge to remove obstructions in flow cell.	
	□ System should have in-built sample tray for auto-sampling from 96 well plates avoiding exposure of samples to light.	
	Optics	
	□ Solid state Blue laser (488 nm) should be 75 mW and solid state Red laser (640 nm) should be 40 mW for efficient fluorochrome excitation.	
	□ Emission: Green (525/30nm), Yellow (583/26 nm), Red1 (690/50nm), Near IR1 (780/70nm) and on Red laser: Red2 (661/19nm), NIR2 (785/70nm) along with Forward scatter and side scatter (Total 8 optical parameters):	
	□ Dual laser excitation should be with high frequency laser modulation allowing multiple excitations for each particle eliminating the need for time delay calibration.	
	□ System should be equipped with fixed optics requiring no laser alignment by user.	
	□ System should be able to discriminate particles less than 1µm in diameter.	
	Electronics	
	□ Dynamic range should be 4 log decades.	
	□ The system should have a proper arrangement of optics to minimize the footprints of the instrument.	
	□ Signal processing should be digital, allowing post-acquisition compensation.	
	Software	
	□ Software should offer simple gating and display of samples, including drag and drop gating and easy export of statistics.	
	□ Software should offer Post acquisition automated compensation for multi-color experiments.	
	□ Software should offer unique analysis features such as EC50/IC50 curve generation and heat mapping for multi-parameter analysis.	
	□ Software should have the ability to "Pool" or combine multiple wells into one sample during analysis for detection of rare cells.	
	□ Software should offer Pre-Configured software modules for commonly used applications such as Viability counting, Cell cycle, Apoptosis, Toxicity etc.	
	□ Software should generate data in fcs 3.0 format to be analyzed by third party software such as flow Jo.	
	Note:	
	Technical specification are intended to be descriptive only and not restrictive. The bidder may substitute alternative standards, brand names and/or catalogue numbers in its bids, provided that it demonstrates to the purchaser's satisfaction that the substitutions are substantially equivalent or superior to those designated in the "Technical Specification"	
2	**Operating Environment**	
2.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.	
2.2	Power supply: 220-240V/ 50/60 Hz AC Single phase with appropriate plug .The power cable must be minimum 3 Meter	
3	**Standards and Safety Requirements**	
3.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND	
3.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.	
4	**User Training**	
4.1	Must provide user training (including how to use and maintain the equipment).	
5	**Warranty**	
5.1	Comprehensive warranty for 2 years after acceptance.	
6	**Maintenance Service During Warranty Period**	
6.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.	
7	**Installation and Commissioning**	
7.1	Supplier must accomplish proper installation and commissioning of the equipment on site.	
8	**Documentation**	
8.1	User (Operating) manual in English	
8.2	Service (Technical / Maintenance) manual in English	
8.3	List of important spare parts and accessories with their part numbers and costing.	
8.4	Certificate of calibration and inspection from factory.	

14 **FLUORESCENCE RESEARCH MICROSCOPE**

No.	Item Specifications	
1	**Operational Requirements :**	
	Frame : Rigid and vibrations free frame	
	Illuminator : Built-in-Koehler illumination for transmitted light 12V100W halogen bulb (pre-cantered) with motion sensor detects when an operator leaves and automatically turns off the light for long life of bulbs, light preset switch, built in filters	
	Observation tube : Wide field trinocular observation head with field no. 22-25 mm	
	Eyepieces : Wide field eyepieces with field No. 22-25 mm	
	Stage : Rectangular Mechanical Stage, Ceramic-coated coaxial stage with right hand low drive control with rotating mechanism and torque adjustment mechanism.	
	Focus : Vertical stage movement 25mm stage stroke with coarse adjustment stopper. Torque adjustment for coarse adjustment knobs. Stage mounting position variable, high sensitive fine focusing knob with minimum adjustment graduation should be 1µm.	
	Objectives : Plan Achromat Objectives 4X/0.1	
	Fluorescence/Semi Apochromat Phase Contrast Objectives 10X/0.3	
	Fluorescence /Semi Apochromat objective 20X/0.5, (spring)	
	Fluorescence /Universal Plan Semi Apochromat Phase Contrast Objective 40X/0.75, (spring)	
	Universal Plan Super Apochromat Objective 60X/1.35, (spring, oil)	
	Universal Plan Super Apochromat Objective 100X/1.4, (spring, oil)	

	Condenser : Universal Turret Condenser NA 1.1 for Bright Field, Phase Contrast and Dark Field Microscopy	
	Fluorescence Unit : Fluorescence with alignment free 130W mercury/LED illumination .Fluorescence axis should have six to eight cube filter turret with Zero Pixel Shift technology. Single narrow band Filters for UV, Blue & Green range excitation and one triple band filter for UV/Blue/Green excitation	
	Cooled Digital Monochrome	
	Camera : Monochrome camera, 1.4 or more Mega pixel for High Resolution Images, Progressive scan interline CCD, Pixel size 6.45um x 6.45um,1280 - 1392 x 1020 - 1040 pixels,10fps frame rate, Mono, 12bit, includes camera head,1394 Fire wire digital interface, power supply. High-Speed Readout < Previewing & focusing in real time 10fps full resolution@12bits(165fps maximum with binning and ROI functions), Tight synchronization with flash lamps automated filters, shutter & microscope stages. Linear Full Well 18,000e-(22,000e-with 2x2 binning), Dark current 1.5e /p/s .Minimizing thermal noise during low light, long exposure imaging, 2/3 inch optical format. 2/3 inch C mount adapter. System should be capable of handling brightfield and fluorescence object	
	Magnification changer: Having option of 1X, 1.25X, 1.6X and 2X.	
	Imaging and analysis System: Image analysis Software for Measurements, EFI, Time lapse imaging, unmixing, colour merging for fluorescence maging, image stitching, image overlay, line profile, geometry/ combine/ filter processing and should be capable of driving the camera for capture of Images in Real Time.	
	Basic Image Acquisition : Live image acquisition : Captures live images in various formats, compares live image with previous snapshot, displays crosshair in live image, saves and loads acquisition settings to reproduce capture conditions. Movie : Creates .avi movie files. Camera settings Saves and loads camera settings to reproduce its snapshot conditions.	
	Basic Image Tools : Image history and properties : Displays image history and properties. Image navigator : Enables tool window for image navigation and zooming. Gallery view : Displays thumbnails of open images in a gallery. Layers : Enables viewing, extraction and deletion of single image layers. Adjust display : Adjust display settings manually or automatically. Combine RGB images : Enables to combine multiple RGB images in one multi-layer image. Image processing tools : Enables to adjust RGB, to adjust intensities, to optimise contrast, to perform white balance, and to invert images. Projections of display : Calculates projections of image display (min, max, mean). Static annotations : Draws text, arrows, lines, rectangles and elipses on the image.	
	Basic Customisation : Saves and manages layouts : Creates, customises, saves and restores interface layouts. Dark skin : Interface skin with coloured icons against a dark background	
	Basic Reporting : Data export and statistics : Exports measurement data to MS Excel and cellSens workbook format enables statistical analysis of measurements. Time lapse : Captures still images over time frequency.	
	Extended Image Tools : Image geometry : Enables to mirror, rotate, resize amd crop images, to shift channels, and to adjust image stacks (cellSens Dimension only). Image Enhancement : Edge detection filters (scobel, roberts and laplace); smoothing filters (rank, median, sigma, low pass and NxN); sharpen filters (sharpen and high pass), adjust intensity and contrast, shading correction and background subtraction and dynamic contrast enhancement (DCE). Morphological filters: erosion, dilation, top hat, open, close, gradient, skeleton and watershed. Mode : Enables to convert bit-depth and colour space. Automatic image calibration Automatically calibrates acquired images based on microscope configuration and current magnification reading from encoded or motorised nosepieces.	
	Extended Measurement: Interactive measurements: Enables field of view measurements to measure distances, angles, rectangles, circles, ellipses and polygons: point, arbitrary line, perpendicular line, polyline, three points angle, four points angle, rectangle, rotated rectangle, three points circle, two points circle, rotated ellipse and closed polygon. Saves and loads measurement of an object from the image.	
	Data Storage and Display System : Suitable latest branded system having Intel 3rd gen.corei7 Processor with 3.0MHz or more. HDD 750 GB or more, 6 GB RAM or more with 21" LED monitor, Windows 7, 1GB graphics card, USB mouse, Key Board, Fire wire port, on line UPS with 30 minutes to one hour backup.	
2	**Operating Environment**	
2.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.	
2.2	Power supply: 220-240V/ 50/60 Hz AC Single phase with appropriate plug .The power cable must be minimum 3 Meter	
3	**Standards and Safety Requirements**	
3.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND	
3.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.	
4	**User Training**	
4.1	Must provide user training (including how to use and maintain the equipment).	
5	**Warranty**	
5.1	Comprehensive warranty for 2 years after acceptance.	
6	**Maintenance Service During Warranty Period**	
6.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.	
7	**Installation and Commissioning**	
7.1	Supplier must accomplish proper installation and commissioning of the equipment on site.	
8	**Documentation**	
8.1	User (Operating) manual in English	
8.2	Service (Technical / Maintenance) manual in English	
8.3	List of important spare parts and accessories with their part numbers and costing.	
8.4	Certificate of calibration and inspection from factory.	

15 **FULLY AUTOMATIC ELISA READER WITH WASHER**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
1.1	4 Elisa plates for 12 test per plate or 16 IFA slides.	
1.2	One Teflon-steel needle with disposable tips option (both with liquid level sensor) for samples and reagents.	

1.3	The IFA slides washing step is performed by The needle on a well by well basis to avoid any risk or cross - reaction	
1.4	Easy and prompt loading of slides into slide holders	
1.5	IFA tests on slides are performed as screening and /or titration with a serial dilution capability.	
1.6	disposable tips capability for pipetting of samples, controls & calibrators.	
1.7	One specific reagent-rack for reagent bottles (diluents, conjugates, substrates) and for tubes (standards, controls, samples, pre-dilution etc)	
1.8	reagent rack is a removable device so that once loaded can be stored & reused in subsequent runs of the same type	
1.9	Washing manifold with 16 probs, 8 for aspiration (longer) and 8 for dispensing(shorter)	
1.10	The automated well washing performed at customized volumes and cycles.	
1.11	Dedicated drawer for high volume bottles(wash buffers, distilled water, wastes) with individual liquid level sensors	
1.12	An independent incubation modules for each plate (from RT upto 55º C)	
1.13	Windows XP software platform	
1.14	loading of work sheet directly from host or keyboard	
1.15	Positive bar-code sample identification	
1.16	samples and reagents dilution	
1.17	samples and reagents dispensing	
1.18	incubation	
1.19	washing	
1.20	Reading (single, double, triple wavelength)	
1.21	Automatic internal Quality Control evaluation	
1.22	Data storage	
1.23	Multilingual and intuitive software	
1.24	Positive samples and reagents identification	
1.25	customized medical report	
1.26	Complete integration with LIS system	
1.27	Result can be exported in excel format	
1.28	Levey-Jennings and Westgard's rules programs on board.	
2	**Operating Environment**	
2.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.	
2.2	Power supply: 220-240V/ 50/60 Hz AC Single phase with appropriate plug .The power cable must be minimum 3 Meter	
3	**Standards and Safety Requirements**	
3.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND	
3.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.	
4	**User Training**	
4.1	Must provide user training (including how to use and maintain the equipment).	
5	**Warranty**	
5.1	Comprehensive warranty for 2 years after acceptance.	
6	**Maintenance Service During Warranty Period**	
6.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.	
7	**Installation and Commissioning**	
7.1	Supplier must accomplish proper installation and commissioning of the equipment on site.	
8	**Documentation**	
8.1	User (Operating) manual in English	
8.2	Service (Technical / Maintenance) manual in English	
8.3	List of important spare parts and accessories with their part numbers and costing.	
8.4	Certificate of calibration and inspection from factory.	

16 **Fume Hood for Manipulation Iodine at Medium Activity (جهاز تحضير اليود المشع)**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
1.1	The hood must be manufactured in compliance with standards EN12469 (Class II). The work area should comply with directives relative to Class A cGMP and ideal for handling Tc99m compounds or other SPECT emitters.	
1.2	The hood must be partially shielded with lead and it could be equipped with systems for the Mo99/Tc99m generators elution, use of dose calibrator and It shoud Include temporary waste storage for not less than 5000 Bq of activity.	
1.3	Must be with Pb not less than 10 mm shielding inside panels and work surface.	
1.4	Shielding elements must made with primary ingots ~ (Pb 98% + Sb 2% purity).	
1.5	Has Spacious work chamber for the maximum ergonomics.	
1.6	Work area with air quality conforming to Class A “At rest” (EEC-cGMP) and equipped with laminar flow on the entire area (downflow).	
1.7	AISI 304 stainless steel work area.	
1.8	The Visual area must made with sliding shielded glass on the front side.	
1.9	The Air inflow must be according to reference standards.	
1.10	The Filtration system to generate laminar flow in the Class A area,must be made with HEPA H14 absolute filtering cartridge	
1.11	Air outflow filtration system made with HEPA H14 absolute filter.	
1.12	Include Dose calibrator compartment set-up	
1.13	Shielded solid waste compartment set-up with extraction door outside the class A area	
1.14	Shielded generator compartment set-up to automatically lift 2 Mo99/Tc99m generators up to the work surface	
1.15	17” monitor integration set-up in the rear wall of the work area, used to control the dose calibrator via IBC DOSE CALIBRATOR	

1.16	PC support and calibrator console set-up on the front side	
1.17	With external exuasting unit.	
2	**Operating Environment**	
2.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.	
2.2	Power supply: 220-240V/ 50/60 Hz AC Single phase with appropriate plug .The power cable must be minimum 3 Meter	
3	**Standards and Safety Requirements**	
3.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND	
3.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.	
4	**User Training**	
4.1	Must provide user training (including how to use and maintain the equipment).	
5	**Warranty**	
5.1	Comprehensive warranty for 2 years after acceptance.	
6	**Maintenance Service During Warranty Period**	
6.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.	
7	**Installation and Commissioning**	
7.1	Supplier must accomplish proper installation and commissioning of the equipment on site.	
8	**Documentation**	
8.1	User (Operating) manual in English	
8.2	Service (Technical / Maintenance) manual in English	
8.3	List of important spare parts and accessories with their part numbers and costing.	
8.4	Certificate of calibration and inspection from factory.	

17 **SPECT (CT) Gamma Camera system**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
	General:	
	Latest technology Dual Headed variable angle SPECT (CT) Gamma Camera system capable of performing all planar, SPECT, WB SPECT and Whole Body imaging applications with CT based transmission attenuation correction and functional anatomical image fusion.	
	□ Dual Head variable angle SPECT (CT)	
	□ SPECT & Whole body imaging capabilities.	
	□ CT based attenuation correction.	
	□ CT image acquisition and fusion with nuclear medicine image.	
	□ Image fusion software & hardware.	
	□ Features of CT should include other conventional features of required hardware and software.	
	□ Capable of acquiring multi slices SPECT/CT scan.	
	□ DICOM ready system alongwith stand alone image compliant PC (latest version with optimal processor speed) (minimum 80 GB hard disc), supported with complete networking. For this purpose the supplier would be required to supply a minimum six image compliant PC's equipped with necessary software e.g. reporting and analysis terminals to enable access and analysis of the patient images from different locations of the department. Dicom compliance statement/certification should be provided.	
	□ Number of installations & company profile: Company should preferably be manufacturer of the equipment and in case non-manufacturing vendors (third party supplier) are allowed to participate the same should be mentioned clearly in bid document. In case of third party supplier the liabilities of principal manufacturing company and third party supplier needs to be clearly demarcated and ensured	
	Gantry:	
	□ Gantry design should be wide open to avoid claustrophobic imaging with clockwise and anticlockwise movement.	
	□ Height, width and depth should be adequate to conveniently locate the gantry in existing space available in the department. In order to access this, manufacturer are required to mention the dimensions.	
	□ Axis of rotation: 100-104 cm.	
	□ Distance between SPECT & CT field of view: 80 cm or more.	
	□ Patient opening for high energy collimator (HE): Max 66 cm and Minimum: 12cm.	
	□ Patient opening for low energy high resolution (LEHR) collimators: Max: 70 cm; Minimum: 19 cm.	
	□ Auto contouring: The detectors should be equipped with automatic body countering (ABC) both for 90° & 180° SPECT with an average auto contour distance of 1.1 cm.	
	□ LCD persistence display unit	
	□ Max CW/CCW: 365°/180°	
	□ Rotation precision: 0.1°	
	□ Rotation speed: 003-3.0 rpm	
	□ Centre of rotation (COR): ≤0.25 pixel in 64x64 matrix	
	□ Gantry should have emergency stop buttons.	
	□ Persistence scope mounted on the gantry for continuous display of patient position and gantry parameters	
	Detectors:	
	Dimensions:	
	□ Large field of view (UFOV) to enable adequate patient breadth coverage	
	□ Should have facility for automatic correction for energy, linearity and uniformity	
	□ Integrated CT hardware option for transmission attenuation correction and lesion localization for all applications	
	Crystal:	
	□ Size: 40-60 X 40-50 cm or more	
	□ Diagonal: 45-70 cm or more	
	□ Thickness: According to the requirement.	
	Photomultiplier Tubes:	
	□ Number of PMTs: 55 or more per detector with 1 ADC per PMT (True digital detector)	

	□ Hexagonal array with box type dynodes and high overall efficiency.	
	Shielding characteristics of Detector:	
	□ Back: 9.5 mm	
	□ Sides: 12.7 mm	
	□ Patient Direction: Max – 36.4 mm; Min – 27.9 mm.	
	□ Edge to edge: Detector housing and FOV – 7.6 mm.	
	Intrinsic Spatial Resolution:	
	□ FWHM in CFOV: ≤ 4 mm	
	□ FWHM in UFOV: ≤ 4 mm	
	□ FWTM in CFOV: ≤ 8 mm	
	□ FWTM in UFOV: ≤ 8 mm	
	Intrinsic Energy Resolution:	
	□ FWHM in UFOV: ≤ 10 %	
	Intrinsic Flood Field Uniformity:	
	□ Differential (CFOV): ≤ 2.5 %	
	□ Differential (UFOV): ≤ 2.7 %	
	□ Integral (CFOV): ≤ 3.0 %	
	□ Integral (UFOV): ≤ 4.0 %	
	System Spatial Resolution (LEHR at 10 cm):	
	□ FWTM in CFOV: 7.8 mm	
	□ FWTM in UFOV: 14 mm	
	Intrinsic Spatial Linearity:	
	□ Differential (CFOV): ≤ 0.2 mm	
	□ Differential (UFOV): ≤ 0.2 mm	
	□ Absolute (CFOV): ≤ 1 mm	
	□ Absolute (UFOV): ≤ 1 mm	
	□ Multiple window spatial registration: ≤ 1.0 mm	
	□ Intrinsic maximum count rate: 310 kcps	
	□ Intrinsic spatial resolution at 75 kcps	
	FWTM (CFOV): ≤ 4.6 mm	
	FWTM (UFOV): ≤ 9 mm	
	□ System Planar sensitivity (LEHR at 10 cm)	
	Absolute: 150-200 cpm / µCi or more	
	□ System planar sensitivity (MEGP at 10 cm)	
	140- 400 cpm / µCi or more	
	□ Reconstructed spatial resolution with scatter (LEHR): ≤ 12.00 mm	
	Collimator Specification:	
	□ Following collimators along with collimator exchange cart for each set of collimators based on requirements	
	1. Low Energy High Resolution (LEHR)	
	2. Low Energy Ultra High Resolution (LEUHR)	
	3. Medium Energy General Purpose (MEGP)	
	4. High Energy General Purpose (HEGP)	
	5. Pin hole	
	CT sub system specifications:	
	Tube Details: Following parameters should be specified by the buyer based on requirements (non-diagnostic / diagnostic CT)	
	□ Tube current: mA	
	□ Tube Voltage: kV	
	□ Heat storage capacity: MHU	
	□ Anode heat storage capacity: MHU	
	□ Focal spot size: mm	
	□ Rotational time: Second.	
	□ Temporal resolution with heart view CT option: micro Second	
	□ Single continuous spiral scan time: Seconds	
	□ Power generator: kW	
	Filter Assembly:	
	□ Al-Equivalent: mm	
	□ Beam limiting device: mm	
	Acquisition System:	
	□ No. of rows of detector: Mentioned according to requirement	
	□ Maximum no. of slice per rotation: Mentioned the slice no per rotation	
	Gantry Aperture:	
	□ Patient part diameter/ aperture: 70 cm or more	
	□ Scan field: 50 cm	
	Data Sequencing:	
	□ Manufacturer are desired to furnish complete details of the data sequencing including reconstructed slice widths, full scan times (360°), partial scan time (240°), no. of uninterrupted scans per range, auto range, standard scan cycle time, dynamic scan cycle time etc. In addition manufacturer would also be required to provide details of multislice spiral image reconstruction slice, specifically with reference to reconstructed slice widths, slice increment length and reconstructions time, topogram length and possible views.	
	Image Quality:	
	Low contrast resolution:	
	□ Object size: mm	
	□ Contrast: HU	
	□ Surface dose: 20 mGy Air Kerma or less at 100 mAS; 16 mGy Air Kerma or less at 90 mAS using parameters such as 0.6 second, 10 mm and 130 KV (for Diagnostic CT)	
	High Contrast Resolution:	

	□ 0% MTF: lp/cm	
	□ 2% MTF: lp/cm	
	Homogeneity:	
	□ Cross field uniformity in a water phantom:	
	□ Dose (CTDI100 volume):	
	Phantom 110 kv 130 kv	
	16 cm	
	32 cm	
	Image Display:	
	□ Range of slice thickness: mm	
	□ Scan field size: cm	
	□ Reconstruction field size: cm	
	□ Reconstruction matrix:	
	□ Houns-field scale:	
	Patient Bed specifications:	
	□ Length: cm	
	□ Width: cm	
	□ Height: cm	
	□ Range of vertical motion: cm	
	□ Pallet material:	
	□ Pallet thickness: mm	
	□ Pallet width (SPECT):	
	□ Attenuation at 140 keV: less than 10%	
	□ Maximum weight bearing capacity: kg	
	□ Maximum deflection of patient pallet: mm	
	□ Scan length in Whole body mode: cm	
	□ Horizontal range: cm with an accuracy of 0.5 mm	
	□ Adjustable head holder for brain scan, butterfly arms support including cardiac arm support, leg support, cushion pad and wide straps for decreasing breast attenuation for optimized cardiac SPECT studies.	
	□ Pediatric & scinti-mammography pallets.	
	□ Separate pallet for imaging to enable radiotherapy planning.	
	□ ECG Trigger to be provided with two sets of spare leads.	
	Acquisition Unit:	
	□ One acquisition station independent of main processing unit capable of data acquisition in static, dynamic, multi-gated, list, whole body scanning, SPECT and gated SPECT with facility for anatomical markers	
	□ Acquisition consol should allow universal networking via DICOM ready to both local and wide area networks	
	□ Display of the alpha numerical patient acquisition data	
	□ High performance Intel duo core PC or Higher with multi tasking operating system having minimum of 2 GB RAM, 3.0 GHz processor speed, 200 GB SCSI hard drive and high resolution flat panel LCD monitor of minimum of 19" size. It should also have CD and DVD combo drive with writer facility.	
	□ Fully integrated CT system capable of acquiring X –ray transmission data along with nuclear emission data. SPECT & CT data acquisition should be on the same console. The CT should have multislice capability with minimum 4 or more slices in a single rotation	
	□ Image acquisition and data display should be from 64x64 matrix up to 256x1024 matrix. Acquisition termination by preset time, preset count or manual stop	
	□ Pre-defined acquisition protocols as well as facility for user to configure his own customized protocols	
	□ Should provide ECG gating device with R wave display	
	□ Virtual film sheet with image manipulation.	
	□ The acquisition workstation should be DICOM ready to permit-	
	(i). Exchange of images and other informations	
	(ii). Communication with other manufacturer's equipments/work stations.	
	(iii).Workflow with hospital information system and other radiological information systems.	
	(iv). Coverage for access controls of patient multiple data CD writers.	
	(v). Maximum intensity projections, multiplanar reconstructions, various display format in routine use.	
	(vi).Image fusion volume rendered CT data fused with SPECT data in a single image frame with 3 x 3 display.	
	Processing & Software workstations: Following softwares may be asked for based on the requirements and choice of non-diagnostic or diagnostic CT.	
	□ High performance intel duo core PC or Higher with multi-tasking workstation with full DICOM ready with image transfer print etc	
	□ Minimum of 2 GB RAM, 3.0 GHz processor speed and 200 GB SCSI hard drive logically divided in to 3-4 partitions	
	□ Minimum 21 inch high resolution LCD monitor	
	□ 3.5" FDD and standard DVD & CD combo drive for data archiving and retrieving with write facility for both.	
	□ The computer is to be connected via a DICOM network for processing and storage of the data to the already existing processing and acquisition computers and documentation devices	
	□ Broad band remote diagnostic facility to be provided	
	□ The software, apart from other state of the art applications, should also provide following applications	
	(i). Real time display of volume data set and enable automatic quantification of stenosis and evaluation of aneurysms.	
	(ii). Clinical processing software and comprehensive protocols for wide spectrum of SPECT, SPECT (CT).	
	(iii) SPECT reconstruction, automatic cardiac processing, motion correction, whole body and whole body SPECT. The software should also encompass organ specific protocols for kidneys, lungs heart, thyroid, parathyroid, brain gall bladder, liver, osteology, oncology etc.	
	(iv). 2D & 3D volumetric visualization and quantification for assessment	
	Of myocardial viability and perfusion and correlation with angiography.	

	(v). Quantitative evaluation and display of 2D/3D gated as well as non- gated myocardial perfusion.	
	(vi). Standard package of CT software including those for angiography	
	(Cardiac and renal) applications and other navigation applications.	
	(vii).Provide QGS/QPS tool box with 2D/3D display and review of wall motion myocardial perfusion analysis.	
	(viii).Should provide evaluation of CT images, coronary calcification (calcium scoring), display of dynamic CT data.	
	□ Apart from inbuilt SPECT/CT software for fusion, separate software for fusion of imported CT and MRI data with SPECT is also to be provided	
	□ Software for various scatter corrections and filters, standard attenuation correction with CT data , patient motion correction etc	
	□ Various clinical application softwares including SISCOM, SEGAMI, NEUROGAM on NEURO MATCH and SPM2 etc.	
	QC Utilities: Choice to be made based on equipment choice and level of QC and experimentation / research likely to be performed.	
	□ Ba-133 point source and Co-57 point source	
	□ Fillable flood phantom for rectangular field of the size adequate for the gamma camera to be supplied.	
	□ Co-57 flood source of at least 15 mCi strength (on the day of the delivery to the institute) for rectangular field of the size adequate for the gamma camera to be supplied	
	□ CT quality assurance phantom for contrast resolution, radiation safety, image uniformity and pixel noise etc.	
	□ QC software (CT) for verifying alignment of the table position between SPECT and CT acquisition	
	□ SPECT phantoms, point sources, CT phantom & KV/mA meter etc to permit comprehensive quality assurance program both for SPECT & CT	
	□ Four Quadrant BAR phantom for rectangular detector size compatible with the detector systems size of the camera to be supplied	
	□ Intrinsic and System resolution phantom	
	□ System count rate performance phantom	
	□ Brain phantom and liver slice phantom having cold and/or hot lesions of various sizes	
	□ QC software package (NEMA NU2-2007 or latest protocol) with documentation	
	Accessories: As per requirements. It is preferable to specify the make of the accessory.	
	□ High resolution table top dry laser film processor for 8" x 10" and 14"x 17" (CT size) x-ray films.	
	□ Photo quality laser color printer	
	□ Future up gradation of the software or new developments shall be required to be done by the vendor free of charge from time to time.	
	□ Clinical programming language for user programming	
	□ Video imager with networking (optional)	
	□ Tread mill with 12 lead ECG display and processing and a hard copy out put device	
	□ Infusion pump with 5 to 50 ml range syringe capacity	
	□ Radioisotope calibrator for beta and gamma activity measurement (specify make)	
	□ Survey meters for monitoring gamma radiation. (specify make)	
	□ Pocket dosimeters (specify make)	
	□ Syringe carrier and holders	
	□ System to be supplied with online digital UPS of reputed make of appropriate capacity providing 30 minutes backup with maintenance free batteries. (please specify if the back up is required for whole SPECT-CT or computer only)	
	□ One TLC Analyzer with computer and printer.	
	□ Two lead lined Fume hoods with appropriate exhaust system, Airfoil, Air Baffle and Adjustable Slots, Sliding Sash, Bypass Slots, Exhaust Duct and Damper sinks etc for radioactivity handling (GMP Model).	
	□ Auto dispenser for radiopharmaceuticals.	
	□ One Horizontal hood Laminar flow bench with HEPA filter: 4 feet length and 16 gauge stainless steel, 304, 316L also custom quoted (GMP model).	
	□ Two lead lined L-Benches	
	□ Interlocking lead bricks-150 nos.	
	□ Cutie Pie for Gamma detection.(specify make)	
	□ Two lead Aprons.	
	□ Additional flat table top with complete hardware and software for radiotherapy planning	
	Others: As per requirements	
	□ Comprehensive warranty of ---- years. Warranty of the equipment shall include crystal, CT tube and all accessories (Thyroid uptake, Well counter, Isotope calibrator, Gun monitor, Survey monitor, Pocket dosimeter, Laser printers etc) as well as leads, wires, electronic consumables, third party items to be supplied by vendor.	
	□ CAMC (Comprehensive Annual Maintenance Contract) for a minimum of ---- years to be quoted separately (CAMC would include all kinds of spares that might be required for insuring 95% uptime of the equipment CAMC shall also include the crystal, CT tube and accessories such as Thyroid uptake, Well counter, Isotope calibrator, Gun monitor, Survey monitor, Pocket dosimeter, Laser printers etc and other items as mentioned above.	
	□ Minors modifications in the walls, floors and other areas of the room to permit adequate shielding particularly for CT associated radiation safety requirement. Thickness of the walls/doors to insure safe radiation levels in the working areas around the Gamma Camera room.	
	□ Training slots----weeks duration at an advanced centre national /abroad.	
	□ On site application training in phases to technical and clinical staff initially and also on as and when required basis.	
	□ A fully trained local resident engineer to be posted to ensure optimal uptime and effective and prompt maintenance services subsequent to satisfactory installation.	
	□ The acceptance of the installation shall be subject to satisfactory handing over of the system to the department and certificate to this effect to be issued by the institute.	
	□ All the operating and service manuals in duplicates to be provided by the vendor at the time of handing over the machine.	

18 **GC Column Set**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
	Two for each item:	
1	DB-1, 30m x 0.32mm, 0.25µm	
2	DB-5, 30m x 0.32mm, 0.25µm	
3	DB-Wax, 30m x 0.32mm, 0.50µm	
4	DB-1701, 30m x 0.25, 0.25µm	
5	DB-62430m x 0.25mm, 1.8µm,	
6	SPB-60830m x 0.25, 0.25µm,	

19 **Gel electrophoresis systems**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
	Gel electrophoresis systems (Horizontal and Vertical) with Power Pack	
	Vertical gel electrophoresis	
	1. Should run one to four precast or hand cast mini gels in less than an hour.	
	2. Dimension of gel should be of approximate size 7.3 x 8.3 cm.	
	3. Should have thermoplastic casting gaskets to form a tight seal with the glass plates to ensure leakfree casting.	
	4. Should provide casting frames with simple cam closure to provide precision alignment on any flat surface.	
	5. Should have side-by-side casting stand which allows access to both gels simultaneously, and a spring-loaded lever creates a tight seal against the thermoplastic rubber gasket.	
	6. The tank should hold a buffer volume of approximately 700-1000 ml.	
	7. The approximate dimension of the tank should be12x16x18cm.	
	8. The short plate and spacer plates size should be approximately 10.1 x 7.3 cm and 10.1 x 8.2 cm respectively.	
	Horizontal gel electrophoresis	
	1. Should have a buffer tank, a safety lid with cables, and a leveling bubble.	
	2. Should be provided with removable electrodes for ease of cleaning.	
	3. Should have arrow on the side of the base indicates the direction of the run and ensures proper orientation of the gel.	
	4. Should have colour-coded, labelled electrodes and labelled base.	
	5. Should be provided with tabs on the base to permit easy removal of the lid.	
	6. Should come with reverse-compatible design Clear plastic construction for easy sample visualization.	
	7. Should be provided with UV-transparent gel trays with fluorescent ruler.	
	8. Should be provided with gel-casting gates to cast gels right in the cell.	
	9. Should be provided with combs to fit every need .	
	10. Dimension of the tanks should be approximately	
	a) 9.2x25.5x5.6 cm (WxLxH) and provided with two gel trays of approximate dimensions as 7x7 cm and 7x10cm and should be able to run 8-30 samples in a single run and provided with both fixed and preparative 8 well and 15 well combs and	
	b) 18x40.5x9.4 cm (WxLxH) and provided with four gel trays of approximate dimensions as 15x10, 15x15, 15x20 and 15x25cm and should be able to run 30-120 samples in a single run and provided with both fixed and preparative 15 well and 20 well combs.	
	11. Should be supplied with micropipettes, variable range 2-20µl, 20-200 µl and 100-1000 µl as essential accessories.	
	Power Pack	
	1. Should have a programmable output range of 10-300V, adjustable in 1V steps, 4-400mA and adjustable in 1mA steps with a maximum of 75 Watts.	
	2. Should have four pair recessed output terminals in parallel.	
	3. Should come with a timer ranging from 1min-99hr59min.	
	4. Should come with pause/resume function.	
	5. Should come with a output which could be constant voltage or constant current with automatic cross-over.	
	6. Should come with a 3 digit LED display.	
	7. Should be provided with a EN-61010,CE regulatory compliance.	
	8. Should include safety features such as no load detection, sudden load change detection, overload/short circuit detection and over voltage protection.	
	9. Should be provided with fuse on both hot and neutral for input protection.	
	10. Should be able to operate at temperatures from 0-40 C and 0-90% humidity.	
	11. Should be a space safer design with approximately 21x24.5x6.5 cm (WxLxH).	
2	**Operating Environment**	
2.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.	
2.2	Power supply: 220-240V/ 50/60 Hz AC Single phase with appropriate plug .The power cable must be minimum 3 Meter	
3	**Standards and Safety Requirements**	
3.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND	
3.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.	
4	**User Training**	
4.1	Must provide user training (including how to use and maintain the equipment).	
5	**Warranty**	
5.1	Comprehensive warranty for 2 years after acceptance.	
6	**Maintenance Service During Warranty Period**	

6.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.	
7	**Installation and Commissioning**	
7.1	Supplier must accomplish proper installation and commissioning of the equipment on site.	
8	**Documentation**	
8.1	User (Operating) manual in English	
8.2	Service (Technical / Maintenance) manual in English	
8.3	List of important spare parts and accessories with their part numbers and costing.	
8.4	Certificate of calibration and inspection from factory.	

20 **Histopathology Autostainer**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
	HISTOPATHOLOGY AUTOSTAINER	
1.1	1. High throughput robotic stainer for Multiple staining applications and should run up to 12 racks in parallel.	
1.2	2. Simultaneous staining of protocols of haematoxylin-eosin and pap stain should be available .	
1.3	3. Equipment should have solvent resistant color touch screen to monitor the staining process using the graphical process representation.	
1.4	4. Racks should be assigned to the correct Staining Protocol based on transponder & Color –code system.	
1.5	5. The equipment should have 34 reagent stations and 6 wash stations of 450ml capacity.	
1.6	6. The equipment should be programmable for 50 programs of upto 40 steps each with incubation time setting from 0 sec to 59 minutes 59 seconds.	
1.7	7. Optional Integrated oven with temperature setting from 40□ to 70□C for optimal slide drying is preferred.	
1.8	8. Continuous loading and unloading of slides via rack entry and exit door should be available.	
1.9	9. Specimen slide throughput of at least 200 slides per hour upto 600 slides per hour is required.	
1.10	10. Agitation programmable from 0 to 20 times or continuous should be available.	
1.11	11. Reagent management System, Station information on touch screen & Data Logging should be available.	
1.12	12. Programmable up and down movement of robotic arm should be available.	
1.13	13. Fume extraction fan with charcoal filter to remove hazardous fumes should be available.	
1.14	14. Gentle vibration to slide rack during lifting to reduce carry over contamination should be available.	
1.15	15. Audible warning buzzer in case of any error during operation should be a feature of the equipment.	
2	**Operating Environment**	
2.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.	
2.2	Power supply: 220-240V/ 50/60 Hz AC Single phase with appropriate plug .The power cable must be minimum 3 Meter	
3	**Standards and Safety Requirements**	
3.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND	
3.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.	
4	**User Training**	
4.1	Must provide user training (including how to use and maintain the equipment).	
5	**Warranty**	
5.1	Comprehensive warranty for 2 years after acceptance.	
6	**Maintenance Service During Warranty Period**	
6.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.	
7	**Installation and Commissioning**	
7.1	Supplier must accomplish proper installation and commissioning of the equipment on site.	
8	**Documentation**	
8.1	User (Operating) manual in English	
8.2	Service (Technical / Maintenance) manual in English	
8.3	List of important spare parts and accessories with their part numbers and costing.	
8.4	Certificate of calibration and inspection from factory.	

21 **Table Top Heavy Duty Blender with High Speed**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
	General: Scientific mill/ blixer/ grinder/blender for grinding and blending of fresh wet and dry fruits/ vegetables/ animal feed / fodder / herbs etc having large capacity bowl with leak proof lid within built scraper blade having safety device fitted to the lid for moving blade and integrate motor braking, grinding material contact part must be easily removable and cleaning to insure hygiene.	
	Type : Table top model, High speed / high quality /Low Noise	
	Bowl number ; Two as stander accessories	
	Technical Specification:	
	Machine / motor basic unit:	
	Model : Table Top	
	Motor: Power capacity- 3-4 HP, metal base, heavy duty (1200- 1500 Watts)	
	Motor built on ball bearing	
	Direct drive shaft of stainless steel/equivalent	
	Bladder Speed range; Variable 300-3000 rpm	
	Control panel with ON/OFF/PUSH button allow for simple operation	
	Power supply ; matched with Voltage 230 VAC at 50 Hzs , Single phage	
	Bowl /Vessel and lid:	
	Bowl ; Stainless steel bowl with handle, capacity ; 3-5 L,	
	Material handling capacity 2-4 litre / kg,	
	High chimney/hub in bowl, automatic bowl lock system, trigger fitting in built with handle	

	Blade; stainless steel Blade with Micro serrated blades	
	Bowl Lid; polycarbonate lid with in built scraper, seal to make totally watertight	
2	**Operating Environment**	
2.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.	
2.2	Power supply: 220-240V/ 50/60 Hz AC Single phase with appropriate plug .The power cable must be minimum 3 Meter	
3	**Warranty**	
3.1	Comprehensive warranty for 2 years after acceptance.	
4	**Documentation**	
4.1	User (Operating) manual in English	
4.2	Service (Technical / Maintenance) manual in English	
4.3	List of important spare parts and accessories with their part numbers and costing.	

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High Dose Rate Brachytherapy

No.	Item Specifications	Fill your Specification
1	**The System shall as a minimum include the following components:**	
	i. Remotely controlled High Dose Rate Brachytherapy (HDRBT) unit (afterloader) with a dual source capability and at least 3 channels	
	ii. PC based control unit for operating, controlling and monitoring of the HDR afterloader	
	iii. Co-60 brachytherapy source (initial activity approx. 80 GBq)	
	iv. Ir-192 brachytherapy source (initial activity approx. 370 GBq)	
	v. Portable shielded storage containers for storing Co-60 and Ir-192 sources when not in use (not installed in the unit's storage safe)	
	vi. Monitoring systems for irradiation time and source position	
	vii. Automatic source retraction in the event of a power failure	
	viii. Manual emergency source retraction	
	ix. Transfer tubes and applicators to perform the source calibration	
	x. Emergency container and related accessories	
	xi. Radiation Safety equipment	
	xii. Additional ancillary devices (phantoms, holders)	
2	**The HDRBT unit shall meet the following technical requirements:**	
	Remotely controlled mobile high dose rate afterloading brachytherapy unit capable to use two different HDR brachytherapy sources.	
	The unit should have at least 3 channels.	
	The unit houses the radioactive source stored in a shielded source safe. For calibration of an ionization chamber (treatment delivery), the source is moved through transfer tubes and applicators to the reference irradiation position (e.g. to the effective point of a well type chamber).	
	The radioactive sources to be used in the remote afterloader are Co-60 and Ir-192. The nominal activity of Co-60 source should be approximately 80 GBq. The nominal activity of Ir-192 source should be approximately 370 GBq.	
	The shielded storage safe within the unit (afterloader) shall contain one source. The other source not in use shall be stored in a separate shielded storage container.	
	The unit shall allow smooth exchange of two different sources (Ir-192 and Co-60) by trained staff.	
	The unit shall have a dummy source for an applicator tube length checking and registering possible obstructions.	
	The unit shall be able to clearly indicate the source type in use, the channel number and the exact position of a source in the channel.	
	Source positioning accuracy shall be within 0.5 mm with the minimum individually programmable step distance of 1 mm.	
	Treatment window for defining possible steps and dwell position shall be at least 40 cm.	
	Dwell times selectable in increments of 0.1 s in a range 0.1 – 999.9 s per dwell position	
3	**Safety features shall include the following items:**	
	The safety systems of the unit shall be integrated into the existing safety infrastructure (e.g. door interlocks).	
	The unit shall be equipped with back-up safety systems (i) an independent backup-retraction motor powered by a battery system, and (ii) an additional hand crank (manual emergency source retraction system).	
	The source position accuracy check shall be enabled with a stepping source viewer and a camera connected to a TV system.	
	Radiation area monitoring system.	
	Integrated radiation detectors to confirm a source return to the shielding safe.	
	Monitoring of the irradiation time by two independent systems.	
	Irradiation interrupt button on the control console (unit) and emergency buttons at different places (e.g. on the console, on the mobile unit and outside the irradiation room).	
	Indication lights about the status of the source position (e.g. safe, extending, irradiating).	
	Warning light indicators.	
4	**Control unit**	
	The computer based control unit (either integrated with the TPS or alone) shall enable operating, controlling and monitoring functions of the HDRBT unit and shall as a minimum meet the following technical requirements:	
	The HDRBT unit shall be controlled via a computer having installed an up to date operating system.	
	The control unit shall allow preparation of irradiation data (e.g. selection of the source, channel, dwell positions, dwell times).	
	Display of irradiation status information shall be continuously present during the operation of the unit.	
	Recording of the entire irradiation protocol (e.g. date, time, source, number of channel, dwell position in each channel, dwell time).	
	Eight sets of transfer tubes and applicators to perform the source calibration	

	Portable shielded storage containers for HDR sources	
	One container for Co-60.	
	One container for Ir-192.	
5	**Ancillary devices**	
	Afterloading calibration phantom with adapters for afterloading applicators, probes and reference chambers.	
	Tripod for afterloading calibration phantom.	
	In-air calibrations jig for Farmer type chambers.	
	Source position check device.	
6	**Optionally, the Contractor should offer**	
	Exchange of Ir-192 source on yearly basis during the period of five years,	
	Exchange of Co-60 source after five years.	
7	**Marking**	
	The System shall have all safety markings in English language.	
9	**Quality Requirements**	
	The System shall be manufactured, shipped and installed in accordance with the Contractor's ISO quality assurance system or an equivalent quality assurance system.	
	The Contractor shall document the compliance with this quality assurance system.	
10	**Testing and Acceptance**	
	The System, prior to shipment, shall be tested for conformance of the System with manufacturer's performance specifications and the minimum requirements specified herein.	
11	**Installation and Training**	
	The Contractor shall install the System at the IAEA.	
	The Contractor shall provide training for the staff of the IAEA Dosimetry Laboratory immediately after the installation of the System in the following areas (i) the operation and maintenance of the System (ii) the sources exchange.	
12	**Warranty and Service**	
	A complete warranty should be offered for 2 years, starting after completion of the formal acceptance testing.	
	An option of 5-year maintenance contract, including exchange of sources, shall be included in the offer.	
	Service support shall be performed within five business days following reports of any breakages, errors or faults on the system.	
	The address of the nearest service location, shall be indicated.	
	The Contractor shall ensure that service support and further upgrades are available for the type of afterloader that is provided.	
	The Contractor shall guarantee that replacement parts are available for at least 10 years after installation of the HDR unit.	
	The Contractor shall take back the HDR sources, after its normal use.	

23 **Horizontal Electrophoresis Machine.**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
	This is a Haemoglobin screening and testing system with following specifications	
1	**GEL ELECTROPHORESIS UNIT**	
1.1	The Mini Horizontal Gel Box system should offer extended run length and improved resolving area for complex analysis in a mini gel format	
1.2	These system should be designed for rapid separation of hemoglobin molecules or agarose gels and should be ideal for sickle cell analysis	
1.3	The system should have a Dimension of 15 cm W x 22 cm L x 9.5 cm H	
1.4	UV transmissible gel tray with fluorescent graduation on the base of the gel tray. The gel tray dimensions should be 9 cm W x 11 cm L with grooves (8.7 cm L x 1.2 cm H) on the side for gripping the gel tray. It should havetwo comb slots on the sam tray area.	
1.5	The gel tray should have stable silicone gaskets, so that no separate casting tray is required	
1.6	It should provide two combs, 10 and 14 tooth each	
1.7	Buffer capacity should be 600 ml for the buffer tanks and optimum gel runs with a fill line indicator for buffer levels along the unit side	
1.8	Max electrode seperation in 19 cm with a Maximum Voltage of 150 V , such that it has 5 volts per cm of electrode seoeration (5 V x 19 cm = 95 V)	
1.9	It should have a buffer chamber with color coded sealed platinum electrodes which are very sturdy and long lasting than the generally offered silver electrodes	
2	**ELECTROPHORESIS POWER SUPPLY**	
2.1	It should be ergonomically designed equipment, which is light weight and occupies less table space. Dimensions should be approximately 300 x 200 x 100, weighing about 3.0 kg which makes them portable.	
2.2	To increase the user's safety, none of the outlets has to be directly wired to the earth The terminals have to be floating and have deeply recessed contacts	
2.3	It must be robust to provide uninterrupted service for years	
2.4	Specific output control for both voltage and current speicifications Ability to change the voltage from 10 - 300 V as minimum of 250 volts will be required for electrophoresis run, Current to be adjusted from 4-400 mA	
2.5	The supply must be integrated with digital displays to provide error free and precise output settings. To be provided with 3 digit display	
2.6	It must have built in timer for unattended runs. This prevents the need for continous monitoring and eliminates risk of sample over runs. It should be programmable from 1 minute to 999 minute with digital display	
2.7	Provision for running multiple gels at single time. To serve this purpose it should be provided with four outputs and power of 75 W	
3	**Reagents and Chemicals**	
1	Pre weighted vials of Molecular Biology Grade, Agarose, Low EEO, DNase and RNase free	

2	Protein Electrophoresis Buffer	
3	Protein Gel Staining Solution	
4	Wash Solution	
5	De-staining Solution	
6	Gel Loading Dye	
4	**Plasticware**	
1	Microfuge tube - Capacity 2 ml Autoclavable	
2	Micropipet - 1000 ul	
3	Micropipet - 200 ul	
4	Micropipet - 0-10 ul	
5	Pipet tips - volume : 1000 ul	
6	Pipet tips - volume : 0-10 ul	
7	Pipet tips - volume : 200 ul	
	ELECTROPHORESIS SYSTEM	
	(SHORT DESCRIPTION)	
A	**ELECTROPHORESIS**	
a	Mini Horizontal Gel Box :	
	9 x 11 cm gel , Rapid cast Gel tray with 2 comb slots, includes 2 combs, 10 and 14 tooth , 1.5 mm T, Bugger chamber 6-- ml, capacity with color coded platinum electrode	
b	Electrophoresis Power supply	
	0-300 V, Constant voltage, constant current, programmable from 1 to 999 min with digital display with ability to change voltage from 10 - 3000 V	
B	**REAGENTS AND CHEMICALS**	
a	Molecular biology grade Agrose, special, Low EEO, DNase, RNase free, Protein Electrophoresis Buffer, Wash Soln., De-Staining Soln, Gel Loading Die, Molecular Biology Grade Water	
C	**PLASTIC WARE**	
1	Microfuge tube - Capacity 2 ml Autoclavable	
2	Micropipet - a) 1000 ul, b) 200 ul, C) 0-10ul	
3	Pipet tips - a) 1000 ul, b) 200 ul, C) 0-10ul	
2	**Operating Environment**	
2.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.	
3	**Standards and Safety Requirements**	
3.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND	
3.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.	
4	**User Training**	
4.1	Must provide user training (including how to use and maintain the equipment).	
5	**Warranty**	
5.1	Comprehensive warranty for 2 years after acceptance.	
6	**Maintenance Service During Warranty Period**	
6.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.	
7	**Installation and Commissioning**	
7.1	Supplier must accomplish proper installation and commissioning of the equipment on site.	
8	**Documentation**	
8.1	User (Operating) manual in English	
8.2	Service (Technical / Maintenance) manual in English	
8.3	List of important spare parts and accessories with their part numbers and costing.	
8.4	Certificate of calibration and inspection from factory.	

24 **HPLC Column Set**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
	One for each item:	
1	Capped reversed phase, 5µm, 13nm, 15cm x 4.6mm	
2	Hypersil ODS, 5µm, 12nm, 15cm x 4.6mm	
3	Hypersil silica, End-capped reversed phase, 5µm, 13nm, 25cm x 4.6mm	
4	Hypersil BDS-C18, End-capped reversed phase, 5µm, 13nm, 25cm x 4.6mm	
5	Guard column, LC-C18 Kit Replacement Cartridges	
6	Guard column Hypersil BDS-C18, End	
7	, LC-Si Kit Replacement Cartridges	

25 **HIGH PERFOTMANCE LIQUID CHROMATOGRAPH (HPLC-MS/MS)**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
	The System should comprise of Isocratic Pump, Photo diode array Detector, Manual Injector and System Controller with the following specifications:	
	1) Solvent Delivery System for Micro, Analytical flow rates	
	□ The flow rate shall be set between less than or equal 0.0001 to 10 ml/min	
	□ Flow rate accuracy should be not more than □2% at 0.1 ml flow rate or □2 µl/min of set value whichever is greater	
	□ Flow rate precision should be less than □0.1% RSD	
	□ Pressure setting range should be 1-40 MPa	
	□ It should be capable of standalone operation and must have a leak sensor as safety feature	
	□ System should be upgradeable to High Pressure Binary as well as Low-Pressure Quaternary Gradient pump.	

	2) System Controller: A System Controller for controlling all modules of HPLC System listed through the Workstation Software should be offered.	
	3) Rheodyne Manual Injector with auto trigger and 20ul loop, Injector mounting plate and Hamilton Micro Syringe 25ul	
	4) Photo Diode Array Detector: A Programmable PDA Detector should be offered with the following Specifications:	
	□ Wavelength Range: 190 nm to 800nm with 512 diode array elements	
	□ Noise Level : 0.6 X 10 (-5) AU	
	□ Drift : 5 X 10 (-4) AU/h	
	□ Programmable Slit width : 1.2 nm for High Resolution & 8 nm for High Sensitivity	
	□ Temperature Controlled flow cell to reduce the base line noise	
	□ Inbuilt Holmuim oxide Filter for auto wavelength accuracy check.	
	D Plot, Control Plot, Snap Shot functions, multi wavelength monitoring, peak purity curves, spectral Library and spectral matching etc should be offered through the workstation software.	
	5) Workstation Software: A Workstation Software for controlling the entire HPLC System through PC should be offered. The Software should be user friendly and based on Windows. Software should support all Quantization features such as Area Normalization, Internal and External Standards, SST, Custom reporting, Audit trails and GLP features. The Software should include complete System Suitability Test functions (SST) functions as per BP/USP etc.	
	6) Column – One Analytical C-18 Column 250 x 4.6 mm, 5u should be supplied.	
	NOTE – Prices quoted should be FOR Destination. The system should be under Warranty for 1 year from the date of installation.	
2	**Operating Environment**	
2.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.	
2.2	Power supply: 220-240V/ 50/60 Hz AC Single phase with appropriate plug .The power cable must be minimum 3 Meter	
3	**Standards and Safety Requirements**	
3.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND	
3.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.	
4	**User Training**	
4.1	Must provide user training (including how to use and maintain the equipment).	
5	**Warranty**	
5.1	Comprehensive warranty for 2 years after acceptance.	
6	**Maintenance Service During Warranty Period**	
6.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.	
7	**Installation and Commissioning**	
7.1	Supplier must accomplish proper installation and commissioning of the equipment on site.	
8	**Documentation**	
8.1	User (Operating) manual in English	
8.2	Service (Technical / Maintenance) manual in English	
8.3	List of important spare parts and accessories with their part numbers and costing.	
8.4	Certificate of calibration and inspection from factory.	

26 **Digital Mammography Machine**

	1. Scope	**Fill your Specification**
	1.1. This specification describes the requirements for a large field of view digital mammography equipment to be delivered and installed to produce pictures of the inside of the breast for detecting and diagnosing breast cancer at its earliest stage to be used in Sudan, Wad Medani by National cancer institute – university of Gezira.	
	1.2. Supplier may propose alternatives that differ from this Specification, but are intended to produce the same or better results for this application. In such cases, these must be clearly stated and justified in the offer and sufficient technical information has to be provided for assurance of compliance with this Specification.	
	1.3. Any assumptions made in the Supplier's offer (e.g. facilities, standards, equipment already possessed by the End-user) must be clearly identified.	
	2. Applicable Documents	
	2.1. The following documents shall be applicable for this Specification to the extent specified hereinafter:	
	2.1.1. INTERNATIONAL ATOMIC ENERGY EGENCY (IAEA), Quality assurance program for digital mammography, IAEA human health series NO. 17, IAEA Vienna 2011	
	2.1.2. FDA, The Mammography Quality Standards Act final regulations:	
	preparing for MQSA inspection, U.S. department of health and human services, 2001	
	2.2. In the event of conflict between the documents listed above and the content of this Specification, the content of this Specification shall take precedence to the extent of the conflict.	
	3. Definitions, Acronyms, and Abbreviations	
	3.1. The following definitions, acronyms, and abbreviations shall apply throughout this Specification unless defined otherwise hereinafter:	
	3.1.1. National Cancer institute - University of Gezira (NCI - U of G) defined as the End-user	
	3.1.2. The company or the agent defined as Supplier's or contractor	
	4. Requirements	
	4.1. Functional and Performance Requirements	
	The System shall meet the following functional and performance requirements:	
	[Large field of view digital mammography for general screening, diagnostic and interventional applications. The system shall consist]	
	4.1.1. Large field digital flat panel detector	
	4.1.2. Integrated digital acquisition system with user console and flat panel monitor	

	4.1.3. Ergonomic examination gantry designed for mammography applications with motorized movements	
	4.1.4. Single / Dual track mammography X-ray tube with additional beam filters and automatic collimator	
	4.1.5. High frequency generator	
	4.1.6. Exposure control system and selectable dose mode	
	4.1.7. Radiation shield and mammography image receptor grids	
	4.1.8. Motorized compression device and compression paddles	
	4.1.9. FFDM based stereotaxy availability / Breast tomosynthesis	
	4.1.10. Magnification device	
	4.2. Technical Requirements	
	The System shall meet the technical requirements as in below.	
	5. Marking	
	5.1. The System shall have all safety markings in <English> language.	
	6. Packing	
	6.1. The System, shipment to the End-User shall be packed in accordance with international standards that are applicable for the shipment of this kind of equipment	
	6.2. The system under the responsibility of the contractor during the transportation to the End-User	
	7. Quality Requirements	
	7.1. The System shall be manufactured, shipped and installed in accordance with the Supplier's ISO quality assurance system or an equivalent quality assurance system.	
	7.2. The Supplier shall document the compliance with this quality assurance system.	
	8. Testing and Acceptance	
	8.1. The System, prior to shipment, shall be tested for its conformance with manufacturer's performance specifications and the requirements specified herein.	
	8.2. During the commissioning, the System shall be tested by the Supplier together with the staff of the End-User to demonstrate that the performance meets the manufacturer's performance specifications and the requirements specified herein as determined by the End-User. The results of the testing of the System shall be documented by the Supplier in an Acceptance Protocol that shall be signed by the End-User	
	8.3. Full compliance to requirements is precondition for payment.	
	9. Installation and Training	
	9.1. The Supplier shall install the System at National Cancer Institute – University of Gezira, Wad Medani - Sudan.	
	9.2. The Supplier shall provide 7 days training in English for all the staff at of the End-User in the operation, troubleshooting and maintenance of the System at the End-User location immediately after the installation of the System.	
	10. Deliverable Data Items	
	The following data items shall be delivered in English	
	10.1. The Supplier shall provide two complete sets of operation and servicing manuals and technical drawings in the <English> language in hard copies and electronic version	
	10.2. Installation drawings and instructions, including electrical and shielding requirements prior to installation	
	10.3. Acceptance testing protocol to document the performance parameters and the successful completion of the installation	
	10.4. A final report that shall summarize the work performed, including as an attachment, a copy of all the training material	
	10.5. The Supplier is requested to propose an itemized list of consumables and special operation and maintenance tools which may be required for the operation of the System.	
	11. Delivery Period	
	Indicate delivery period required for delivering the mammography unit to the End-User. Indicating delivery period is a mandatory requirement and should be clearly stated.	
	12. Warranty and Service Support	
	12.1. A complete warranty should be offered for two years starting after completion of formal acceptance testing;	
	of formal acceptance testing;	
	12.2. Service support shall be provided via e-mails, calls or any (specify)	
	12.3. An option of 5-year maintenance contract, including exchange of parts, shall be included in the offer.	
	12.4. Service support shall be performed within two business days following reports of any breakages, errors or faults on the system	
	12.5. Supplier to provide an itemized list of consumables and special operation and maintenance tools which may be required for the operation of the System, and components where replacement is expected within a typical ten year life span.	
	12.6. The address of the nearest service location shall be indicated.	
	12.7. The Contractor shall ensure that service support and further upgrades are available for the Mammography that is provided	
	12.8. The Contractor shall guarantee that replacement parts are available for at least 10 years after installation of the Mammography unit	
	13. Optional Requirements	
	Please indicate if any additional items are suggested for installation, calibration, and operation. Quotations and recommendations for these are appreciated. They must be kept separate from the main quotation.	
	Technical requirements	
	The requested System shall consist the following technical characteristics	
	1 X-ray generator	
	High frequency generator type	
	4.0 kw or more generator power	
	kV range: 23 to 35 or more in 1 kV steps	
	mAs range: 0 to 500	
	Exposure monitoring generator and tube load pre-exposure display of the exposure parameters.	
	Displayed parameters kV, mAs, target filter, density selection Auto record of the exposure parameters for each mammogram	

	2 X-ray tube	
	Single / Dual track mammography X-ray tube with additional beam filters and automatic collimator.	
	Spot size large focal spot: 0.3 mm small focus of 0.1 mm.	
	Rotating anode	
	Anode heat storage capacity shall be 150 kHU or more	
	Beam filters: Mo and Rh.	
	3 Gantry assembly	
	Isocentric system	
	Motorized rotation and vertical movement	
	Rotation angle: -+180 to -165 degree	
	Distance floor to image receptor: 70 to 150 cm	
	Source to image receptor distance (SID): 65cm or more	
	Magnifications stand with dedicated paddles	
	Magnification factor 15 or 18	
	Motorized & Manual compression	
	Large paddle facility	
	Regular sliding paddle	
	Square spot sliding compression paddle	
	Round spot sliding compression paddle	
	4 Exposure control	
	Both manual and Auto mode (Automatic Technique selection) should be available	
	Parameters controlled: kV mAs, filter	
	5 Automatic technique selection	
	Parameters: Anode track, filter, kV mAs, Virtual cell and dose should be chosen automatically	
	Different modes should be available for selection	
	6 Collimator	
	Molybdenium & Rhodium Beam filter should be available	
	FOV can be modified manually and can also be selected automatically based on the paddle and magnification platform	
	7 Flat panel detector	
	Direct / indirect conversion type solid state flat panel detector. Type: Amorphous Selenium / Silicon	
	Detector size: 24 x 29 cm or more	
	Pixel size: 100 um or less	
	Image depth >= 14 bit	
	Operating temperature: app 15 to 30 degrees Celsius	
	DQE at OLP/mm : 60% or more	
	8 Digital acquisition system	
	Local storage capacity: 8000 images & more	
	Image annotation & Measurement functions possibility	
	Automatic dose (Skin dose and average Glandular Dose) annotation Automatic windowing	
	Multi format display	
	Zoom and roam & Image invert facility	
	Print layout for multi format printing.	
	Integrated CD R/W	
	9 Connectivity	
	DICOM SEND (storage provide).	
	DICOM storage commitment (storage commitment user).	
	DICOM print (basic grayscale print user)	
	10 Printer interface	
	Basic Grayscale print user	
	Validated printer list for hardcopy diagnostic	
	11 Grid / Breast support assembly	
	Grid ratio:5:1	
	Low attenuation carbon fiber support	
	12 Accessories include	
	Pair of dual foot pedals	
	Radiation shield with 0.3 mm Pb equivalent	
	Face shield	
	Large paddle- 24x31cm	
	19 x23 cm sliding paddle	
	Square spot sliding compression paddle	
	Round spot sliding compression paddle	
	Remote service modem	
	Quality control toolkit / software's	
	13 Display workstation	
	Mammography diagnostic workstation	
	Two high contrast and resolution 5 MP LCDB & W monitors. OR Single head 3 MP Grayscale monitor to be provided on main console & Dual head high contrast and resolution 5 MP grayscale monitors to be offered along with the review workstations	
	Multi-modality viewer to display U/S, DX, MR, MG, NM, PET & CT	
	Customizable having protocols	
	Dedicated mammography keypad	
	Customizable functions buttons	
	Patient list management tool	
	User selectable auto contrast modes	
	14 Options (Quote as optional)	
	Digital stereo tactic breast biopsy	
	Positioning at any angle +/-90 deg should be available	
	Decubitus Biopsy table for patient positioning during srereotaxy procedure	

	Breast tomosynthesis (3D mammography)	

27 **MICROTOME**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
	The instrument should have Motorised feeding system with optional motorized and manual sectioning with rocking mode facility and ability for voltage selection,2nd handwheel brake, separate control panel for display, blade holder, disposables blades , with following specifications:	
1.1	Section thickness setting: 0.5 to 100 microns	
1.2	Setting values:	
a	0.5 to 5 micron in 0.5 micron increments	
b	5 to 20 micron in 1 micron increment	
c	20 to 60 micron in 5 micron increment	
d	60 to 100 in 10 micron increment	
1.3	Horizontal specimen feed: 28 mm +/- 1 mm, feed motion via step motor	
1.4	Coarse feed: Motorised coarse feed in two steps i.e 300 micron /sec and 900 micron/sec.	
1.5	Vertical specimen stroke length: 70 mm.	
1.6	Specimen orientation: Horizontal 8 deg, Vertical 8 deg.	
1.7	Trimming Section thickness: 1 to 600 micron	
1.8	8.Specimen retraction: 5 to 100 micron in 5 micron increment, can be turned off.	
2	**Operating Environment**	
2.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.	
2.2	Power supply: 220-240V/ 50/60 Hz AC Single phase with appropriate plug .The power cable must be minimum 3 Meter	
3	**Standards and Safety Requirements**	
3.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND	
3.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.	
4	**User Training**	
4.1	Must provide user training (including how to use and maintain the equipment).	
5	**Warranty**	
5.1	Comprehensive warranty for 2 years after acceptance.	
6	**Maintenance Service During Warranty Period**	
6.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.	
7	**Installation and Commissioning**	
7.1	Supplier must accomplish proper installation and commissioning of the equipment on site.	
8	**Documentation**	
8.1	User (Operating) manual in English	
8.2	Service (Technical / Maintenance) manual in English	
8.3	List of important spare parts and accessories with their part numbers and costing.	
8.4	Certificate of calibration and inspection from factory.	

28 **Multihead Microscope (Ten Head)**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
	Stand	
	Rugged and sturdy stand with the following features:	
	(a) Power supply external for HAL 100 W lamps, stabilized including lamp sockets with switch	
	(b) Co-axial coarse and fine harmonic drive focusing knobs, low positioned for convenient operation.	
	(c) Built-in filter 6 position filterwheel and grey filter set containing 3 grey filters 0.015, 0.06 and 0.25.	
	(d) Built-in variable field diaphragm for transmitted light illumination.	
	Nosepiece	
	6x revolving nosepiece (capable of accommodating upto 6 objectives) mounted on ball bearing with highly precise click stops.	
	Mechanical Stage	
	Ball bearing mounted X-Y mechanical with low positioned co-axial knobs, right handed, with scanning area of 75x50 mm. The stage should be coated with anodized surface.	
	Binocular photo tube	
	Binocular photo tube with an Upright image and 30inclination and suitable for 23mm Field of view eyepieces and 50:50 ratio for observation and documentation. Interpupillary distance adjustment from 55-75mm. It should have 'Siodentopf' design by which we can have two different viewing heights.	
	Illumination	
	It should be with Koehler illumination technique with 12V / 100W halogen lamp. The illumination control knob and ON/OFF switch should be low positioned for convenient operation.	
	Condenser	
	Abbe Condenser 0.9 / 1.25 for bright field. should be upgradeable for Dark field and Phase contrast	
	Objectives	
	The microscope should be offered with high contrast semi Plan-Apochromatic Objectives with infinity colour corrected optics. The magnification / numerical aperture of the objectives should be: 5x/0.16, 10x/0.3, 20x/0.50, 40x/0.75 and 100x/1.30 oil.	
	Eyepieces	
	Wide field focusing eyepieces with minimum 23m field of view with soft rubber soft eyecups and is suitable for spectacle wearers. It should be marked with ± 5 diopter settings. The eyepieces should be suitable for graticule insertion.	
	Ten-head attachment	

	Teaching head attachment for additional 9 observers , Suitable for field-of-view 23mm should be quoted. The 10x eyepieces for the additional observers also should be of focusable type with ± 5 diopter settings in both the eyepieces of the tubes. The main observer as well as all the coobservers should have the uniform 23 mm field of view for observation.	
2	**Operating Environment**	
2.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.	
2.2	Power supply: 220-240V/ 50/60 Hz AC Single phase with appropriate plug .The power cable must be minimum 3 Meter	
3	**Standards and Safety Requirements**	
3.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND	
3.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.	
4	**User Training**	
4.1	Must provide user training (including how to use and maintain the equipment).	
5	**Warranty**	
5.1	Comprehensive warranty for 2 years after acceptance.	
6	**Maintenance Service During Warranty Period**	
6.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.	
7	**Installation and Commissioning**	
7.1	Supplier must accomplish proper installation and commissioning of the equipment on site.	
8	**Documentation**	
8.1	User (Operating) manual in English	
8.2	Service (Technical / Maintenance) manual in English	
8.3	List of important spare parts and accessories with their part numbers and costing.	
8.4	Certificate of calibration and inspection from factory.	

29 **Nano Spectrophotometer For DNA and RNA**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
1.1	Instrument Type: Spectrophotometer for measurement of 0.5 2 µL DNA, RNA,and protein samples	
1.2	Measure very low and high concentration samples (0.4 15,000 ng/µL dsDNA)	
1.3	Cuvette capability allows for kinetics (time or time / temperature studies) and cell culture (OD 600) measurements.	
1.4	Minimum Sample Size: 0.5 µL	
1.5	Path length: 1 mm (auto-ranging to 0.05 mm)	
1.6	Light Source: Xenon flash lamp	
1.7	Detector Type: 2048-element linear silicon CCD array	
1.8	Wavelength Range: 190-840 nm	
1.9	Wavelength Accuracy: +1 nm	
1.10	Spectral Resolution: <1.8 nm (FWHM @Hg 253.7 nm)	
1.11	Absorbance Precision: 0.002 absorbance (1 mm path)	
1.12	Absorbance Accuracy: ± 2% (at 0.76 absorbance at 257 nm)	
1.13	Absorbance Range: 0.02 -300 (10 mm equivalent)	
1.14	Detection Limit: 2 ng/µl (dsDNA)	
1.15	Maximum Concentration: 15,000 ng/µl (dsDNA)	
1.16	Measurement Time: < 5 seconds	
1.17	Sample pedestal Material of Construction: 303 stainless steel and quartz fiber	
1.18	Operating Voltage: 12 VDC	
1.19	Operating Power Consumption: 12-18 W, (max 30 W)	
1.20	Software Compatibility: Windows® XP (32 bit)	
1.21	**Cuvette specifications**	
	Z-Height: 8.5 mm	
	Heating: 37 ± 0.5 °C	
	Stirrer: 150-850 rpm	
	Path Length: 10, 5, 2, 1 mm	
	Absorbance Range: 0.008 - 1.5	
	Detection Limit: 0.4 ng/µl- Maximum Concentration 750 ng/µl (dsDNA)	
	Measurement Time: < 3 seconds	
	Cuvette Dimensions: 12.5 mm x 12.5 mm, up to 48 mm H	
	Type : Masked cuvette	
	Computer with highest RAM and Highest GB Space should be provided with nanodrop spectrophotometer	
1.22	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.	
2	**Operating Environment**	
2.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.	
2.2	Power supply: 220-240V/ 50/60 Hz AC Single phase with appropriate plug .The power cable must be minimum 3 Meter	
3	**Standards and Safety Requirements**	
3.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND	
3.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.	
4	**User Training**	
4.1	Must provide user training (including how to use and maintain the equipment).	
5	**Warranty**	
5.1	Comprehensive warranty for 2 years after acceptance.	
6	**Maintenance Service During Warranty Period**	
6.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.	
7	**Installation and Commissioning**	

7.1	Supplier must accomplish proper installation and commissioning of the equipment on site.	
8	**Documentation**	
8.1	User (Operating) manual in English	
8.2	Service (Technical / Maintenance) manual in English	
8.3	List of important spare parts and accessories with their part numbers and costing.	
8.4	Certificate of calibration and inspection from factory.	

30 **PCR Thermo cycle machine 96 well**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
	An automated system for both real-time PCR and post-PCR (endpoint) analysis	
	System should be certified for In Vitro Diagnostic use.	
	The System should support applications including absolute quantization, simultaneous analysis data for relative quantization of 10 plates of 96 wells each, multiplex-PCR, allelic discrimination (SNP), dissociation curve analysis as well as pathogen detection and plus/minus assay using internal positive control.	
	The normalization of reaction due to non-PCR related fluctuations such as pipetting variations should be possible by using ROX™ or any calibrated dye.	
	Selection or de-selection of passive reference during the run should be optional.	
	The system should have temperature range of 4 oC-105 oC and a ramp rate for heating as well as cooling should be between 5 oC - 6oC/second.	
	System should support reaction volume 10-30 µL and universal thermal cycling conditions to eliminate optimization of PCR conditions for running the templates from different sources simultaneously.	
	The system should provide easy door design for loading and unloading 96-well plates or individual 0.2 mL PCR tubes.	
	The excitation by Tungsten Halogen source and detection by cooled CCD camera. Five position fluorescence excitation as well as emission filters. System should collect data for all 5 filters for all wells regardless of plate setup. It should be possible to alter the plate setup after run completes. The data collection and instrument control software should provide multicomponenting algorithm for deconvolution of multiple dyes, enabling addition of new dyes without any hardware change. A dedicated licensed full version software for primer and probe design must be included in the supply.	
	System should be standardized for Taqman and SYBR Green Chemistry with pre-validated and functionally tested Taqman Gene Expression Assays as well as Taqman SNP Genotyping Assays. They should be readily available covering entire human genome. It must be possible to set-up and run Taqman as well as SYBR Green chemistries on single plates with seamless switchover.	
	The quoted system must have full license for PCR process. A copy of the license must be attached to the offer.	
	Ready to use IVD kits should be available for Infectious diseases like HIV, HBV, HCV, MTB, from the same manufacturer with high sensitivity, specificity and broad dynamic range. The manufacture should be able to supply Real Time Ready H1N1 kit on demand.	
	Systems should be supplied with latest Pentium computer with color monitor and printer. It should have a interface to laboratory host computer.System software should be based on Windows XP and the software must be validated for IVD applications.	
	Systems should be compatible for 220 V / 50 Hz power supply. The company must also provide an online UPS with back up of atleast 1 hour	
	The Company must have good service and application support at regional level. The parent company also should have training facility.	
2	**Operating Environment**	
2.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.	
2.2	Power supply: 220-240V/ 50/60 Hz AC Single phase with appropriate plug .The power cable must be minimum 3 Meter	
2.3	Suitable UPS with maintenance free batteries for minimum one-hour back-up should be supplied with the system.	
3	**Standards and Safety Requirements**	
3.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND	
3.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.	
4	**User Training**	
4.1	Must provide user training (including how to use and maintain the equipment).	
5	**Warranty**	
5.1	Comprehensive warranty for 2 years after acceptance.	
6	**Maintenance Service During Warranty Period**	
6.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.	
7	**Installation and Commissioning**	
7.1	Supplier must accomplish proper installation and commissioning of the equipment on site.	
8	**Documentation**	
8.1	User (Operating) manual in English	
8.2	Service (Technical / Maintenance) manual in English	
8.3	List of important spare parts and accessories with their part numbers and costing.	
8.4	Certificate of calibration and inspection from factory.	

31 **Platelet agitator and Incubator 100-80Litres**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
	Stainless steel chamber with adjustable shelves and a tough ended glass inner viewing door.	
	The outer cabinet is to be rust resistant.	
	Temperature Control detail required:-	

	An LED display to show the chamber temperature, Indicator	
	Lamps to show when the heater is active and if an over temperature condition exists.	
	The over temperature safety cut-out to be set by the user.	
	Fitted with circulation fan.	
	Temperature Range : At least 5°C above ambient to +60°C	
	Control (fan) : ±0.1°C at +37°C	
	Variation (fan) : ±0.25°C at +37°C	
	Chamber Capacity: 80 - 100 Litres	
	Shelves: >= 5.	
2	**Operating Environment**	
2.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.	
2.2	Power supply: 220-240V/ 50/60 Hz AC Single phase with appropriate plug .The power cable must be minimum 3 Meter	
2.3	Suitable UPS with maintenance free batteries for minimum one-hour back-up should be supplied with the system.	
3	**Standards and Safety Requirements**	
3.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND	
3.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.	
4	**User Training**	
4.1	Must provide user training (including how to use and maintain the equipment).	
5	**Warranty**	
5.1	Comprehensive warranty for 2 years after acceptance.	
6	**Maintenance Service During Warranty Period**	
6.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.	
7	**Installation and Commissioning**	
7.1	Supplier must accomplish proper installation and commissioning of the equipment on site.	
8	**Documentation**	
8.1	User (Operating) manual in English	
8.2	Service (Technical / Maintenance) manual in English	
8.3	List of important spare parts and accessories with their part numbers and costing.	
8.4	Certificate of calibration and inspection from factory.	

32 **ICE FLAKE MAKING MACHINE**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
1.1	Minimum 40 kg/ day capacity	
1.2	Production start time: 10-15 minutes.	
1.3	Type of ice: flakes.	
1.4	Storage Capacity of bin: Min. 8 kgs.	
1.5	Table Top/ under counter model.	
1.6	Built-in insulated storage bin for maximum ice preservation.	
1.7	Load-monitoring system continuously checks workload on gearbox, shutting down system	
1.8	before a problem develops.	
1.9	Corrosion free exterior and interior.	
1.10	Designed for continuous production of ice throughout the day.	
1.11	Environmental friendly CFC free cooling.	
1.12	Micro processor based temperature control.	
1.13	PUF insulation.	
1.14	Energy Efficient.	
1.15	Light Weight.	
1.16	Quality compressor & Air Cooled condensation CFC/HCFC Free.	
1.17	Interior and Exterior are made of corrosion resistant material.	
1.18	Easy Extraction system.	
1.19	Energy Efficient.	
1.20	Automatic low water and full storage cut off system.	
1.21	Geared motor with overheating and over voltage protection.	
1.22	Castor wheels for easy movement.	
1.23	Water sensor to eliminate low or no water failures	
1.24	Rugged stainless steel evaporator.	
1.25	No requirement for Side Clearance Required: Front and rear air exchangers.	
2	**Operating Environment**	
2.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.	
2.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.	
3	**Standards and Safety Requirements**	
3.1	Must submit ISO13485:2003/AC:2007 for Medical Devices **AND** CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.	
3.2	Electrical safety conforms to standards for electrical safety IEC 60601-1 General requirement for Electrical safety of Medical Equipment.	
4	**User Training**	
4.1	Must provide user training (including how to use and maintain the equipment).	
5	**Warranty**	
5.1	Comprehensive warranty for 2 years after acceptance.	
6	**Maintenance Service during Warranty Period**	
6.1	During warranty period supplier must ensure corrective/breakdown maintenance whenever required.	

7	**Documentation**	
7.1	User (Operating) manual in English.	
7.2	Service (Technical / Maintenance) manual in English.	
7.3	List of important spare parts and accessories with their part number and costing.	
7.4	Certificate of calibration and inspection from factory.	

33 **Sonicator**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
1.1	Power Output: 400 -500 Watts	
1.2	Frequency: 20kHz	
1.3	Processing capability: 0.5 mL-500 mL or better	
1.4	Automatic Tuning and Frequency Control	
1.5	Fully digital, Programmable	
1.6	Can run in continuous or pulsed modes	
1.7	Can vary amplitude, time and temperature	
1.8	Real Time digital display of parameters including wattmeter, timer, temperature, power, amplitude	
1.9	Include sound proof enclosure, stand, clamp and laboratory jack.	
1.10	**Probes:**	
a	½"probe with threaded end and replaceable tips (2)	
b	¼" tapered microtip (1)	
c	1/8" tapered microtip (1)	
d	Extender 5" solid type compatible with ½ inch probe (2)	
2	**Operating Environment**	
2.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.	
2.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.	
3	**Standards and Safety Requirements**	
3.1	Must submit ISO13485:2003/AC:2007 for Medical Devices **AND**	
3.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.	
3.3	Electrical safety conforms to standards for electrical safety IEC 60601-1 General requirement for Electrical safety of Medical Equipment.	
4	**User Training**	
4.1	Must provide user training (including how to use and maintain the equipment).	
5	**Warranty**	
5.1	Comprehensive warranty for 2 years after acceptance.	
6	**Maintenance Service during Warranty Period**	
6.1	During warranty period supplier must ensure corrective/breakdown maintenance whenever required.	
7	**Documentation**	
7.1	User (Operating) manual in English.	
7.2	Service (Technical / Maintenance) manual in English.	
7.3	List of important spare parts and accessories with their part number and costing.	
7.4	Certificate of calibration and inspection from factory.	

34 **Soxhlet Apparatus Unit**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
	1. Samples per batch: 6 (Six samples at a time)	
	2. Capacity per day : 30 - 45 samples	
	3. Sample size to be used: 0.5 to 15 gram	
	4. Measuring range : 0.1 - 100% Fat with reproducibility of +/- 1%	
	5. Maximum temperature: 200 - 300 °C	
	6. Solvent tube volume: 70-140 ml	
	7. Initial heat-up time Room temperature to 200°C within 6-10 minutes	
	8. Max. water consumption for cooling: 2-3 Litres/ min	
	9. Solvent recovery 70% or more	
	10. Weight of extraction unit 30 - 40 kg.	
	11. Power: 220 – 240 V 50/60 Hz	
	12. Power consumption: 1200-2000 Watts	
	13. All the steps in extraction should be automated and programmable.	
2	**Operating Environment**	
2.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.	
2.2	Power supply: 220-240V/ 50/60 Hz AC Single phase with appropriate plug .The power cable must be minimum 3 Meter	
3	**Standards and Safety Requirements**	
3.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND	
3.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.	
4	**User Training**	
4.1	Must provide user training (including how to use and maintain the equipment).	
5	**Warranty**	
5.1	Comprehensive warranty for 2 years after acceptance.	
6	**Maintenance Service During Warranty Period**	
6.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.	
7	**Installation and Commissioning**	
7.1	Supplier must accomplish proper installation and commissioning of the equipment on site.	

8	**Documentation**	
8.1	User (Operating) manual in English	
8.2	Service (Technical / Maintenance) manual in English	
8.3	List of important spare parts and accessories with their part numbers and costing.	
8.4	Certificate of calibration and inspection from factory.	

35 **Stomacher Circulsator**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
	• Time: 30, 180, 600sec	
	• Rap speed: 6-9 times/sec	
	• Capacity: 3-400ml	
	• Rap trunk: stainless steel	
	• Sterilized Homogenize Bag: 17×30cm	
	• Wattage: 300W	
2	**Operating Environment**	
2.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.	
2.2	Power supply: 220-240V/ 50/60 Hz AC Single phase with appropriate plug .The power cable must be minimum 3 Meter	
3	**Standards and Safety Requirements**	
3.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND	
3.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.	
4	**User Training**	
4.1	Must provide user training (including how to use and maintain the equipment).	
5	**Warranty**	
5.1	Comprehensive warranty for 2 years after acceptance.	
6	**Maintenance Service During Warranty Period**	
6.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.	
7	**Installation and Commissioning**	
7.1	Supplier must accomplish proper installation and commissioning of the equipment on site.	
8	**Documentation**	
8.1	User (Operating) manual in English	
8.2	Service (Technical / Maintenance) manual in English	
8.3	List of important spare parts and accessories with their part numbers and costing.	
8.4	Certificate of calibration and inspection from factory.	

36 **Trinocular Stereo Microscope**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
1.1	**Optical light path**	
	Fully Apochromatic light path Compact Greenough system	
1.2	**Zoom Range /Ratio**	
	1x -8x with a Zoom ratio 8:1	
1.3	**Optical Resolution**	
	300 lines / mm at 1x	
1.4	**Viewing angle**	
	38°	
1.5	**Optics system design**	
	Apochromatic single spindle design	
1.6	**Camera port /Trinocular**	
	Switchable 100% for Video or Photo and 100% for Observation	
1.7	**Compatibility**	
	Should have a C-mount adaptor to fit existing digital Camera	
1.8	**Depth of field**	
	70m m (70 microns) at 10x/23 Wide field eyepieces	
1.9	**Total Magnification**	
	10x-80x with 10x Eyepieces .(Should be upgradable to Magnification 640x with Suitable Eyepice and Objective combination)	
1.1.	**Free Working Distance**	
	75 mm at 1x Objective (Or without Objective)	
1.11	**Inter pupilery Distance**	
	55mm - 75mm	
1.12	**Eye pieces**	
	10x 23 mm FOV Focusable and Adjustable	
1.13	**Field of View**	
	23 mm	
1.14	**Illumination**	
	Ring Light and Spot Light Illumination (LED light Source)	
1.15	**Color temperture**	
	6100°K (daylight),	
1.16	**Brightness control**	
	Brightness control with special 10-step increments	
1.17	**Digital Camera**	
	Digital camera HD with control software	
1.18	**Resolution**	
	5 Mega Pixel (1824x1368)	

1.19	**Pixel Size**	
	Pixel size 2.35 µm× 2.35µm (2.35 micron square)	
1.20	**Sensor size and type**	
	6.1 mm x 4.6 mm / Aptina 1/2.3" CMOS	
1.21	**Exposure time**	
	0.5 ms – 500 ms	
1.22	**Camera Interface**	
	C mount in line with CCD size preferably 0.55X	
1.23	**Interface**	
	USB and HD with on and off switch for longer life of sensor.	
1.24	**Speed in Live image**	
	30 frames per second and HD720 (1280x720) for Movie clips	
1.25	**Camera adaptor**	
	C mount - video adaptor with a factor of 0.55x in line with Suitable for senso	
1.26	**Complementary accessories**	
	External Hard Disk 500GB	
	Photographic sheets 2000	
	Storage cub board for carbonised grains	
	Watch Glasses to hold the samples during photography-30 (small, medium and large each 5)	
	Table to keep the microscope and its accessories	
	Cleaning tool kit, covers for eyepiece and camera	
1.27	**PC Computer**	
	With Core i7 processor	
	Windows 7 or Windows 8 professional compatible with the microscope software	
	8GB DDR3 RAM, 2GB Graphic card, 1 TB HDD	
	24″ LED monitor and all other standard configuration live & expansion slots, network interface,	
	4USB 2.0; 2USB 3.0; 1 headphone, 1 audio live in; 1 audio live out, 1VGA, 1RJ-45; USB wired mouse and keyboard	
	3 yr. warranty	
1.28	**Terms and conditions**	
	□ Microscope, camera and software must be from same manufacturer for better compatibility	
	□ The suppliers should encase brochure of the product offered.	
	□ The quote should also include the list of laboratories, preferably government institutions to	
	□ whom similar units were supplied along with the date of supply and copy of the Purchase Order.	
	□ They should also enclose performance certificate, if any, from the clients already using the machines.	
	□ The supplier should demonstrate the proper operation of the equipment upon installation and provide proper training (atleast twice in first year of operation) for operation and maintenance of the equipment.	
	□ Service Centre / technical support must be available	
	□ The vendor should be able to provide 2 years instrument warranty from the date of supply and specify the charges for extended warranty.	
2	**Operating Environment**	
2.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.	
2.2	Power supply: 220-240V/ 50/60 Hz AC Single phase with appropriate plug .The power cable must be minimum 3 Meter	
3	**Standards and Safety Requirements**	
3.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND	
3.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.	
4	**User Training**	
4.1	Must provide user training (including how to use and maintain the equipment).	
5	**Warranty**	
5.1	Comprehensive warranty for 2 years after acceptance.	
6	**Maintenance Service During Warranty Period**	
6.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.	
7	**Installation and Commissioning**	
7.1	Supplier must accomplish proper installation and commissioning of the equipment on site.	
8	**Documentation**	
8.1	User (Operating) manual in English	
8.2	Service (Technical / Maintenance) manual in English	
8.3	List of important spare parts and accessories with their part numbers and costing.	
8.4	Certificate of calibration and inspection from factory.	

37 **Vacum Rotary Evaporator**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
1.1	**Type**	
	Mobile	
1.2	**Application**	
	For purification of solvents	
1.3	**Water bath volume**	
	5 liter or above	
1.4	**Temperature Range**	
	Ambient temperature + 5°C - 180°C or above	
1.5	**Accuracy**	
	+ 1°C or better	
1.6	**Display**	
	Microprocessor LED/LCD display	
1.7	**Rotation Speed**	

	20-200rpm with DC brushless motor	
1.8	**Distillation Condenser**	
	Diagonal Type	
1.9	**Evaporating Flask**	
	500-2000ml with connector & seal	
1.10	**Collecting Flask**	
	500ml-1000ml with connector & seal	
1.11	**System Lifting**	
	Motorized with manual system on power cut off	
1.12	**Timer**	
	Must be available	
1.13	**Accessories**	
	All Standard Accessories including condenser silicon housing.	
	Compatible Chemical resistance vacuum pump.	
	Compatible 15 liters/min or above recirculating water chiller with -10 to 40 °C.	
1.14	**Lab. For Repairing**	
	Supplier must have lab/ repair facility & engineers for back up.	
2	**Operating Environment**	
2.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.	
2.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.	
3	**Standards and Safety Requirements**	
3.1	Must submit ISO13485:2003/AC:2007 for Medical Devices **AND**	
3.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.	
3.3	Electrical safety conforms to standards for electrical safety IEC 60601-1 General requirement for Electrical safety of Medical Equipment.	
4	**User Training**	
4.1	Must provide user training (including how to use and maintain the equipment).	
5	**Warranty**	
5.1	Comprehensive warranty for 2 years after acceptance.	
6	**Maintenance Service during Warranty Period**	
6.1	During warranty period supplier must ensure corrective/breakdown maintenance whenever required.	
7	**Documentation**	
7.1	User (Operating) manual in English.	
7.2	Service (Technical / Maintenance) manual in English.	
7.3	List of important spare parts and accessories with their part number and costing.	
7.4	Certificate of calibration and inspection from factory.	

38 **Humedifier**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
	humidification capacity 3 l/h air circulation 280 m3/h	
	Power consumption [W] 220-240 , 50..60 hz	
	Water inlet pressure	
	Water tank content 6L	
	dimensions aprox (W x h x d) 420 x 420 x 350 mm	

39 **Steamer 36 - 40 L**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
	Capacity : approx. 36L	
	Isolated steel	
	Vertical position	

40 **Water ionizer**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
	Type	
	Dual- Filter	
	Installation	
	Standing or wall mounted and direct connection to tap	
	LCD Display	
	Disply on pH, ORP (7colour), water flow per minute, self clean	
	Method	
	contiue electrolysis	
	controlling method	
	touch on or manual valve	
	pH range	
	3.5-10.2	
	ORP Range	
	adjustable +790-460	
	Maimum Operation Temperture	
	60 C	
	Water Flow Rate	
	3-5 litre per minute	

	Available Water Pressure	
	0.7-5 Kg/cm3	
	over current detector	
	Automatically stops the output of electrolytic cells	
	Over temperture protector	
	the temperture detector circuit installed to automatically stops the devices	
	Filte system	
	Active carbon	

41 **Automatic Kildegal Apparatus**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
	automatic digestion unit	
	supply	
	230V/50-60Hz	
	capacity 8X250ml	
	include: lhft, suction cap,sample rack and 250ml tube	
	Power 1150 W	
	Certifications/Compliance	
	AOAC, EPA, DIN and ISO	

42 **Microwave Digestion**

No.	Item Specifications	Fill your Specification
1	**Operational Requirements :**	
	be suitable for placement and operation on a normal laboratory bench-top	
	allow direct pressure and temperature control during the complete run	
	possess a temperature sensor resistant to mineral acid vapours	
	be able to apply microwave power of at least 1500 W	
	be capable of maintaining digestion vessels at 300°C	
	be capable of maintaining digestion vessels in at least 150 bar of pressure	
	be capable of processing at least 6 samples of <1 g simultaneously	
	be capable of processing different amounts of samples (from 0.3 g up to 10 g) in the same run assuring the same conditions of temperature and pressure	
	be supplied with appropriate connections, fittings and gas line to connect to a cylinder of nitrogen gas pressurised to 200 bar	
	have an active cooling system to allow quick cooling of the samples for reducing the run time (the cooling time to bring the system from 180 °C to 60 °C should be less than 20 minutes)	
	be supplied with digestion vessel racks and suitable accessories for the handling of two sizes of digestion vessels: One set for vessels of volume between 10 and 15 ml, and one set for vessels of volume > 25 ml	
	be supplied with the digestion vessels tabulated below, together with caps for all vessels	
	PTFE/PFA , 10 – 15 mL , Qty : 100	
	Quartz , 10 – 15 mL , Qty : 30	
	PTFE/PFA , > 25 mL , Qty : 30	
	Quartz , > 25 mL , Qty : 20	
	be supplied with a spare parts kit and any special tools required to perform maintenance or cleaning in routine use	
	Validation	
	After each preventive and/or corrective maintenance a certificate according to ISO 17025 or equivalent shall be supplied, listing the maintenance performed and the results of the tests performed. Based on these results, a decision on the functioning of the instrument shall be made and this decision shall be mentioned on the certificate.	
	Delivery	
	Supply, installation, validation and training shall be done within 9 months from the date of entry into force of the contract.	
	Warranty and Maintance	
	Full warranty must be foreseen for a period of two years after delivery and acceptance of the requested equipment by the signature of the certificate of conformity by the Commission. This full warranty shall be a full maintenance including:	
	One yearly preventive maintenance	
	Corrective maintenances if necessary	
	Spare parts covering the warranty period.	