1

A-B Scan

No.	Item Specifications
1	**Description of Function**
1.1	A-Scan can be used for biometric calculation and for quantifying the reflectivity of lesions in the eye and orbit. B-Scan is used for imaging the anatomy.
2	**Operational Requirements**
2.1	System completes with all hardware and software and report printer and image recorder is required.
3	**System Configuration**
3.1	A+B Scans Ultrasound for Ophthalmology, complete unit with complete accessories.
4	**Technical Specifications**
4.1	Shall have A-scan mode.
4.2	Shall have B-scan mode.
4.3	Shall have dynamic movie archiving.
4.4	Shall have Laser & video CD recording facility.
4.5	Shall have auto & manual measure function.
4.6	Shall have distance & area measurement on B-scan images.
4.7	Shall have vector A-scan measurement.
4.8	Shall have simultaneous B-scan with vector A-scan.
4.9	Shall have A-scan dynamic recording with gain adjustments.
4.1	Shall have facility for IOL power calculations (all formulas).
5	**Accessories, spares and consumables**
5.1	**Accessories:**
	□ A Scan Probe, frequency > 10 MHz: 01 no.
	□ B Scan Probe, frequency> 10 MHz: 01 no.
	□ Integrated or compatible recorders/printers: CD recorder, printer.
5.2	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.
6	**Operating Environment**

6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.
6.3	Suitable UPS with maintenance free batteries, voltage regulation and spike protection for minimum 30 min. back-up shall be supplied with the system.
7	**Standards and Safety Requirements**
7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND
7.2	CE (93/42 EEC Directives) or USFDA approved product certificate.
7.3	Shall meet IEC 60601-2-37 Medical Electrical Equipment - PART 2 Particular Requirements for the Safety of Ultrasonic Medical Diagnostic and Monitoring Equipment.
8	**User Training**
8.1	Must provide user training (including how to use and maintain the equipment).
9	**Warranty**
9.1	Comprehensive warranty for 2 years.
10	**Maintenance Service During Warranty Period**
10.1	During warranty period supplier must ensure corrective/breakdown maintenance whenever required.
11	Documentation
11.1	User (Operating) manual in English.
11.2	Service (Technical / Maintenance) manual in English.
11.3	List of important spare parts and accessories with their part numbers and costing.
11.4	Certificate of calibration and inspection from factory.

2

Auto Refractometer

No.	Item Specifications
1	**Description of Function**
1.1	Auto refractometer is computerized vision testing machines used obtain and objective measure the eye's refractive error. This measurement provides the most accurate prescription for corrective lenses.
2	**Operational Requirements**
2.1	Auto Refractometer with full auto mode.

3	**System Configuration**
3.1	Auto Ref-Keratometer, complete unit with all standard accessories.
4	**Technical Specifications**
4.1	Shall have automatic radius measurement.
4.2	Shall have automatic peripheral measurement.
4.3	It must have adjustable tilt colour LCD monitor.
4.4	Shall have active accommodation relaxation.
4.5	Shall have IOL measuring mode
4.6	Shall have reliable PD measurement.
4.7	Shall have large cylinder measuring range up to 10 D.
4.8	Measurement as from 2.3 mm pupillary diameter
4.9	In-built printer with paper cutter function.
4.1	**Refractometry:**
	□ Sphere (SPH): -30 to + 22D when VD is set to 12mm.
	□ Cylinder (CYL):0 to +/- 10D.
	□ Axis (AX): 1 to 180 degree.
	□ Automatic measurement (release) in the case of correct centering.
	□ 1 to 10 automatic measurements possible.
4.11	**Radius Measurement:**
	□ Surface refraction power 33.75 D-67.5 D in 0.01/0.12/0.25 D steps.
	□ Radius 5.0 - 10.0 mm in 0.01 mm steps.
	□ Cylinder size 0-9.0 D (Axis 0deg. to 180deg. in 1deg. steps).
4.12	Cornea vertex distance: 0 10 12 13.5 15 mm.
4.13	Minimum pupillary diameter: 2.3 mm.
4.14	Pupillary distance up to 85 mm in 1 mm steps.
4.15	Shall have RS232C and video NTSC.
5	**Accessories, spares and consumables**
5.1	**Accessories:**
	□ Trolley: 01 no.

5.2	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.
6	**Operating Environment**
6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.
6.3	Suitable UPS with maintenance free batteries, voltage regulation and spike protection for minimum 30 min. back-up shall be supplied with the system.
7	Standards and Safety Requirements
7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND
7.2	CE (93/42 EEC Directives) or USFDA approved product certificate.
7.3	Electrical safety conforms to standards for electrical safety IEC 60601-1 General requirement for Electrical safety of Medical Equipment.
8	User Training
8.1	Must provide user training (including how to use and maintain the equipment).
9	Warranty
9.1	Comprehensive warranty for 2 years.
10	Maintenance Service During Warranty Period
10.1	During warranty period supplier must ensure 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.

3

Ophthalmic set

No.	Item Specifications
1	Standard Set
2	CE or USFDA or TUV approved certificate.

4

Ophthalmic table

No.	Item Specifications
1	Mechanical Movement
2	The adjustable cushioned head rest comfort for operation
3	The adjustable wrist support provides comfort and stability while operating.
4	Versatile operation table for Ophthalmic surgery and certain special procedures.
5	Up & Down:
	Minimum Height : 610 mm
	Maximum. Height : 890 mm
6	Stroke Length : 280 mm
7	Tilting (Forward & Reverse) Back Rest Section 30 Leg Section 20
8	Weight capacity : not less than 200 kg.
9	DIMENSIONS Aoprox: not less than L890 mm, W 690 mm

5

Ophthalmic Unit

No.	Item Specifications
1	Required Ophthalmic features:-
2	One fully upholstered elegant ophthalmic chair with full motorized recline facilities with full motorized up & down
3	movement for 300mm
4	One stand and console:-
5	with illuminated soft light for examination
6	with controls for ophthalmic chair, for recline and up & down movements, back and
7	forward movement. One foot pedal for the up and down movement is also required.
8	Required Base dimensions and Floor space
9	Base Dimension Floor Space required
10	Height 7-8 feet
11	Length after reclining 9-10 feet

12	Width 4 inch
13	Input power supply: 220 ± 20 % V AC , 50Hz
14	Output 3V, 6V, 12V

6

Ophthalmic Operating Microscope

No.	Item Specifications
1	**Description of Function**
1.1	Ophthalmic operating microscopes are used to magnify eye anatomy to assist during ophthalmic surgery.
2	**Operational Requirements**
2.1	A binocular stereoscopic type microscope with built in illumination provided with facility for changing the magnification without disturbing other alignments i.e. when the magnification is changed the image remains in focus.
3	**System Configuration**
3.1	Ophthalmic Operating Microscope (Floor Mounted), complete unit with all standard accessories.
4	**Technical Specifications**
4.1	Binocular optical head with coaxial illumination.
4.2	**Eye Piece:**
	□ Wide field minimum 10 X to 12.5X individually adjustable
	□ Inclined binocular tube 45 deg.
	□ Must have dioptric adjustment of -5.00 to +5.00.
	□ Inter-pupillary distance : 55mm to 75mm.
4.3	Objective Lens: focal length (f' minimum 175+/-25 & above).
4.4	Working Distance: To be stated for each alternative not less than 150 mm.
4.5	Total Magnification: 4 to 17.5X or more, if stepped, the steps to be stated.
4.6	Assistant Binocular Microscope: Assistant Microscope to match the focusing of main Microscope.
4.7	Zooming ratio if available 1:6.
4.8	Field of Vision: Range 40 mm to 50 mm or more (at the minimum magnification).
4.9	Motorized focussing.
4.1	Motorized foot control.
4.11	Intensify: Maximum 80,000 lux or more.

4.12	Type: Coaxial dual lamp/ by optical light guide. Halogen bulbs, no. of bulbs, voltage, wattage and secondary power source to be stated by bidder. Fan Cooling arrangement shall be available.
4.13	Field: Range 45 mm to 60 mm or more.
4.14	U.V. Filter: U.V filters switchable facility for occluding pupillary light.
4.15	**Construction (Mounting & Adjustments): Arms:**
	□ Counter balanced spring type.
	□ Horizontal lengths of Arms: To be stated not less than 800mm.
	□ Range of vertical adjustment: 300 to 550 mm or more.
	□ Rotation of arms: not less than 300 deg.
	Base:
	□ The base must be stable and must not topple when optical units articulated arm is fully extended.
	□ Dimension of base in mm: To be stated by the Bidder.
	Means of Mobility:
	□ To be stated and stability & safety arrangements described in details by the Bidder.
5	**Accessories, spares and consumables**
5.1	**Accessories:**
	□ Spare Halogen Bulbs
	□ Sterilizeable & detachable caps for nobs: 2 sets
	□ Dust cover for covering the microscopes: 1 no.
5.2	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer. Bidders must specify the quantity of every item included in their offer (including items not specified above).
6	**Operating Environment**
6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.
6.3	Suitable UPS with maintenance free batteries, voltage regulation and spike protection for minimum 30 min. back-up shall be supplied with the system.
7	**Standards and Safety Requirements**

7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND
7.2	CE (93/42 EEC Directives) or USFDA approved product certificate.
7.3	Electrical safety conforms to standards for electrical safety IEC 60601-1 General requirement for Electrical safety of Medical Equipment.
8	**User Training**
8.1	Must provide user training (including how to use and maintain the equipment).
9	**Warranty**
9.1	Comprehensive warranty for 2 years.
10	**Maintenance Service During Warranty Period**
10.1	During warranty period supplier must ensure corrective/breakdown maintenance whenever required.
11	**Documentation**
11.1	User (Operating) manual in English.
11.2	Service (Technical / Maintenance) manual in English.
11.3	List of important spare parts and accessories with their part numbers and costing.
11.4	Certificate of calibration and inspection from factory.

7

Phaco Machine

No.	Item Specifications
1	**Description of Function**
1.1	Phaco multification systems are used to break up and remove cataracts lenses of the eye.
2	**Operational Requirements**
2.1	The units must possess irrigation, irrigation/aspiration, ultrasound, diathermy, and vitrectomy operational modes.
3	**System Configuration**
3.1	Phaco multification machine, complete unit with all standard accessories.
4	**Technical Specifications**
4.1	Phaco multification unit must work on venturi & peristaltic pump and shall provide light weight steel hand piece.
4.2	Ultrasonic mode shall have continuous and pulse mode.
4.3	Shall provide two IA straight hand pieces with 4 piezo electric crystals.

4.4	Machine must have good panel display with digital control good audio, memory set up for surgical parameters.
4.5	Shall have multifunctional foot switch.
4.6	Shall have facilities for Bipolar Coagulation, Phacoemulsification, Aspiration and Anterior Vitrectomy.
4.7	Shall have multiple programmes.
4.8	Digital LCD panel display of parameters.
4.9	Bipolar Coagulation: 2 to 6 watts, foot controlled
4.1	**Phaco multification:**
	□ Ultrasonic tip frequency: 29-60 KHz.
	□ Phaco power in both linear and pulse mode.
	□ Ultrasound pulse rate 1-14 pulses/sec.
	□ Micro flow tip.
	□ Auto priming, auto fluidic and auto tuning.
4.11	Aspiration: 0-500 mmHg linear vacuum.
4.12	Anterior Vitrectomy : 30-600 cuts/min.
4.13	Multifunctional foot pedal with a reflux switch.
5	**Accessories, spares and consumables**
5.1	**Accessories:**
	□ 30 degree US tips: 30 nos.
	□ Tubing: 06 nos.
	□ Silicon Sleeves: 50 nos.
	□ Test chambers: 50 nos.
	□ Diathermy cord: 01 no.
	□ Customized Trolley having wheels with brakes: 01 no.
5.2	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.
6	**Operating Environment**
6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.

6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.
6.3	Suitable UPS with maintenance free batteries, voltage regulation and spike protection for minimum 30 min. back-up shall be supplied with the system.
7	Standards and Safety Requirements
7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND
7.2	CE (93/42 EEC Directives) or USFDA approved product certificate.
7.3	Electrical safety conforms to standards for electrical safety IEC 60601-1 General requirement for Electrical safety of Medical Equipment.
8	User Training
8.1	Must provide user training (including how to use and maintain the equipment).
9	Warranty
9.1	Comprehensive warranty for 2 years.
10	Maintenance Service During Warranty Period
10.1	During warranty period supplier must ensure 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.

8

Trial Sets

No.	Item Specifications
1	The lenses should be20mm in aluminum, amount of 38mm diameter, anodized red for minus and black for plus.
	The Sphere lenses with handle and cylinder without handle
2	Trial lenses of good quality, the case made of melamine polished wood, sturdy and attractive finish.
3	lenses—Spheres
	a. Concave and convex-0.12 b. 0.25 to 4.0 in 0.25 steps
	c. 4.5 to 6.0 in 0.5 steps

	d. 7.0 to 14.0 in 1.0 steps e. 16.0 to 20.0 in 2.0 steps f. 0.25 to 3.5 in 0.25 steps g. 4.0 to 6.0 in 0.5 steps
	e. Prisms-1/2,1,2,3,4,5,6,8,10,12.
4	Accessories-Trial frames, one adult size and one for child, adjustable with slots
	i. -Red glass
	ii. green glass iii. -Pin hole iv. –Slit
	v. -Two blank discs vi. two occlude
	vii. -cross cylinder +/- 0.25 and +/- 0.5

9

Ophthalmoscope

No.	Item Specifications
1	**Description of Function**
1.1	Ophthalmoscope is an instrument designed to visualize the interior of the eye, with the instrument relatively close to the subject's eye and the observer viewing an upright magnified image.
2	**Operational Requirements**
2.1	Compact system, battery operated.
3	**System Configuration**
3.1	Ophthalmoscope set with all standard accessories.
4	**Technical Specifications**
4.1	Ophthalmoscope set shall have diagnostic head threaded on a handle.
4.2	Head shall have wheel with lens dioptres (0 to +20 and 0 to -20), apertures small, large and semi-circle, fixation star and green filter.
4.3	Shall have halogen bulb, 2.5V with bright white light.
4.4	Handle shall have on/off switch.
4.5	Shall works with 2 AA-batteries (1.5V / LR6 alkaline).
5	**Accessories, spares and consumables**
5.1	**Accessories:**
	1 x spare 2.5V halogen bulb.
	1 x set of 2 AA-batteries (1.5V / LR6 alkaline).
	1 x storage case.

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 or TUV approved product certificate.
8	**User Training**
8.1	Must provide user training (including how to use and maintain the equipment).
9	**Warranty**
9.1	Comprehensive warranty for 1 year after acceptance.
10	**Maintenance Service During Warranty Period**
10.1	During warranty period supplier must ensure corrective/breakdown maintenance whenever required.
11	**Documentation**
11.1	User (Operating) manual in English.
11.2	Service (Technical / Maintenance) manual in English.
11.3	List of important spare parts and accessories with their part numbers and costing.
11.4	Certificate of calibration and inspection from factory.

10 **Argon Laser**

No.	Item Specifications
1	(photocogulatr)
2	Argon Laser (400-600 nm)
3	Internal water cooled system
4	Slit lamp
5	power on the cornea 50-1700 Mw
6	Can be connected with a yag laser

11 **Yag Laser**

No.	Item Specifications
1	multiFrequencies
2	Slit lamp Delivery (Solid State Design)
3	1064 nm wavelength
4	cone angle 16 D
5	Motorized Table
6	Can be connected with an argon laser on the same slit lamp
7	Full Range Of Delivery Accessories
8	Focus shift mechanism to shift the beam (contenuously variable)

12

Octopus Perimeter

No.	Item Specifications
1	Target Size : Goldmann III Size
2	Method of Presentation : Rear Projection LED
3	(50 to 10dB)Luminance Range : 0.01 to 1000 Apostilbs
4	Number of Stimuli approx : 133
5	Luminance Accuracy : +/- 0.5dB
6	Colour : Pale Green
7	Duration : 0.2 to 5.0 sec in 0.2 sec increment
8	Interval : 0.3 to 4.9 sec in 0.2 sec increment
9	Spatial Angle : +/-70deg. Horizontal
10	Input power supply: 220 ± 20 % V AC , 50Hz

13

Fundus Camera

No.	Item Specifications
1	**Description of Function**

1.1	A fundus camera or retinal camera is a specialized low power microscope with an attached camera designed to photograph the interior surface of the eye, including the retina, optic disc, macula, and posterior pole i.e. the fundus. A digital camera converts these images into digital images .
2	**Operational Requirements**
2.1	Digital Fundus Camera provides colour and fundus auto fluorescence (FAF) imaging within a small compact design.
3	**System Configuration**
3.1	Digital Fundus Camera, complete with compatible printer for reporting and all standard accessories.
4	**Technical Specifications**
4.1	Field angles 30-60 deg.
4.2	Image captures (Colour, Fluorescein Angiography, Green, Blue and Red).
4.3	Capture: 1 chip sensor colour 1 chip sensor black & white
4.4	Monitor 15 inches LCD for direct display.
4.5	Fixation light: internal and external fixation lights both.
4.6	Exposure interval 0.5 - 1 sec.
4.7	Facility for data storage, data transfer, image archiving, image analysis.
4.8	Instrument table: asymmetrical motorized suitable for patients in wheel chair.
4.9	Supporting latest computer hardware & software.
5	**Accessories, spares and consumables**
5.1	**Accessories:**
	□ Compatible printer for reporting: 01 no.
5.2	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.
6	**Operating Environment**
6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.
6.3	Suitable UPS with maintenance free batteries, voltage regulation and spike protection for minimum 30 min. back-up shall be supplied with the system.

7	**Standards and Safety Requirements**
7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND
7.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.
7.3	Electrical safety conforms to standards for electrical safety IEC 60601-1 General requirement for Electrical safety of Medical Equipment.
8	**User Training**
8.1	Must provide user training (including how to use and maintain the equipment).
9	**Warranty**
9.1	Comprehensive warranty for 2 years.
10	**Maintenance Service During Warranty Period**
10.1	During warranty period supplier must ensure corrective/breakdown maintenance whenever required.
11	**Documentation**
11.1	**User (Operating) manual in English.**
11.2	**Service (Technical / Maintenance) manual in English.**
11.3	**List of important spare parts and accessories with their part numbers and costing.**
11.4	**Certificate of calibration and inspection from factory.**

14

Optical Coherence Tomography

No.	Item Specifications
1	**Description of Function**
1.1	Optical coherence tomography (OCT) is an interferometry, non-invasive optical tomographic imaging technique offering millimetre penetration (approximately 2-3 mm in tissue) with micrometre scale axial and lateral resolution.
2	**Operational Requirements**
2.1	OCT machine automatically scans both eyes and produces simultaneously an OCT scan & red free images.
3	**System Configuration**
3.1	Optical Coherence Tomography, complete unit with all standard accessories.
4	**Technical Specifications**
4.1	**Tomography Imaging:**
	□ Cross sectional imaging of fundus.

	□ Signal type: Optical scattering from tissue.
	□ Signal source: Super luminescent Diode, 820 nm.
	□ Optical power: 750 microwatts at cornea.
	□ Longitude/Axial Resolution: 20 µm in tissue.
	□ Sample size: 2mm heavily calcified tissue.
	□ Scanners: Galvanometric mirrors.
	□ Scan patterns: Line, Circle, Concentric Rings, Radial lines.
	□ Scan pixels: Adjustable from (1024 axial x 128 transverse) to (1024 axial x 768 transverse).
	□ Longitudinal (Depth) range: 2 mm in tissue.
	□ Scan rate: 2.5 msec / A-scan.
	□ Normative database: RNFL (Retinal Nerve Fibre Layer) and Macular thickness.
4.2	**Fundus Alignment, Documentation:**
	□ Signal type: CCD image.
	□ Field of view: 290 x 230.
	□ Viewing method: Flat panel display.
	□ Illumination: Near IR / Red free.
	□ Internal fixation: 32 x 16 LED Dot Matrix.
	□ External fixation: Slit lamp type adjustable blinking LED.
	□ Minimum pupil diameter: 3.2 mm.
	□ Power consumption: 700VA.
	□ Footprint: 120 x 85cm - 48inches x 34inches
4.3	PC workstation with Core i5 CPU with laser printer (colour), 300 GB HDD, DVD Read/Write, Image capture card and software loaded for digitization of images, 2GB RAM and interfaces to RVG and Intraoral digitization.
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.
6	**Operating Environment**
6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.

6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.
6.3	Suitable UPS with maintenance free batteries, voltage regulation and spike protection for minimum 30 min. back-up shall be supplied with the system.
7	**Standards and Safety Requirements**
7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND
7.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.
7.3	Electrical safety conforms to standards for electrical safety IEC 60601-1 General requirement for Electrical safety of Medical Equipment.
8	**User Training**
8.1	Must provide user training (including how to use and maintain the equipment).
9	**Warranty**
9.1	Comprehensive warranty for 2 years.
10	**Maintenance Service During Warranty Period**
10.1	During warranty period supplier must ensure corrective/breakdown maintenance whenever required.
11	**Documentation**
11.1	User (Operating) manual in English.
11.2	Service (Technical / Maintenance) manual in English.
11.3	List of important spare parts and accessories with their part numbers and costing.
11.4	Certificate of calibration and inspection from factory.

15

Synaptophore

No.	Item Specifications
1	**Movement of Optical Tubes:-**
2	**Horizontal:** Adduction + 50 degree, Abduction-40 degree
3	**Vertical:** Hyper 30 degree, Hypo 30 degree
4	**Torsional :** Incyclo 20 degree, Excyclo 20 degree
5	**Slide Illumination:**
	By rheostat controlled 6v Lamp for each slide. After Image Illumination by 12v Lamp
6	**Auto Flashing:**

	Auto flashing of slide illumination either simultaneously or alternatively in rapid and variable models.
7	**Mode & Mode Selection:**
	Five Modes of slide illumination namely Normal, Flashing Right, Flashing R+L & Flashing, can be selected
8	**Haidinger Brush:**
	One Haidinger brush attachment along with rheostat for speed control and switch for direction reversal.
9	**Dimensions:**
	Longitudinal : 40-55cm
	Lateral : 30-40cm
	Vertical : 30-50cm
	Weight : 10-15kg
10	**Power Supply:**
	220 Volt A.C.
11	**Standard Accessories:**
	A set of slides containing 9 pairs
12	**Accessories:**
	One power cord
	One dust Cover
	Spare 6v Bulbs (2 Nos) & 12v Bulbs (2 Nos.)

16 **Cataract Surgical Set**

No.	Item Specifications
1	Standard Set
2	CE or USFDA or TUV approved certificate.

17 **Pan Fundoscopic Lenses**

No.	Item Specifications
1	(+90 , +78) and gonio lenses
2	CE or USFDA or TUV approved certificate.

18

Slit Lamp

No.	Item Specifications
1	**Description of Function**
1.1	The slit lamp is an instrument consisting of a high-intensity light source that can be focused to shine as a slit. It is used in conjunction with a microscope.
2	**Operational Requirements**
2.1	Slit lamp with beam splitter and camera attachment is required.
3	**System Configuration**
3.1	Photo – Slit Lamp with Applanation Tonometer, complete unit with all standard accessories.
4	**Technical Specifications**
4.1	Slit width: 0-14 mm adjustable.
4.2	Slit length: 0.1 –14mm.
4.3	Slit angle: +90 – 90 adjustable in steps continuous.
4.4	Decentring of slit image: +4 to –4 horizontal.
4.5	Diaphragm sizes: 0.2 – 14mm.
4.6	Rotation: 0-180 degrees.
4.7	Light source: Halogen lamps.
4.8	Slit tilt: 0-20 degrees.
4.9	Filters: cobalt blue, red free, neutral, UV protection.
4.1	Binocular microscope with standard objective and eyepieces.
4.11	5X to 40X magnification in steps with drum rotation.
4.12	Field of view: 6 to 40mm.
4.13	Movement: base movement (x, y, vertical), adequate chin rest movement
4.14	Shall come with:
	□ Motorized imported table for slit lamp.
	□ Applanation tonometer.
	□ Beam splitter.
	□ Slit lamp camera.
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.
6	**Operating Environment**
6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.
6.3	Suitable UPS with maintenance free batteries, voltage regulation and spike protection for minimum 30 min. back-up shall be supplied with the system.
7	**Standards and Safety Requirements**
7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND
7.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.
7.3	Electrical safety conforms to standards for electrical safety IEC 60601-1 General requirement for Electrical safety of Medical Equipment.
8	**User Training**
8.1	Must provide user training (including how to use and maintain the equipment).
9	**Warranty**
9.1	**Comprehensive warranty for 2 years.**
10	**Maintenance Service During Warranty Period**
10.1	**During warranty period supplier must ensure corrective/breakdown maintenance whenever required.**
11	**Documentation**
11.1	**User (Operating) manual in English.**
11.2	**Service (Technical / Maintenance) manual in English.**
11.3	**List of important spare parts and accessories with their part numbers and costing.**
11.4	**Certificate of calibration and inspection from factory.**

19

Basic orthopedic set

No.	Item Specifications	Qty.
1	Lane Screw Driver	1

2	Hexagonal screw Driver with self holding sleeve2.5mm tip	1
3	Small Hexagonal Screw Driver 2.5mm tip	1
4	Hexagonal screw Driver with T handle3.5mm tip	1
5	Hexagonal screw driver with sleeve 2.5mm tip	1
6	Hexagonal screw Driver with self holding sleeve3.5mm tip	1
7	Large hexagonal screw driver 3.5mm tip	1
8	Hexagonal screw driver with fiber handle,Box joint type 3.5 mm tip	1
9	Screw driver shaft G C end 2.5mm	1
10	Small plate bender (pair)	1
11	Plate bending plier (roller type)	1
12	Plate bending press	1
13	Screw driver shaft G C end 3.5mm tip	1
14	Large plate bender(pair)	1
15	Plate bender for reconstruction plates	1
16	Small depth gauge	1
17	Large depth gauge	1
18	Large neutral and loaded drill guide	1
19	Counter sink with T - handle with 5.0mm head	1
20	Counter sink with T - handle with 8.0mm head	1
21	Small neutral and loaded drill guide	1
22	DCP Drill guide for 2.7mm screws	1
23	Counter sink with T handle -6 mm head	1
24	Counter sink with G C End-5mm head	1
25	Counter sink with G C End-6mm head	1
26	Quick coupler handle T-Type	1
27	Quick coupler adapter for drill bits	1
28	Tap sleeve -3.5mm	1
29	Counter sink G C End 8.0mm head	1
30	Quick Coupling handle (fiber)	1
31	Quick coupling tap handle-Long T Type	1

32	Tap sleeve -4.5mm	1
33	Double drill sleeve 1.5/1.1mm	1
34	Double drill sleeve2.7/2.0mm	1
35	Drill and tap sleeve combined-2.5mm-3.5mm	1
36	Insert drill sleeve 2.5mm	1
37	Double Drill sleeve 2.0mm-1.5mm	1
38	Drill and tap sleeve combined-2.5mm-3.5mm	1
39	Drill and tap sleeve combined-3.2mm-6.5mm	1
40	Insert drill sleeve 3.2 mm	1
41	Pointed drill guide with 4.5mm tap sleeve &3.2 mm drill sleeve	1
42	Screw removal forceps	1
43	Conical extraction reamer for broken IL Nails	1
44	Screw holding forceps	1
45	hollow mill	1
46	Conical extraction screws for damaged hexagonal head screws- 3.5mm/4.5mm	5
47	Bending plier for plate 2.4mm to 4.0mm	1

20

C-Arm

No.	Item Specifications
1	1 Description of Function
1.1	This equipment is used in orthopaedic fractures for imaging of bone pathology or fractures on display monitor during operation/ reduction of fractures.
2	Operational Requirements For continuous fluoroscopy, image storage and retrieval The system offered shall be a general fluoroscopy/radiology system, it should be a non-digital; non-DICOM compatible type.
3	System Configuration
3.1	X-ray C-Arm Mobile with complete accessories
4	Technical Specifications
4.1	X-Ray Generator
	Microprocessor based, high frequency inverter generator

	Generator Output: not less than 2kW at 100kV
	Fluoroscopic/ Radiographic KV range
	Lower limit shall not exceed 40 KV
	Higher limit shall not be less than 120 KV
	Fluoroscopic mA range
	Lower limit shall be ~0.1 mA
	Upper limit shall be ~9 mA
4.2	X-Ray Tube
	Rotating anode type
	Single focal spot, shall not be more than 0.6 mm
	Nominal voltage: 110 kV
	Anode heat storage capacity not less than 300 KHU
	Inherent filtration should be at least 3 mm Al eq
4.3	Collimator
	Operator controlled automatic collimation
4.4	C-Arm
	· Focus - I.I. Distance shall be at least 100 cm
	· Depth shall be ~ 75cm
	· Horizontal travel at least 200mm
	· Vertical travel at least 450 mm
	· Orbital movement shall be ~125°
	· Swivel range shall be ~12°
	· Rotation about horizontal axis shall be more than +/-180°
4.5	Image Intensifier
	· At least 23 cm input screen with direct coupling with camera
	· Shall be at least 52 lp/ cm
	· Noise reduction, scattered light trap for high contrast dynamics
	· CCD camera technology with ABC and AGC control
4.6	TV Monitor
	· 2 units LCD monitor side by side for live and reference image

	· Shall be at least 43 cm with automatic brightness control
4.7	Image rotation
	· Shall be at least 625 scanning lines at 50 Hz
	· Trolley for 2 display screens and with the alphanumeric keyboard included
	· High resolution and anti glare
4.8	Imaging Modes
	· Fluoroscopy mode shall have the following facilities:
	· Continuous fluoroscopy with last image hold
	· Last image hold with at least two frames image memory
	· Continuous fluoroscopy with image acquisition rate: about 20 frame/second.
	· Hard disk with image storage capacity of at least 30000 images
	· RAM Memory of 256 images
	· Mosaic display of 16 images
	· Zoom (x 2)
	· Measures: at least distances,angles
	· Come with CD/DVD/RW drive
4.9	Video printer for B/W thermal printing on paper, size 20 x 25 cm, resolutions about 300 dpi; The video printer can be placed on the monitor trolley
4.1	Indicate here other features and software functions included in this offer
5	System Configuration Accessories, spares and consumables
5.1	Video printer for B/W thermal printing 01 no.
5.2	Sterilizable textile cover and clips, for the X-ray tube and the Cassette holder for 24 x 30 cm
5.3	All standard accessories/consumables/parts required for the proper operation of the above item shall be included in the offer.
6	Operating Environment
6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6.2	Should work on 220-240V/ 50 Hz AC Single phase fitted with appropriate plugs and sockets.
7	7 Standards and Safety Requirements

	The unit offered shall be certified to meeting the relevant requirements of TUV, CE mark (MDD), FDA and/ or any equivalent quality and safety standards.
	Certificates showing the compliance of this unit offered with any relevant quality and safety standards MUST be submitted with this TSF.
8	User Training
8.1	On site operational training till the familiarity of the system and satisfaction of end user shall be provided.
9	Warranty
9.1	Comprehensive warranty for 2 years.
10	Maintenance Service During Warranty Period
10.1	Preventive & Corrective Maintenance:
	During the warranty period supplier must ensure planned preventive maintenance (PPM) at least 3 nos. in a year along with corrective/breakdown maintenance whenever required.
11	Installation, Inspections and Commissioning
11.1	Supplier must accomplish proper installation and commissioning of the equipment on site.
11.2	Inspections to verify the compliance of the offered equipment as per the specifications
12	Documentation
12.1	User (Operating) manual in English
12.2	Service (Technical / Maintenance) manual in English
12.3	List of important spare parts and accessories with their part numbers and costing.
12.4	Certificate of calibration and inspection from factory.
12.5	Log book with instruction for daily,weekly, monthly and quarterly maintenance checklist.

21

Pneumatic Drill

No.	Item Specifications
1	**Description of Function**
1.1	The drill system is required to saw, cut dissect, curette, abrade, carve and shape the skull bones and the vertebral bodies, bio-metal, bio-plastics, methacrylate, ceramics and the like.
2	**Operational Requirements**

2.1	The drill system must be able to saw, cut dissect, curette, abrade, carve and shape the skull bones and the vertebral bodies, bio-metal, bio-plastics, methacrylate, ceramics and the like. A wide range of attachments and dissecting tips both for routine and microsurgical work required.
2.2	Must run on N2 gas, compressed air, electricity.
3	**System Configuration**
3.1	Pneumatic Drill Machine for Neurosurgery with complete accessories.
4	**Technical Specifications**
4.1	Motor speed must be at least 80,000 rpm, operating pressure up to 100-200 psi (variable).
4.2	Motor must be light weight (preferably less than 70 grams).
4.3	Main motor unit must be detachable from air supply hose.
4.4	Straight and angled attachments of various lengths must be available for Cranial and Spinal surgery.
4.5	Keyless Change of hand piece with mounted tool must be possible.
4.6	Motor must be converted to an angulated position with or without an adaptor.
4.7	Sound level must be very low less than 85db close to the operating field
4.8	Quick coupling attachment must be available.
4.9	Sterilization through Flash or Regular steam autoclave.
4.1	Perforator driver with cutter must be available.
4.11	Must have Saw hand piece (reciprocating, oscillating and sagittal with saw blades) with same system. Foot control for variable speed.
4.12	Compatible low noise medical grade air compressor to run the machine optimally at the required psi.
4.13	Irrigation pump must be available.
5	**Accessories, spares and consumables**
5.1	Shall supply all accessories including:
	Handpieces:
	□ Straight hand piece 120mm: 01 no.
	□ Straight hand piece 90mm: 01 no.
	□ Straight hand piece 160mm: 01 no.
5.2	**Craniotomy Attachment:**
	□ Craniotome hand piece: 01 no.
	□ Fixed Duraguard adult: 01 no.

	□ Fixed Duraguard paediatrics: 01 no.
5.3	**Craniotome Cutter (Bits):**
	□ Craniotome cutter (bits) paediatrics: 20 nos.
	□ Craniotome cutter (bits) adult: 20 nos.
5.4	**Perforator:**
	□ Perforator driver: 01 no.
	□ Cranial perforator, 9X12mm, Hudson type: 02 nos.
	□ Cranial perforator, 6/9mm, Hudson type: 02 nos.
	□ Hudson chuck: 01 no.
5.5	**Burrs:**
	□ **Rosen burr for medium hand piece: 10 nos.**
	□ **Diamond burr for medium hand piece: 10 nos.**
	□ **Diamond burr for large hand piece: 5 nos.**
	□ **Barrel burr for medium hand piece: 10 nos.**
	□ **Barrel burr for large hand piece: 05 nos.**
	□ **Acorn burr for small hand piece: 10 nos.**
	□ **Pin Point burr for medium hand piece: 25 nos.**
	□ **Twist drill for small hand piece: 10 nos.**
5.6	**Micro Sagittal Saw Attachment:**
	□ **Micro sagittal saw pencil shape: 01 no.**
	□ **Saw blade for micro sagittal saw 9/13/0.3/0.3mm: 04 nos.**
5.7	**Storage & Maintenance:**
	□ **Oil spray for high speed motor and hand pieces: 50 nos.**
	□ **Oil spray for perforator: 05 nos.**
	□ **Autoclaveable perforated basket with covering lid with holders for motors, all other accessories**
5.8	**All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.**
6	**Operating Environment**
6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.

6.2	**Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.**
6.3	**Suitable UPS with maintenance free batteries with voltage regulation and spike protection for minimum 30 min. back-up shall be supplied with the system.**
7	**Standards and Safety Requirements**
7.1	**Must submit ISO13485:2003/AC:2007 for Medical Devices AND**
7.2	**CE (93/42 EEC Directives) or USFDA approved product certificate.**
7.3	**Electrical safety conforms to standards for electrical safety IEC 60601-1 General requirement for Electrical safety of Medical Equipment.**
8	**User Training**
8.1	**Must provide user training (including how to use and maintain the equipment).**
9	**Warranty**
9.1	**Comprehensive warranty for 2 years.**
10	**Maintenance Service During Warranty Period**
10.1	**During warranty period supplier must ensure preventive maintenance & corrective/breakdown maintenance whenever required.**
11	**Documentation**
11.1	**User (Operating) manual in English.**
11.2	**Service (Technical / Maintenance) manual in English.**
11.3	**List of important spare parts and accessories with their part numbers and costing.**
11.4	**Certificate of calibration and inspection from factory.**

22

Electric Drill

No.	Item Specifications
1	**Description of Function**
1.1	Drilling machines are used in a number of orthopaedics surgical procedures, for example, in making holes in bones for bone screws and in drilling out the medulla or marrow areas of bones.
2	**Operational Requirements**
2.1	Electric driven, autoclaveable, versatile, forward & reverse mode with oscillating saw hand pieces.
3	**System Configuration**

3.1	Electric Operated Drill & Saw, complete unit.
4	**Technical Specifications**
4.1	Driving unit shall include motor, sturdy stand with wheels.
4.2	Flexible shaft: Minimum length, 2 metres, autoclaveable quick connection.
4.3	**Hand Piece for Drill:**
	□ Cannulated autoclaveable pistol type.
	□ Speed-1200 to 1500 RPM.
	□ Jacob chuck.
	□ Quick coupling chuck (Synthesis type).
	□ Hudson's chuck.
	□ Chuck for K-wire.
	□ Forward & reverse options.
4.4	**Hand Piece for Reamers:**
	□ Cannulated autoclaveable pistol type.
	□ Speed-400 RPM, non-damaging to the bone endosteal blood supply.
	□ Chuck for cannulated reamers.
	□ Forward & reverse options.
4.5	**Sagittal Saw:**
	□ Autoclaveable pistol type.
	□ Easy Attachments of blades (without Instrument).
	□ 2 Blades each of different size routinely used in Orthopaedic surgery (Total nos. 10).
	□ ACL Blades for commonly used sizes.
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.
6	**Operating Environment**
6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.

7	**Standards and Safety Requirements**
7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND
7.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.
7.3	Electrical safety conforms to standards for electrical safety IEC 60601-1 General requirement for Electrical safety of Medical Equipment.
8	**User Training**
8.1	Must provide user training (including how to use and maintain the equipment).
9	**Warranty**
9.1	Comprehensive warranty for 2 years.
10	**Maintenance Service During Warranty Period**
10.1	During warranty period supplier must ensure corrective/breakdown maintenance whenever required.
11	**Documentation**
11.1	User (Operating) manual in English.
11.2	Service (Technical / Maintenance) manual in English.
11.3	List of important spare parts and accessories with their part numbers and costing.
11.4	Certificate of calibration and inspection from factory.

23

Dynamic Eondyla Screw (DES) Set

No.	Item Specifications
1	Standard Set
2	CE or USFDA or TUV approved certificate.

24

Dynamic Hip Screw (DHS) Set

No.	Item Specifications	Qty.
1	Rasp for Austin Moore-Standard Stem	1
2	Rasp for Austin Moore -Broad Stem	1
3	Rasp For Thompson - Standard Stem	1
4	Murphy Lane Bone Skid	1
5	Rasp for Austin Moore -Narrow Stem	1

6	Rasp for Austin Moore - Extra Long Stem	1
7	Rasp For Thompson - Narrow Stem	1
8	Moore Hollow Chisel	1
9	Moore Hollow Chisel with Fibre Handle - Standard	1
10	Judet Auger Extractor	1
11	Impactor- Nylon Faced	1
12	Extractor with Two Hooks	1
13	Moore Hollow Chisel with Fibre Handle - Extra Large	1
14	Measuring Gauge for Prosthesis	1
15	Impactor - nylon Faced, Large Tip	1
16	Spare Hook For Extractor	1
17	Rasp with Tommy Bar for Bipolar Prosthesis	1
18	Pencel Reamer - For Bipolar Prosthesis	1
19	Tapered Reamer -For Bipolar Prosthesis	1
20	Slotted Reamer -For Bipolar Prosthesis	1
21	Bipolar Trial Stem S.S	1
22	Trial Cup	1
23	Trial Cup Holder	1
24	Impactor - For Bipolar Prosthesis	1
25	Hook for Extraction of Bipolar Stem	1
26	Charnley’s TH cup holder with pusher	1
27	Charnley slotted reamer	1
28	Charnley tapered reamer	1
29	Charnley’s retractor with weight and chain	1
30	Charnley’s pin retractor	3
31	Charnley’s cup gauge	1
32	Charnley’s Long curette-spoon, ring	1 each
33	Acetabular reamer-43,45,47,49,51,53,55,57,59 with shaft	1 each
34	Femoral rasp five sizes	1 each

25

Orthopedic Table

No.	Item Specifications
1	**Description of Function**
1.1	Fracture table to use in orthopaedic surgical procedures.
2	**Operational Requirements**
2.1	Watson Jones type design fracture table.
3	**System Configuration**
3.1	Fracture Table with all attachments.
4	**Technical Specifications**
4.1	The table must confirm to Watson Jones type design.
4.2	**Dimensions:**
	Approx.(+/- 10%): 762mm height, 1829mm length, 762mm breadth, with leg size 76x76 mm & cross bar 76x25mm.
4.3	Material: Mild steel
4.4	The table shall have epoxy powder coated washable paint finish.
4.5	The table must be provided with all necessary attachments.
	Bidder shall specify the details of attachments.
5	**Accessories, spares and consumables**
5.1	All standard accessories/consumables/parts required for the proper operation of the above item shall be included in the offer.
6	**Operating Environment**
6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
7	**Standards and Safety Requirements**
7.1	Must submit ISO 9001 or ISO13485:2003/AC:2007 for Medical Devices AND
7.2	CE or USFDA approved product certificate.
8	**Warranty**
8.1	Comprehensive warranty for 1 year.
9	**Maintenance Service During Warranty Period**

9.1	Standard warranty conditions are applicable.
10	**Installation and Commissioning**
10.1	The supplier must accomplish proper commissioning of the item onsite.
11	**Documentation**
11.1	User and/or service manual shall be supplied in English.

26 **General orthopedic set**

No.	Item Specifications
1	Standard Set
2	CE or USFDA or TUV approved certificate.

27 **Interlocking Set**

No.	Item Specifications
1	Standard Set
2	CE or USFDA or TUV approved certificate.

28 **K wire Set**

No.	Item Specifications
1	Standard Set
2	CE or USFDA or TUV approved certificate.

29 **K-Nails Set**

No.	Item Specifications
1	Standard Set
2	CE or USFDA or TUV approved certificate.

30 **Plaster Saw**

No.	Item Specifications
1	**Description of Function**
1.1	These instruments are used in orthopaedic surgery for cutting of plaster of paris/synthetic cast applied for fractured bones.
2	**Operational Requirements**
2.1	System complete with essential items like one plaster spreader, shear shall be supplied.
3	**System Configuration**
3.1	Plaster Cutting Saw, complete unit with all standard accessories.
4	**Technical Specifications**
4.1	Shall have light weight & heavy duty.
4.2	Must have shock proof fibre glass body.
4.3	Must be capable of cutting pop & fibre glass (synesthetic).
4.4	Shall have long life Teflon coated blade.
4.5	Must be supplied with 63mm diameter blade.
5	**Accessories, spares and consumables**
5.1	**Accessories:**
	□ Blade 63mm: 10 nos.
	□ Storage case to accommodate the plaster cutter and other accessories.
5.2	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.
6	**Operating Environment**
6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6.2	Power supply: 220 – 240 VAC, 50Hz Single Phase fitted with appropriate plug. The power cable must be at least 3 metre in length.
7	**Standards and Safety Requirements**
7.1	Must submit ISO 9001 or ISO13485:2003/AC:2007 for Medical Devices AND
7.2	CE or USFDA approved product certificate.
7.3	Electrical safety conforms to standards for electrical safety IEC 60601-1 General requirement for Electrical safety of Medical Equipment.

8	**User Training**
8.1	Must provide user training (including how to use and maintain the equipment).
9	**Warranty**
9.1	Comprehensive warranty for 2 years.
10	**Maintenance Service During Warranty Period**
10.1	During warranty period supplier must ensure preventive maintenance & corrective/breakdown maintenance whenever required.
11	**Documentation**
11.1	User (Operating) manual in English.
11.2	Service (Technical / Maintenance) manual in English.
11.3	List of important spare parts and accessories with their part numbers and costing.
11.4	Certificate of calibration and inspection from factory.

31 **Plaster trolley**

No.	Item Specifications
1	Standard
2	CE or USFDA or TUV approved certificate.

32 **Plates Set**

No.	Item Specifications
1	Standard Set
2	CE or USFDA or TUV approved certificate.

33 **Screws set**

No.	Item Specifications
1	Standard Set
2	CE or USFDA or TUV approved certificate.

34 **Splint**

No.	Item Specifications
1	Standard
2	CE or USFDA or TUV approved certificate.

35 **Traction Bed**

No.	Item Specifications
1	Standard
2	CE or USFDA or TUV approved certificate.

36 **Traction kit**

No.	Item Specifications
1	Standard kit
2	CE or USFDA or TUV approved certificate.

37 **Calposcopy**

No.	Item Specifications
1	Standard
2	CE or USFDA or TUV approved certificate.

38 **Gastro, Duodeno and Colonoscopy**

No.	Item Specifications
1	**Description of Function**
1.1	Combined gastroscopy (Gastro, Duodeno and Colonoscopy) is an examination of oesophagus (gullet), stomach and the first part of your small bowel called the duodenum.
	The second procedure is called a colonoscopy. This is an examination of large bowel (colon).
1.2	The instrument used for this is called Gastro, Duodeno and Colonoscopy.
2	Operational Requirements

2.1	The video endoscopy system, including camera system, all video endoscopes and all other peripheral equipment offered must be of the same BRAND and same MANUFACTURER. All video endoscopes offered in this TSF must also be able to share one common camera system in order to promote sharing of such camera system and hence increase its utilisation. All bidders must comply with this condition.
3	**System Configuration**
3.1	Video Gastro, Duodeno, Colonoscope with Camera system, LED light source and with complete accessories.
4	**Technical Specifications**
4.1	**Video Gastroscope:**
	□ Field of View : 130 - 140 deg.
	□ Observation Range: 5 - 100mm
	□ Distal end diameter of not more than 10.5 mm
	□ Direction of view must be zero degree.
	□ Insertion tube diameter of less than 10 mm.
	□ Angulations of tip up at least 200 degrees and down 90 degrees with right and left movement of at least 100/100 degrees.
	□ Inner diameter of instrument channel more than 2.5mm
	□ Working length not less than of 1000mm
	□ Total length not less than of 1300mm
	□ Must be compatible with the video system specified
4.2	**Video Colonoscope:**
	□ Field of View : 130 - 140 deg.
	□ Observation Range: 5 - 100mm
	□ Distal end diameter of not more than 13 mm
	□ Direction of view must be zero degree.
	□ Insertion tube diameter of less than 12 mm.
	□ Angulations of tip up at least 180 degrees and down 180 degrees with right and left movement of at least 160/160 degrees.
	□ Inner diameter of instrument channel minimum 3.5mm
	□ Working Length: 1650 - 1700mm

	□ Total length: 1950 - 2000mm
	□ Must be compatible with the video system specified
4.3	**Video Duodenoscope:**
	□ Field of vision more than 100 deg.
	□ Direction of view 5deg backward / oblique.
	□ Depth of view app 5-50 mm
	□ Distal end outer diameter not exceeding 13 mm
	□ Insertion tube outer diameter : 11 mm
	□ Bending angulation must be at least up 120 deg., down 90 deg., Right 110 deg. Left 90 deg.
	□ Instrumental channel not less than 4 mm
	□ Working length not below 1200 mm
	□ Total length - 1500 mm
	□ Compatible with video system specified.
4.4	**Video processor with light source & Monitor**
4.5	Digital Single-Chip Medical-Video-Camera – colour system PAL, NTSC with integrated Image Processing Module.
4.6	The video processor offered shall be compatible with all type of video scopes, such as video gastroscope, video colonoscope, video duodenoscope, paediatric scope, double channel scopes, therapeutic scopes and double balloon enteroscope for small bowel intervention. It shall be compatible with all type of flexible endoscopes by using a suitable adapter.
4.7	Fully compatible to the colour systems PAL & NTSC.
4.8	Controls for colour adjustment, to enhancement and balance settings.
4.9	Controls to freeze images enhance a portion of frozen image (zoom & post-processing).
4.1	Patient and physician data input key board.
4.11	Must have Automatic Gain Control (AGC) illumination adjustment function.
4.12	Multiple settings allow the user to select the preferred level of image enhancement.
4.13	**Light Source & Fiberoptic Cable:**
	□ LED light source.
	□ Lamp life more than 50000 hrs.
	□ Light intensity comparable to 300W Xenon

	□ Colour temperature 6000 degree Kelvin
	□ The intensity of light shall be continuously adjustable. The adjustment shall be in both Manual and AUTO mode.
	□ The light source shall have air pump must have selectable pressure settings.
4.14	**Monitors:**
	□ Digital Flat screen high resolution 21” colour LCD / TFT monitor.
	□ Colour system: PAL/NTSC.
	□ Input signal: Analog (RGB analog), Digital (DVI standard 1.0).
4.15	**Suction Unit:**
	Suction unit designed for endoscopic and surgical suction with variable suction control, strong suction capability, with a 2 litre autoclavable jars.
	Bidder shall indicate the suction pressure here.
4.16	**Manual scope disinfector:**
	□ Washer/disinfector for disinfection of endoscopes, both flexible and video endoscopes.
	□ The unit shall be mobile on castors.
	□ Dimensions approx.: 100w x500d x 900mmh
	□ Weight: ~30kg
	□ Tray Capacity: min. 6 L
4.17	**Ultrasonic cleaner for endoscopic accessories:**
	The unit shall be specially designed for cleaning of endoscopic accessories.
4.18	**Endoscopy Trolley:**
	□ Must have all different racks for complete mounting of video endoscopy system components.
	□ Must have lockable castor wheels for easy & smooth movement of trolley from one place to another place.
	□ Must have hanger in-built for hanging of scopes.
5	**Accessories, Spare Parts and Consumables**
5.1	**Accessories for Video Gastroscope:**
	□ **Biopsy forceps: 2pc (one type each)**
	□ **Injection needle for sclerotherapy: 2pc**
	□ **Dialators:1**

	□ Foreign body grasper: 1
5.2	Accessories for Video Colonoscope:
	□ Biopsy forceps: 2 pc (one type each)
	□ Polypectomy snares: 2 set
	□ Bite Block, 1 piece per each scope
5.3	Accessories for Video Duodenoscope:
	□ Biopsy forceps, 2 pcs (one type each)
	□ Foreign body removal forceps, 1 pc
	□ Haemostastasis injection needle, 1 pc
	□ Haemostastasis loops, 1 pc
	□ Gastric Balloon Dilatation Device, 1 pc
	□ Papillotomy knife, 1 pc
	□ Bite Block, 1 piece per each scope
5.4	Other Accessories:
	□ CD/DVD Recorder
	□ Colour Video Printer
	□ 2 boxes of 100 pieces colour video printing paper.
5.5	All standard accessories/consumables/parts required for the proper operation of the above item shall be included in the offer.
5.6	All standard Maintenance tools and cleaning /lubrication materials where applicable shall be included.
5.7	One set of the standard maintenance accessories, for example, cleaning brushes, rubber seal, cleaning cap, cleaning adapter silicone oil EO gas sterilisation venting cap, shall be included for each scope.
6	Operating Environment
6.1	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metres in length.
6.2	UPS of suitable rating with voltage regulation, spike protection and maintenance free batteries for 30 minutes backup.
7	Standards & Safety Requirements

7.1	**Must submit ISO13485:2003/AC:2007 for Medical Devices AND**
7.2	**CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.**
7.3	**Shall meet IEC 60601-2-18 Medical Electrical Equipment PART 2: Particular Requirements for the Safety of ENDOSCOPIC Equipment.**
8	**User Training**
8.1	**The Supplier shall conduct user training for this equipment to enable operators to use the equipment properly. The training shall include the use of all operational functions of the equipment, as well as routine checks and maintenance expected by users.**
9	**Warranty**
9.1	**Comprehensive warranty for 2 years from acceptance.**
10	**Maintenance Service During Warranty Period**
10.1	**During the warranty period supplier must ensure planned preventive maintenance (PPM) along with corrective/breakdown maintenance whenever required.**
11	**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.**

3 .. 46

Cystoscopy

No.	Item Specifications
1	**Description of Function**
1.1	Laparoscope is used for minimally invasive surgery and comprises of telescope and associated instruments and units.
1.2	Cystoscopy (cystourethroscopy) is a diagnostic procedure that is used to look at the bladder (lower urinary tract), collect urine samples, and examine the prostate gland.
	Cystoscopy an endoscopic procedure is used by urologists to examine the entire bladder lining and take biopsies of any areas that look questionable.
2	**Operational Requirements**
2.1	Shall supply the set for Laparoscopic surgery which have units/groups of items/components as

	Mentioned in the technical specifications.
2.2	Cystoscope (urethroscope) set of instruments uses a lighted tip for guidance to aid in diagnosing urinary tract disease and prostate disease. This surgical test also enables biopsies to be taken or small stones to be removed by way of a hollow channel in the cystoscope.
3	**System Configuration**
3.1	Laparoscopic Instrument set with Adult Cystoscope and Resectoscope, complete system and with all standard accessories.
4	**Technical Specifications**
4.1	**Telescopes:**
4.1.1	Straight forward Telescope 0o enlarged view diameter 10mm, length 30cm. autoclaveable: 01 no.
4.1.2	Telescopes shall have low risk of object bum.
4.1.3	Shall have colour coded for identification.
4.1.4	Shall have fibreoptic light transmission incorporated.
4.2	**Reusable Hand Instruments:**
4.2.1	Hassan's Trocar, 10.5mm- 1 No.
4.2.2	Trocar , size 10mm- 1 No.
4.2.3	Trocar, size 5mm- 3 Nos.
4.2.4	Maryland dissecting forceps 5mm dia, jaws with size 5-10mm for unipolar coagulation- 2 Nos.
4.2.5	Gall bladder fundus holding Allis type grasping forceps 5mm dia, jaws with size 5-10mm and with fine teeth- 1 No.
4.2.6	Gall bladder neck holding Allis type grasping forceps 5mm dia, jaws with size 5mm and with fine teeth- 1 No.
4.2.7	Metzenbaum scissor for unipolar coagulation, size 5mm- 1 No.
4.2.8	Hook scissor for unipolar coagulation, size 5mm with L shaped jaw-1 No.
4.2.9	Two ways Suction and Irrigation cannula: Size 5mm, length 36cm, used with suction and irrigation handle and hand piece with stopcock- 2 Nos.
4.2.10	Gall Bladder extractor size 10mm dia, jaws with size 10mm and with big teeth- 1 No.
4.2.11	Fenestrated grasping forceps size 5mm- 1 No.
4.2.12	Needle aspirator size 5mm- 1 No.
4.2.13	Needle holder size 5mm-1 No.

4.2.14	Clip Applicator-Medium Large, 10mm- 1 No.
4.2.15	Reduction Sleeves/Extractors: From 10/11mm to 5mm, metallic- 2 Nos.
4.2.16	Reducers: From 10/11mm to 5mm- 2 Nos.
4.2.17	High frequency cord- 2 Nos.
4.3	**Cystoscope Telescope: 2 nos.**
	30 degree Telescope of size 4mm, length 30cm (+/- 3cm).
	Must have very high quality of rod lens system.
	Must have fibre optic light transmission incorporated.
	The telescope must be autoclaveable.
4.4	**Cystoscope Sheath: 1 no.**
	Cystoscope sheath with luer lock connection of two different sizes must be provided
	16 Fr., 17 Fr., 18.5 Fr. and 20 Fr. sheath one each with slot for instrument.
	The sheath must be marked and graduated.
4.5	**Telescope Bridge: 1 no.**
	Telescope bridge with one instrument channel to fit with the cystoscope.
4.6	**Flexible Grasping Forcep: 1 no.**
	7 Fr. grasping forcep shall be provided.
4.7	**Flexible Biopsy Forcep: 1 no.**
	7 Fr. Biopsy forcep shall be provided.
4.8	**Rigid Biopsy and Grasping Forcep: 1 no.**
	Optical Rigid Biopsy forcep compatible with 20 Fr. Cystoscope sheath shall be provided.
4.9	**Toomey syringe 100 CC: 1 no.**
	Toomey syringe of 100 cc with adaptor to fit with the sheath shall be provided.
4.1	Flexible Scissor: 1 no.
4.11	**ELLIK Evacuator: 1 no.**
	ELLIK Evacuator with spare rubber bulb and adaptor shall be provided.
4.12	**Urethrotome Sheath: 1 no.**
	21 Fr. optical Urethrotome sheath with one channel shall be provided.
4.13	**Cold Knife: 2 nos**.
	Straight cold knife shall be provided.

4.14	**Resectoscope Sheath: 1 no.**
	□ 26 Fr. continuous irrigation Resectoscope sheath with ceramic beak shall be provided with set of silicon tube.
	□ Sheath must be provided with deflecting obturator
4.15	**Working Element Set: 1 no.**
	Working element set passive type with standard accessories like, Kollins knife, HF cord, protection tube, cutting loop shall be provided.
4.16	Cutting loop 24 Fr.: 12 nos.
4.17	**Formalin Chamber: 1 No.**
	Formalin chamber made of Virgin Acrylic 6mm thickness of appropriate size preferably with three trays for sterilizing the laparoscope.
4.18	**Sterilization/Cidex Tray: 2 Nos.**
	Sterilization/Cidex tray with cover for storage of telescopes, hand instruments and other accessories of suitable sizes.
4.19	**Single Chip Camera System: 1 No.**
4.19.1	Single chip endovision camera system with digital image processor module.
4.19.2	Image sensor: ½" CCD chip.
4.19.3	Pixels (approx.): 752 (H) x 582 (V).
4.19.4	Resolution: 450 lines horizontal.
4.19.5	AGC: Microprocessor based.
4.19.6	Minimum sensitivity: 3 lux
4.19.7	Exposure control: 1/50 sec-1/1000 sec.
4.19.8	Shall have freezing function & automatic filter function.
4.19.9	Programmable function keys on camera head for functions like automatic white balance, gain control, brightness control etc.
4.19.10	Integrated optical parfocal zoom lens: 25-50mm
4.19.11	DV output, S-VHS and composite video output.
4.19.12	Shall have accessories output to control external devices like video printer from the buttons.camera head
4.19.13	Focus control, digital zoom.
4.2	**High Resolution Video Monitor: 1 No.**

4.20.1	Shall have colour system PAL/ NTSC.
4.20.2	Compatible with endovision camera of any make.
4.20.3	Screen size diagonal 19-20” Ultra high resolution at least 1920x1200 pixels, flat screen, TFT/LCD.
4.20.4	Max horizontal screen resolution in lines > 1000 lines.
4.20.5	Monitor menu displays all controls, capabilities and operations via curser keys, user defined captions, easy to use and highly dependable.
4.20.6	Must be composite, have multiple video input and out puts – BNC, RGB, Y/C, SDI, DVI etc. Power supply of 220-240 VAC. 50Hz.
4.20.7	Must have facilities for recording the data on computer /digital video recorders/CD.
4.20.8	On screen menu for monitor setting, compact and light weight, drip water protected dust proof, all connecting cables to be supplied.
4.20.9	Brightness, at least 400cd/m2, contrast ratio 700.
4.20.10	Antireflection coated front glass.
4.20.11	Must have consistent illumination level.
4.20.12	Drip water protected, dustproof housing.
4.20.13	Must have facility for up gradation and must be compatible with lower models.
4.21	**Xenon Light Source and Light Cable: 1 unit**
4.21.1	Must be high intensity Xenon light source.
4.21.2	Shall be light in weight.
4.21.3	Shall have 300 watts bulb minimum 1000 hrs. of operation.
4.21.4	Must have colour temperature more than 6000K.
4.21.5	Monitoring of lamp function.
4.21.6	Must have display of lamp service life.
4.21.7	Facility of standby mode.
4.21.8	Must have built in Antifog Pump.
4.21.9	Light intensity adjustment continuously adjustable from 0 to 100% manually as well as fully automatically by the cameras video output signal.
4.21.10	Universal jaw assembly to adapt cable of any make of fibre optic cable without adapter.
4.21.11	Light Cable: Fibre optic light cable of size 4.8mm or as appropriate with the system in diameter and length 250-300 cm, the same must also be heat-resistant.

4.22	**Electronic CO2 Insufflator: 1 unit**
4.22.1	Microprocessor controlled, fully automatic gas fill.
4.22.2	LCD based central display monitor with multilingual text & graphics.
4.22.3	Must have an adjustable flow rate of 0 to 30-40 litres per minute and a pressure range adjustable between 0-30 mm Hg.
4.22.4	Pin index connection.
4.22.5	Silicon autoclaveable tubing with luer lock attachment.
4.22.6	Soft approach pressure control for safe recovery of abdominal pressure.
4.22.7	The insufflations must have an excellent operational safety to the patient and the surgeon and it must be easy to use.
4.22.8	Optical and acoustic warning signals for pressure exceeding set limits.
4.22.9	Provision for preheating gas to body temperature.
4.22.10	The unit shall come with:
	CO2 equipment with mains cord, a high - pressure hose with an appropriate length, universal wrench. The unit must be provided with 10 sterile disposable CO2 gas filters.
4.22.11	**CO2 Cylinder:**
	Shall provide one large size cylinders with required regulators and connecting pipe to the insufflator with pressure gauge.
4.23	**Suction and Irrigation: 1 unit**
4.23.1	**The suction and irrigation unit shall be a combined unit for performing laparoscopy surgeries.**
4.23.2	**Irrigation pressure control between 0-400 mm Hg.**
4.23.3	**Suction pressure control between 0.75 bar.**
4.23.4	**Main unit with digital display.**
4.23.5	**Overflow protection on suction bottles.**
4.23.6	**Control from control panel and/or foot pedal.**
4.23.7	**Shall come with:**
	Silicone suction tubings set, reusable pressure domes, bacterial filter and sterilizeable, polycarbonate unbreakable suction and irrigation bottles of capacity minimum1.5 litres with cap.
4.24	**Electrosurgical Generator (Monopolar, Bipolar & in saline mode) :**
4.24.1	**High frequency microprocessor/microcontroller based digitally controlled device.**

4.24.2	**Shall have approx. 6.5” or more touch screen for convenient use. There shall be no extra button for confusing.**
4.24.3	**Shall be suitable for Open, Laparoscopic, Endoscopic, Urology & Gynaecology procedures.**
4.24.4	**Full range of monopolar & bipolar modes for general surgery.**
4.24.5	**EFFECTS’ mode to fine tune energy delivery to make even finer adjustments for precise tissue management.**
4.24.6	**Tissue-adaptive power output for controlled, precise and fast cutting.**
4.24.7	**Quick memory function to set and recall settings easily.**
4.24.8	**Automatic smoke evacuation function when combine with insufflators providing a ‘HD’ view of the cavity.**
4.24.9	**Universal connector with instrument recognition URO & GYN.**
4.24.10	**Saline detection ensuring the right medium is used in resection-in-saline.**
4.24.11	**Saline modes for improved ignition and vaporization performance.**
4.24.12	**Shall have double pedal foot switch.**
4.24.13	**Automatic activation of coagulation current as soon as coagulation electrode touches tissue with both branches.**
4.24.14	**Activation of HF Functions possible via footswitch or manual control switch.**
4.24.15	**Connecting sockets for unipolar and bipolar application can be selected according to individual requirements.**
4.24.16	**Switchover function enables switching between two modes within a user programme via a footswitch from the sterile area.**
4.24.17	**Readily plug & play most common bipolar & monopolar diathermy instruments with international 4mm single & 3pin instruments, 5mm & 8mm single pins e.g. Bovie connectors/ banana plugs.**
4.24.18	**Maximum Bipolar saline coagulation at 150-250 watt, bipolar saline cut-100 watt, bipolar saline –c- cut at 300 watt.**
4.24.19	**Unipolar maximum at 200-300 watt where standard coagulation at 200 watt, forced coagulation at 120 watt, spray coagulation at 120 watt.**
4.24.20	**LF / HF leakage current monitor.**
4.24.21	**Neutral Electrode safety system.**
5	**Accessories, spares and consumables**

5.1	**Video Cart: 01 no.**
	□ Customized, imported, epoxy powder coated/ stainless steel video cart.
	□ Portable on 4 antistatic, antirust, 360o swivel dual castors, 2 with brakes.
	□ Shall have required number of shelves for housing all the units of the set.
	□ Adjustable arm for fixation to either side for fixing the flat monitor.
	□ One drawer unit with lock and key.
	□ Shall have excellent cable management system.
	□ Power box with concealed wiring for providing electrical connections of proper rating to all the units.
5.2	**All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.**
6	**Operating Environment**
6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6.2	**Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.**
6.3	**Suitable UPS with maintenance free batteries, voltage regulation and spike protection for minimum 30 min. back-up shall be supplied with the system.**
7	**Standards and Safety Requirements**
7.1	**Must submit ISO13485:2003/AC:2007 for Medical Devices AND**
7.2	**CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.**
7.3	**Shall be certified to be meeting safety standard IEC 60601-2-18 part 2 Particular requirements for the safety of Endoscopic Equipment.**
8	**User Training**
8.1	**Must provide user training (including how to use and maintain the equipment).**
9	**Warranty**
9.1	**Comprehensive warranty for 2 years after acceptance.**
10	**Maintenance Service During Warranty Period**
10.1	**During warranty period supplier must ensure preventive maintenance and corrective/breakdown maintenance whenever required.**

11	**Documentation**
11.1	**User (Operating) manual in English.**
11.2	**Service (Technical / Maintenance) manual in English.**
11.3	**List of important spare parts and accessories with their part numbers and costing.**
11.4	**Certificate of calibration and inspection from factory.**

47

Lithotripsy

No.	Item Specifications
1	Description of Function
1.1	An extracorporeal lithotripter is a device that is used to fragment urinary (i.e., kidney, ureter, and bladder) and biliary tract stones. These devices are placed at the stone location via an endoscope or laparoscope.
2	Operational Requirements
2.1	System complete with all accessories and hand piece is required
3	Technical Specifications
3.1.1	Extracorporeal Lithotripter
	a. Master control unit includes:
	i. Holder for the stone catcher -1
	ii. Electric foot pedal-1
	iii. Instruction manual -1
	iv. Spare tube for the pneumatic hand piece without connector -1 stone catcher set (with sterile suction tube, length 3m) - 1
	vi. Carton package- 1
	b. Ultrasound hand piece set includes:
	i. Ultrasound hand piece- 1
	ii. Silicone seals-1
	iii. Wrench 5mm-1
	iv. Transportation case -1
	c. Pneumatic hand piece set includes:
	i. Pneumatic hand piece-1

	ii. Adjustment interface-1
	iii. Probe cap -1
	iv. Compressed air tubing for hand piece-1
	v. Silicone probe guide set (packing unit 12 silicones) -1
	vi. Transportation case -1
	d. Pneumatic Probes includes:
	i. Probe, 2mm, length 425mm -1
	ii. Probe, 1mm, length 605mm-1
	iii. Probe, 0.8mm, length 605mm -1
	iv. Probe, 1mm, length 569mm for combination with 1 Ultrasound probes 3.3mm and 3.8mm-1
3.2.2	Probes Set
	a. Probe 3.8mm or 3.3mm for the ultrasound hand piece-5
3.3.3	Compressed air tubing
	a. Compressed air tube 1m for the compressor-1
	b. Compressed air tube 3m for the compressor-1
	c. Compressed air tube dragger -1
	d. Compressed air tube france-1
4	System Configuration Accessories, spares and consumables
4.1	System as specified-
4.2	1. IPP Treatment Kit -1
	2. Gel pad -2
	3. Scanner Advance Sono kit Linear 10/70mm-1
	4. Collecting container -1
	5. Transducer 7.50MHz linear array-1
	6. Main Cord-1
	7. Compressor-1
	a. 8 bar/ 220V
	8. Vacuum Set
	a. Vacuum body with tub-valve (silicone tube 15cm with connector) - 1
	b. Suction set for Vacuum (silicone tubing with 2 connecting pieces) 1

	9. Vacuum Suction tube
	a. Suction tube for Vacuum 1.6mm -1
	b. Probe 0.8mm, length 668mm -1
	c. Suction tube for Vacuum, 4mm -1
	d. Suction tube for Vacuum, 3.5mm-1
	e. Probe 1.6mm, length 453mm -1
4.3	4.3 All standard accessories/consumables/parts required for the proper operation of the above item shall be included in the offer.
5	5 Environmental factors
5.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6	Power Supply
6.1	Must work on 220-240V/ 50 Hz AC Single phase fitted with appropriate plugs and sockets. The power cable must be minimum 3 metres long.
6.2	Suitable UPS with maintenance free batteries for minimum 30 min.back-up should be supplied with the system.
7	Standards, Safety and Training
7.1	Must be USFDA or CE or TUV
7.2	Manufacturer must have ISO certification for quality standards.
7.3	Electrical safety conforms to standards for electrical safety IEC 60601-1 General Requirements for safety.
7.4	Comprehensive warranty for 2 years.
7.5	Comprehensive training for staff and support services till familiarity with the system.
8	Documentation
8.1	User/Technical/Maintenance manuals to be supplied in English.
8.2	Certificate of calibration and inspection.
8.3	List of important spare parts and accessories with their part numbers and costing.

48

Litholopaxy set

No.	Item Specifications
1	Standard Set

2	CE or USFDA or TUV approved certificate.

49

Segmodscope

No.	Item Specifications
1	Standard
2	CE or USFDA or TUV approved certificate.

50

Baby Cot

No.	Item Specifications
1	**Description of Function**
1.1	Basic baby cot on castors for use in wards and delivery rooms of healthcare facilities.
2	**Operational Requirements**
2.1	Mobile baby cot with removable bassinet.
3	**System Configuration**
3.1	Baby cot with bassinet on castors.
4	**Technical Specifications**
4.1	Mounted on 4 swivel anti-static castors, of which two with brakes.
4.2	With padded mattress, detachable for easy cleaning.
4.3	Mattress cover removable via side zipper.
4.4	Basinet sets and removes smoothly from cart frame.
4.5	**Materials:**
	□ High resistance to corrosion (tropical environment).
	□ Frame: Epoxy oven baked powder coated tubular steel.
	□ Mattress: High-density polyurethane foam with density approx. 20 kg/m3.
	□ Cover: Plastic, flexible highly tear resistant, anti-static, flame retardant, disinfectant- and liquid proof, washable.
4.6	**Dimensions, Approx. + 10%:**
	□ Frame: 800 x 400 x 900mm (l x w x h).
	□ Bassinet: 800 x 400 x 300mm (l x w x h).

	□ Frame, diameter: 30mm.
	□ Mattress: 70mm (h)
	□ Swivel castors, diameter: 50mm.
	□ Carrying capacity: 30kg.
5	**Accessories, spares and consumables**
5.1	All standard accessories/consumables/parts required for the proper operation of the above item shall be included in the offer.
6	**Operating Environment**
6.1	The system offered must be designed to store and be operated normally under the condition include Climate, temperature and relative humidity for Sudan.
7	**Standards and Safety Requirements**
7.1	Must be USFDA or CE or TUV approved product
7.2	This unit shall be certified to meet ISO9001 and/or ISO14971 and/or ISO 13485:2003/AC: 2007.
8	**Warranty**
8.1	Warranty for 1 year.
9	**Maintenance Service During Warranty Period**
9.1	Standard warranty conditions are applicable.
10	**Installation and Commissioning**
10.1	Must supply preassembled unit, ready to use.
11	**Documentation**
11.1	**User's manual shall be supplied in English.**

51

Infant Incubator

No.	Item Specifications
1	**Description of Function**
1.1	An infant incubator provides a closed, controlled environment that warms an infant by circulating heated air over the skin. The heat is then absorbed into the body by tissue conduction and blood convection. Ideally, both the skin and core temperatures must be maintained with only minor variations.
2	**Operational Requirements**

2.1	High quality with humidity and servo controlled double walled with cabinet incubator. The quality of the material shall be very high and crystal transparent.
3	**System Configuration**
3.1	Infant Incubator Servo Control, complete unit with all standard accessories.
4	**Technical Specifications**
4.1	Microprocessor controlled, easy access control panel with feather touch switches. Facility for self-test function.
4.2	Shall have facility to elevate base to offer adjustable range.
4.3	Facility with both servo control as well as air temperature control and servo humidifier.
4.4	Shall have Oxygen port with tubing.
4.5	Continuous bed tilt up to 8° on either sides
4.6	Head end raise facility with auto lock.
	Both visual and audible alarms for:
4.7	□ High / low temperature.
	□ Air circulation / probe / system / power failure.
	□ Humidity control.
4.8	Head end raise facility with auto lock.
4.9	Facility to take x-ray and weight without removing baby.
4.1	Facility to display and trending of temperature information on compatible monitors with other physiological parameters.
4.11	Height 140 +/- 5 cm, depth at least 60 mm, width at least 90 mm.
4.12	Mattress to hood distance (approx.) 40 cm.
4.13	Working level (approx.): 90 to 100 cm.
4.14	Iris port for tubing, leads, probes.
4.15	Gel mattress (approx.) 4 cm. thick and easily washable.
4.16	With at least 4" dia. castors wheel with swivel in all directions and with front lockable wheels. Two shelves cabinets with door.
4.17	Weight (approx.) 90-100 kg.
4.18	Patient control (Servo) mode, 35 oC to 37 oC and Air control (manual mode), 20 oC to 37 oC
4.19	Air velocity less than 10 cm/sec with inner wall.

4.2	Temperature variability less than +/- 0.2 oC. and temperature resolution +/- 1 oC.
4.21	Average oxygen input concentration range 5-15 litres/min or 25-70%.
4.22	**Humidification:**
	□ Standard: 10-75% dependent on nursery environment and incubator temperature setting.
	□ Servo: 40-80% regardless of nursery environment.
4.23	Double wall canopy with six hand ports.
4.24	Shall accommodate IV pole.
4.25	C02 flushing, according to lEC 60601-2-19 / 105.1 Maximum C02 concentration inside incubator 0.2%.
4.26	Servo control for Oxygen with integrated monitoring.
4.27	Noise level < 49 dB.
5	Accessories, spares and consumables
5.1	Accessories:
	□ Two sets of extra mattresses.
	□ Two sets of extra sensors.
5.2	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.
6	Operating Environment
6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.
7	Standards and Safety Requirements
7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND
7.2	CE (93/42 EEC Directives) or USFDA approved product certificate.
7.3	Shall meet IEC 60601-2-50 Medical Electrical Equipment PART 2: Particular Requirements for the Safety of Baby Incubators.
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 preventive maintenance corrective/breakdown maintenance whenever required.
11	Documentation
11.1	User (Operating) manual in English.
11.2	Service (Technical / Maintenance) manual in English.
11.3	List of important spare parts and accessories with their part numbers and costing.
11.4	Certificate of calibration and inspection from factory.

52

Infant Portable Ventilator

No.	Item Specifications
1	Unit to be used for child and infant ventilation during cardiopulmonary resuscitation and for ventilation during transportation when necessary.
2	To have frequency control 1 – 150 bpm breaths per minute.
3	Tidal volume control 5 - 100 ml.
4	Inflation pressure monitor 0 to 100 cm H2O.
5	Air mix control zero to 70% air mixture,
6	Adjustable relief pressure with audible alarm 20 to 80 cm H2O
7	PEEP facility 0 to 10 or 15 cm H2O.
8	To be supplied with a sling to enable the user to carry the unit easily and a patient circuit 1.25m long 15mm single bore silicone hose Autoclavable
9	Must have at least 1 hour of built in battery back-up for the complete ventilator including compressed Air Source.
10	The ventilator should be compatible with DC power cables for powering the ventilator from Ambulance Cigarette lighter power supply.
11	**Operating Environment**
11.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
11.2	**Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.**

12	**Standards and Safety Requirements**
12.1	**Must submit ISO13485:2003/AC:2007 for Medical Devices AND**
12.2	**CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.**
12.3	**Shall meet IEC 60601-2-50 Medical Electrical Equipment PART 2: Particular Requirements for the Safety of Baby Incubators.**
13	**User Training**
13.1	**Must provide user training (including how to use and maintain the equipment).**
14	**Warranty**
14.1	**Comprehensive warranty for 2 years after acceptance.**
15	**Maintenance Service during Warranty Period**
15.1	**During warranty period supplier must ensure preventive maintenance corrective/breakdown maintenance whenever required.**
16	Documentation
16.1	User (Operating) manual in English.
16.2	Service (Technical / Maintenance) manual in English.
16.3	List of important spare parts and accessories with their part numbers and costing.
16.4	Certificate of calibration and inspection from factory.

53

Infant Ventilator

No.	Item Specifications
1	**Description of Function**
1.1	Paediatric/Infant Ventilators provide artificial respiration support to infants and neonates in ICU/Wards.
2	**Operational Requirements**
2.1	□ The Infant Paediatric ventilator must be easy to operate and must incorporate safety alarms and backup ventilation.
	□ Microprocessor Controlled integrated suitable for neonate and child ventilation.
3	**System Configuration**
3.1	Ventilator-Paediatric & Infant with Built in Medical Air Compressor and with complete accessories.
4	Technical Specifications

4.1	Must have not less than 10 inch colour TFT screen for monitoring of the ventilation parameters, curves and loops
4.2	Automatic compliance & Leakage compensation for circuit and ET tube
4.3	Must have the facilities for following setting for neonate to child:
	□ Tidal Volume
	□ Flow Pattern
	□ Inspiration Plateau
	□ Pressure ramp
	□ SIMV Rate
	□ CPAP/PEEP
	□ Pressure Support
	□ FiO2
	□ Pause Time
	□ Inspiration trigger sensitivity to flow & pressure
	□ Base Flow
	□ Sensitivity for cycling to expiration
4.4	Must have the capability of monitoring of the following parameters:
	□ Airway Pressure
	□ Expired tidal Volume
	□ Minute Volume
	□ Spontaneous Minute Volume
	□ Total Frequency
	□ Fio2
	□ Auto PEEP
	□ Rapid Shallow Breathing Index
	□ Plateau Pressure
	□ Inspiratory & Expiratory Resistance
	□ Static Compliance
	□ Imposed Work of Breathing
	□ Peak, Plateau and mean airway pressure

4.5	Must have the Alarms for all the measured and monitored parameters.
4.6	□ Must have the following Modes of ventilations:
	□ Volume controlled
	□ Pressure controlled
	□ Pressure support
	□ SIMV (Pressure Control and volume control) with pressure support.
	□ CPAP/PEEP (0 – 50 CM H20)
	□ Auto mode /Auto flow preferable
	□ PRVC
	□ Biphasic preferable
	□ High frequency ventilation
4.7	Sensors must be automatically calibrated every time it is switched on
4.8	Must have the ability to calculate:
	□ Intrinsic Peep
	□ Occlusion Pressure
	□ Negative Inspiratory force
4.9	Medical Air Compressor:
	□ Imported Built in Medical Air compressor
	□ Snap fit with the Ventilator module to provide an oil free Medical air .
	□ Peak output flow must be minimum 160 LPM.
	□ Air quality must comply with ISO compressed air purity class.
	□ Medical Air Compressor must automatically activate in the event of wall air supply loss.
	□ Replacement of internal filters must be performed without removing the compressor
	□ Must have washable air filter.
5	**Accessories, spares and consumables**
5.1	**Accessories:**
	□ Humidifier -Servo controlled with digital monitoring of inspired gas temperature complete with heating wire-01 no.
	□ Nebulizer compatible with ventilator-01
	□ Medical Air Compressor-01 no.

	□ Air Hose-01 no.
	□ Oxygen Hose-01 no.
	□ Paediatric autoclaveable/reusable silicon breathing circuit-02 nos.
	□ Infant autoclaveable/reusable silicone breathing circuit-02 nos.
	□ Filter paper for humidifier for 100 uses
	□ Non corrosive trolley and hinged arm: 01no.
5.2	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.
6	**Operating Environment**
6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.
7	**Standards and Safety Requirements**
7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND
7.2	CE (93/42 EEC Directives) or USFDA approved product certificate.
7.3	Certified to be compliant with ANS/IEC60601.2.12-01 Medical Electrical Equipment—Part 2-12; Particular Requirements for the Safety of Lung Ventilators—Critical Care Ventilators.
7.4	Must meet IEC 529 Level 3 (IP3X) (spraying water) for enclosure protection , water ingress.
7.5	Certified to be compliant with ISO-7767 for Oxygen monitoring.
8	**User Training**
8.1	Must provide user training (including how to use and maintain the equipment).
9	Warranty
9.1	Comprehensive warranty for 2 years.
10	Maintenance Service During Warranty Period
10.1	During the warranty period supplier must ensure planned preventive maintenance (PPM) along with corrective/breakdown maintenance whenever required.
11	Documentation
11.1	User (Operating) manual in English.
11.2	Service (Technical / Maintenance) manual in English.

11.3	List of important spare parts and accessories with their part numbers and costing.
11.4	Certificate of calibration and inspection from factory.

Over head heater (Infant Warmer)

No.	Item Specifications
1	**Description of Function**
1.1	A radiant warmer is used to keep the patient's core temperature stable at 37 oC.
2	**Operational Requirements**
2.1	It shall be microprocessor controlled radiant warmer with manual and servo options.
3	**System Configuration**
3.1	Radiant Warmer with Baby Bassinet, complete unit with all standard accessories.
4	**Technical Specifications**
4.1	It must have facility to display both skin and air (ambient) temperature separately.
4.2	It shall have audio-visual alarm facilities for:
	□ Overheating beyond set temperature range.
	□ Patient temperature less than or greater than the required temperature i.e. above or below the set range.
	□ Power failure.
	□ Heater failure.
	□ Probe failure.
	□ Time out alarm in manual mode.
4.3	It must have manual setting for high and low alarm setting.
4.4	It must rotate and swivel in different direction, so as to allow taking X-ray.
4.5	The light must be dazzle free.
4.6	It must have preferably inbuilt rechargeable battery to run equipment in case of power failure for at least 30 min.
4.7	In servo mode, the heater output must be controlled to maintain the baby at the required set temperature.
4.8	In manual mode, the heater output must be directly controlled by a setting on the front panel.
4.9	The desired temperature range from 25 to 40 oC.
4.1	The resolution must be 0.1 oC.
4.11	The height of the warmer must be adjustable for different types of bed.

4.12	Halogen based observation light must be provided for observing the baby.
4.13	It must be mounted on a pole with sturdy base with lockable castors.
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.
6	**Operating Environment**
6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.
7	**Standards and Safety Requirements**
7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices **AND**
7.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.
7.3	Shall meet IEC 60601-2-21 Medical Electrical Equipment PART 2: Particular Requirements for the Safety of Infant Radiant Warmers.
8	**User Training**
8.1	Must provide user training (including how to use and maintain the equipment).
9	Warranty
9.1	Comprehensive warranty for 2 years after acceptance.
10	Maintenance Service during Warranty Period
10.1	During warranty period supplier must ensure corrective/breakdown maintenance whenever required.
11	Documentation
11.1	User (Operating) manual in English.
11.2	Service (Technical / Maintenance) manual in English.
11.3	List of important spare parts and accessories with their part numbers and costing.
11.4	Certificate of calibration and inspection from factory.

55

Infant Transport Incubator

No.	Item Specifications
1	**Description of Function**

1.1	Required for transportation of premature babies and neonates and it can be used for long distance transportation.
2	**Operational Requirements**
2.1	It shall be self-contained mobile intensive care station including power supply unit and infusion stand.
3	**System Configuration**
3.1	Transport Incubator, complete unit with all standard accessories.
4	**Technical Specifications**
4.1	Microprocessor controlled, easy access control panel with feather touch switches.
4.2	It shall be mounted on collapsible trolley having lockable rust free casters of the size 4 inches dia. or more and with facility to mount two A type Aluminium oxygen cylinders on rack under the Incubator .
4.3	Single walled incubators with at least two large pot holes for access. Iris ports for ventilator & other tubings. Bed level at least 80 cm. above ground level. Two shelves cabinet with door.
4.4	Mattress to hood distance at least 30 cm.
4.5	Air Mode: Adjustable set temperatures between 20 oC to 39 oC. Display of set temperatures with resolution of 0.1 oC . Skin mode adjustable set temperatures between 34 oC to 38 oC . Display of set temperatures with resolution of 0.1 oC.
4.6	Alarms of high, low and probe failure for the set air mode up to +2.5 oC and skin mode of + 0.5 oC of temperatures.
4.7	Oxygen monitor in incubator hood with display of 21 to 100% Oxygen alarms for high, low and probe failure.
4.8	Heart and Oxygen saturation monitor: Fixed, built monitors, dual wavelength probe for Oxygen saturation with digital LED display for Heart rate and Oxygen saturation. Alarms for high and low for Heart Rate, Oxygen saturation and probe failure.
4.9	The system must have an internal rechargeable maintenance free battery to ensure continued functioning of the unit for at least 3 hours during transport. It shall have automatic switch circuit for change over from battery to AC and vice versa.
4.1	One suction apparatus with negative suction pressure of 5- 120 mm Hg must be provided.
4.11	Shall provide IV fluid stand to support two infusion bottles.

4.12	One Syringe infusion pump with stand compatible with 10, 20, and 50 ml syringes compatible with available brand of syringes. Range of infusion rate 1to 99 ml / hr.in steps of 0.1ml. Shall have display functions for infusion rates, alarms for occlusions, end of infusion and it shall have internal rechargeable battery.
4.13	Overall Dimensions with trolley (approx.):
	□ Height less than 60”.
	□ Depth less than 30”.
	□ Width 33”-36”.
	□ Weight 90-100 kg or less.
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.
6	**Operating Environment**
6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6.2	**Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.**
7	**Standards and Safety Requirements**
7.1	**Must submit ISO13485:2003/AC:2007 for Medical Devices AND**
7.2	**CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.**
7.3	**Shall meet IEC 60601-2-50 Medical Electrical Equipment PART 2: Particular Requirements for the Safety of Baby Incubators.**
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 preventive maintenance corrective/breakdown maintenance whenever required.**
11	Documentation
11.1	User (Operating) manual in English.

11.2	Service (Technical / Maintenance) manual in English.
11.3	List of important spare parts and accessories with their part numbers and costing.
11.4	Certificate of calibration and inspection from factory.

56

Adult Ambo Bag

No.	Item Specifications
1	**Description of Function**
1.1	An Ambu Bag (also known as a Bag Valve Mask or BVM or Ambu bag) is a hand-held device used to provide ventilation to a patient who is not breathing or who is breathing inadequately.
2	**Operational Requirements**
2.1	It shall be self-inflatable and must have pop up valve (non-return valve), attachment for oxygen tube & oxygen reservoir.
3	**System Configuration**
3.1	Ambu bag, complete unit.
4	**Technical Specifications**
4.1	Bag must be made up of medical grade silicon, latex free double layered which retain sensitivity and it must be resistant to rough use.
4.2	Inlet end of the bag must have separate port for Oxygen supplement.
4.3	Outer port must be such that re-breathing valve or non-return valve can be attached.
4.4	Must be supplied with Oxygen reservoir bag and shall deliver tidal volumes of 250/500/750 and 1000 ml.
4.5	It shall be autoclaveable.
4.6	It shall be adaptable to all type of face masks.
5	**Accessories, spares and consumables**
5.1	Set to be supplied in a heavy duty, re-sealable plastic pouch or clear top plastic box.
5.2	with dult face mask
6	**Operating Environment**
6.1	The system offered must be designed to store and be operated normally under the condition include Climate, temperature and relative humidity 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 or TUV approved product certificate.
8	**Warranty**
8.1	Comprehensive warranty for 1 year after acceptance.
9	**Documentation**
9.1	User's manual shall be supplied in English.

57

Neonate Ambo Bag

No.	Item Specifications
1	**Description of Function**
1.1	An Ambu Bag (also known as a Bag Valve Mask or BVM or Ambu bag) is a hand-held device used to provide ventilation to a patient who is not breathing or who is breathing inadequately.
2	**Operational Requirements**
2.1	It shall be self-inflatable and must have pop up valve (non-return valve), attachment for oxygen tube & oxygen reservoir.
3	**System Configuration**
3.1	Ambu bag, complete unit.
4	**Technical Specifications**
4.1	Bag must be made up of medical grade silicon, latex free double layered which retain sensitivity and it must be resistant to rough use.
4.2	Inlet end of the bag must have separate port for Oxygen supplement.
4.3	Outer port must be such that re-breathing valve or non-return valve can be attached.
4.4	Must be supplied with Oxygen reservoir bag and shall deliver tidal volumes of 250/500/750 and 1000 ml.
4.5	It shall be autoclaveable.
4.6	It shall be adaptable to all type of face masks.
5	**Accessories, spares and consumables**
5.1	Set to be supplied in a heavy duty, re-sealable plastic pouch or clear top plastic box.
5.2	with infant face mask sizes 00,01 & 02
6	**Operating Environment**

6.1	The system offered must be designed to store and be operated normally under the condition include Climate, temperature and relative humidity 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 or TUV approved product certificate.
8	**Warranty**
8.1	Comprehensive warranty for 1 year after acceptance.
9	**Documentation**
9.1	User's manual shall be supplied in English.

58 **TUR-set**

No.	Item Specifications
1	Standard set
2	CE or USFDA or TUV approved certificate.

59 **Anesthesia Machine**

No.	Item Specifications
1	**Description of Functions**
1.1	It shall be an anaesthesia unit with pneumatically or electrically powered and electrically controlled ventilator.
2	**Operational Requirements**
2.2	It shall be suitable to be used for adult and paediatric patients.
3	**System Configurations**
3.1	It shall come with the main unit and two vaporizers, one for isoflurane and the other for halothane.
4	**Technical Specifications**
4.1	Equipment safety standard should follow IEC 60601, document evidence shall be submitted for evaluation
4.2	On sturdy steel with anticorrosive powder coating trolley running on four antistatic wheels with brakes and drawers
4.3	Revolving support for possible inclusion of CO2 absorber.
4.4	Gas inlet: 3 inlets, O2, N2O and Air

4.5	Gas cylinder yokes: O2 & N2O
4.6	Should come with accessories for connecting gas supply both from central supply as well as from cylinders.
4.7	**Flow meter:**
4.8	It shall come with 6 flow meter columns; 2 flow meter columns for each kind of gas; which 1 column with normal increments and 1 column with small adjustments.
4.9	The oxygen flow meter shall have adjustment ranges: 1 column approximately from 0 to 1 L/min and the other column approximately from 1 to 10 L/min
4.10	The Nitrous oxide flow meter shall have adjustment ranges: 1 column approximately from 0 to 1 L/min and the other column approximately from 1 to 10 L/min
4.11	The air flow meter shall have adjustment ranges: 1 column approximately from 0 to 1 L/min and the other column approximately from 1 to 10 L/min
4.12	O2, N2O and air pressure gauges
4.13	Battery backup for not less than 90 minutes of operation
4.14	Autoclaveable CO2 absorbent canister with minimum 2.5kg soda lime.
4.15	All circuits shall be detachable, washable and Autoclaveable at most with steam of 134 degree C
4.16	**Vaporizer**
4.17	Type of vaporiser : shall be concentration calibrated type, such as variable bypass or heated blender or equivalent
4.18	It shall accommodate two vaporizers.
4.19	Come with 2 sets of concentration calibrated type vaporizers and two sets of compatible fillers for one for isoflurane and the other for halothane.
4.20	Stainless steel supporting arm with two articulations and rail clamp
4.21	Vaporizer is to be maintenance free with easy re-filling
4.22	Gas flow control or Oxygen ratio control
4.23	The N2O and O2 flow control shall be interlocked that the proportion of O2 to N2O will never fall below a minimum value, i.e. O2 concentration shall never be less than 25%, to produce a hypoxic breathing mixture.
4.24	It shall automatically cut off the supply of N2O and other gases and activate an alarm if O2 pressure drops below 28 - 30PSI, It shall sounds at maximum volume every 10 seconds
4.25	Ventilator
4.26	Microprocessor based electrically powered and electrically controlled ventilator

4.27	Operating modes: Manual, spontaneous, VCV
4.28	Tidal Volume: approximately 50 - 1200 ml
4.29	Breathing frequency: approximately 5 - 60 breath/min
4.30	Inspiratory flow: approximately 5 - 70 L/min
4.31	Pressure limitation : approximately 10 - < 70 cm H2O
4.32	PEEP (positive end-expiratory pressure): approximately 0 - 20 cm H2O
4.33	Monitoring
4.34	Alarms shall be available for all vital parameters and system error or failure of at least the following
a	Concentration of O2
b	Expiratory volume and flow
c	High and low airways pressure
d	Pressure high, low or leakage
e	Low gas supply pressure
f	Power failure, low battery, patient disconnection and others
5	Accessories, Spare Parts and Consumables
5.1	All standard accessories/consumables/parts required for the proper operation of the above item shall be included in the offer.
5.2	All standard Maintenance tools and cleaning /lubrication materials where applicable shall be included.
5.3	Silicone breathing circuit for adult and child, 2 complete sets each.
5.4	Connecting hose with regulator/ flow meter or probe for connection to PIN index oxygen cylinder and BOC type oxygen wall outlet, at least 5 meter length, 1 set
5.5	Connecting hose with regulator/ flow meter or probe for connection to N2O cylinder or N2O wall outlet, at least 5 meter length, 1 set
5.6	Connecting hose with regulator/ flow meter or probe for connection to air cylinder or wall outlet, at least 5 meter length, 1 set
5.7	Silicone test lung adult and child size, 1 set each
5.8	Silicone rubber anaesthesia face mask adult and paediatric size, 1 pc each
5.9	O2 sensor, 1 set
6	Operating Environment

6.1	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metres in length.
7	Standards & Safety Requirements
7.1	This unit shall be certified to meet ISO9001 and ISO14971 and ISO 13485:2003/AC: 2007 or Directive 93/42/EEC and its subsequent additional Directives amending to it or equivalent. Certificates showing the compliance of this unit offered with any relevant quality and safety standards MUST be submitted with this TSF.
8	User Training:
8.1	The Supplier shall conduct user training for this equipment to enable operators to use the equipment properly. The training shall include the use of all operational functions of the equipment, as well as routine checks and maintenance expected by users.
9	Warranty
9.1	The warranty period for this item shall be 24 months after acceptance of the Goods
10	Maintenance Service During Warranty Period
10.1	Preventive and corrective maintenance services during warranty period shall be included.
11	Documentation
11.1	It must be supplied with detailed operating and maintenance manuals and technical information in the English language

60

Autoclave

No.	Item Specifications
1	**Description of Function**
1.1	Autoclaves are required to sterilize objects under high temperature and pressured steam.
2	**Operational Requirements**
2.1	Suitable for hospital dressings, linen, surgical instruments, glassware, culture media and laboratory wares etc.
3	**System Configuration**
3.1	Autoclave for CSSD (Central Sterile Services Department) approx. 80l, stand alone
4	**Technical Specifications**
4.1	Single door high pressure steam sterilizer with double / triple walled, steam jacket and separate boiler
4.2	**Material of construction:**

	□ Sterilizer chamber SS 316
	□ Door SS 316
	□ Jacket Stainless Steel
	□ Loading carriage SS 316
	□ Door Gasket : Silicon or better
	□ Insulation: fibre glass resin bonded wool or better
	□ Insulation cover: SS sheets
4.3	Operating temperature 121 0C – 138 0C pressure 1.1 to 2.2 kg/cm2 of steam pressure
4.4	Capacity- 80 litres
4.5	Digital microprocessor based PID temperature controller with stored memory
4.6	Separate cycle timer and easy to read display pressure gauges.
4.7	Indicating lights display all functions including heating, low water, timer operation, temperature set point and actual temperature.
4.8	Spring loaded safety valves and automatic vacuum breaker for jacket.
4.9	Removable plug screen for chamber drain.
4.1	SS baffle for even steam distribution in the chamber.
4.11	Safety lock for door: pressure lock safety device.
4.12	Low water off.
4.13	Earth leakage breaker (ELB)
4.14	Must include chart recorder for temperature and pressure, increased power rating for rapid heating applications.
4.15	Electrical heating element to have over-temperature protection/cut out and maximum electrical power must not to exceed 4.5 KW.
5	**Accessories, spares and consumables**
5.1	Accessories:
	□ 3 dressing drums – (seamless stainless steel construction, suitable to fit into the autoclave)
	□ A minimum of two spare lid gaskets
5.2	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.
6	**Operating Environment**

6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6.2	**Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.**
7	**Standards and Safety Requirements**
7.1	**Must submit ISO 9001 or ISO 13485:2003/AC:2007 AND**
7.2	**CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.**
7.3	**Electrical safety conforms to standards for electrical safety IEC-60601.**
8	**User Training**
8.1	**Must provide user training (including how to use and maintain the equipment).**
9	**Warranty**
9.1	**Comprehensive warranty for two year.**
10	**Maintenance Service During Warranty Period**
10.1	**During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.**
11	**Documentation**
11.1	**User (Operating) manual in English**
11.2	**Service (Technical / Maintenance) manual in English**
11.3	**List of important spare parts and accessories with their part number and costing.**
11.4	**Certificate of calibration and inspection from factory.**

61

Diathermy

No.	Item Specifications
1	**Description of Functions**
1.1	A 300W diathermy machine (electrosurgical unit)
2	**Operational Requirements**
2.1	It shall operate on AC power supply in the operating theatre.
3	**System Configurations**
3.1	Diathermy Machine (Electrosurgical) 300W with complete accessories.
4	**Technical Specifications**

4.1	Nominal HF output: 300 Watts at ~400 Ohm.
4.2	At least 2 modes of operation: mono-polar cutting and mono-polar / bipolar coagulation.
4.3	Mono-polar cutting modes shall have different level of effects from pure cutting to blend cutting (cutting with haemostasis).
4.4	Come with 3 mono-polar coagulation modes - soft, forced and spray.
4.5	Desiccate mode for low voltage contact coagulation suitable in delicate tissue work
4.6	Fulgurate mode for efficient non-contact coagulation in most applications.
4.7	Spray mode for coagulation large tissue areas with minimum depth of necrosis.
4.8	Come with 3 bipolar modes: precise, standard and macro or equivalent.
4.9	Precise mode to have fine control of desiccation in delicate tissue.
4.1	Standard mode for applications at low voltage to prevent sparking.
4.11	Macro mode for applications on tissue with high resistance.
4.12	Control panel with digital setting and display of power of modes used.
4.13	All mono-polar and bipolar modes shall be controllable by hand switch and footswitch.
4.14	Bipolar mode can be activated by either foot pedal and / or auto coagulate by using forceps.
4.15	Footswitches shall be splash proof and unaffected by common OR fluid spills, easy to clean, have suitable mechanical protection against accidental pedal depression and Switches shall not be susceptible to sticking in the ON position.
4.16	Unit must have automatic power regulating feature to always keep minimum current to the patient throughout the procedures.
4.17	Shall come with Return Electrode Contact Quality Monitors (RECQMs) to monitor the quality of electrode-skin contact to eliminate the risk of patient's burn. It shall give audio-visual alarm and deactivate output if contact between patient and electrode is loosened or disconnected.
4.18	Come with output Leakage controller.
4.19	Shall have over current protection.
4.2	Shall be able to be activated from only one output at a time.
4.21	Must have an undefeatable audible activation-tone indicator/alarm.
4.22	The unit must have RF activation port to tell other equipment like ECG or EEG that RF current is being generated.
5	**Accessories, Spare Parts and Consumables**

5.1	All standard accessories/consumables/parts required for the proper operation of the above item shall be included in the offer. Bidders shall specify, in a separate Excel worksheet, the quantity and details of any items included in this offer which have not been specified in this Technical Specifications Forms.
5.2	All standard Maintenance tools and cleaning /lubrication materials where applicable shall be included.
5.3	The unit shall come with trolley well designed to fit the generator with drawers for keeping the accessories
5.4	One unit/ set of explosion-protected foot pedal for mono-polar and bipolar operation
5.5	Universal adapter to fit and use with most common electrosurgical instruments/ hand pieces x 1 set.
5.6	Come with reusable standard mono-polar pencil/ handle with 2 button switch - 1 unit.
5.7	Reusable mono-polar cord x 1 set.
5.8	Come with 2 types of reusable standard mono-polar electrodes, 1 piece/ type of electrode.
5.9	Come with 1 piece of reusable standard mono-polar coagulation forceps.
5.1	Come with 1 piece of reusable standard bipolar forceps with hand switch.
5.11	Reusable bipolar cord x 1 set.
5.12	Reusable connecting cable for patient electrode x 1 set
5.13	Patient return electrode for Adult & Child, 50 pieces each
6	Operating Environment
6.1	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metres in length.
7	Standards & Safety Requirements
7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND
7.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.
7.3	Shall meet IEC 60601-2-2 Medical Electrical Equipment - PART 2-2: Particular Requirements for the Safety of HIGH FREQUENCY SURGICAL EQUIPMENT.
8	User Training:
8.1	The Supplier shall conduct user training for this equipment to enable operators to use the equipment properly. The training shall include the use of all operational functions of the equipment, as well as routine checks and maintenance expected by users.
9	Warranty
9.1	Comprehensive warranty for 2 years.
10	Maintenance Service During Warranty Period

10.1	Preventive and corrective maintenance services during warranty period shall be included.
11	Documentation
11.1	User (Operating) manual in English.
11.2	Service (Technical / Maintenance) manual in English.
11.3	List of important spare parts and accessories with their part numbers and costing.
11.4	Certificate of calibration and inspection from factory.

62

Emergency Trolley

No.	Item Specifications
1	**Description of Function**
1.1	A trolley for transportation of a patient in the hospital.
2	**Operational Requirements**
2.1	It shall be constructed fully with anti-corrosive and antirust treated epoxy powder coated steel sheet and tube or better.
3	**System Configuration**
3.1	Patient trolley with handles and four swivels castors.
4	**Technical Specifications**
4.1	Overall size: approximately 2030 L x 560 W x 820 H mm
4.2	Welded tubular frame with box type pattern construction.
4.3	Dished shaped top, push handles to be fitted at both ends. The dished shaped top surface shall be smooth and corrosive and rust resistance.
4.4	Shall be mobile on 4 x 200mm robust swivelling castors with non-marking grey tyres and with at least 2 diagonal castors shall have locking/brake mechanism. All four wheels MUST be fully 360 deg. swivels. Fixed direction wheels are NOT acceptable.
4.5	To be supplied complete with patient transfer board. Smooth board in either heavy duty mild steel or Aluminium Approx. size 1500 l x 500 w mm. All edges shall be rounded /curved finished. Surface to be smooth to permit easy sliding of patient onto trolley.
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.

6	**Operating Environment**
6.1	The product offered shall be designed to be stored and to operate normally under the conditions. The conditions include Climate, Temperature, Humidity, etc.

63

Mobile operating light

No.	Item Specifications
1	**Description of Function**
1.1	Mobile operating light is required for carrying out operations in an emergency environment and the system can be moved from place to place in hospitals.
2	**Operational Requirements**
2.1	Shall operate on mains electric supply as well as on battery.
3	**System Configuration**
3.1	Operating Light Mobile with single light head, moveable on casters and with all standard accessories.
4	**Technical Specifications**
4.1	The light shall be designed with good counterbalance mechanism in order to ensure stability of light head in all positions
4.2	Shall have single light head.
4.3	Light head shall not be greater than 400mm diameter
4.4	Number of bulb: 1 main bulb halogen 24V 150W with 1 backup bulb with auto-switching or multi-bulbs light head not more than 3 bulbs of halogen 12V 50W.
4.5	Light intensity range, shall not be less than 80,000 lux at 1 meter distance from light source. Bidder shall attached certified test certificated showing the compliance of this requirement with TSF.
4.6	Light temperature, between 4000 - 4500 K.
4.7	Shall have colour rendering index in between 92 - 94.
4.8	Shall have 99% heat filtrating.
4.9	Temperature increase at head shall not be more than 2 oC.
4.1	Temperature increase on operating field shall not be more than 15 oC.
4.11	Radiant heat energy (beam temperature) shall not exceed 25,000 microwatts per square centimetre measured 1m from the light source.

4.12	The light offered shall have safety designed to prevent patient from burns, especially during the ophthalmic procedures. The light offered shall be certified safe to be used under ophthalmic procedures.
4.13	Working distance range (focal length): 70 - 130cm.
4.14	Depth of field with focused light: > 60cm.
4.15	Luminance field size: 15 ~ 25cm diameter, adjustable.
4.16	Shall have a control to regulate light intensity and to switch on the unit.
4.17	Shall have an On/Off switch at lamp head.
4.18	Shall come with continuous dimmer, continuous focus adjustment, continuous field adjustment.
4.19	Sterilizeable handle to regulate light field size, 2 pcs.
4.2	Vertical adjustment shall not be less than 115cm.
4.21	Rotation 360 degree.
4.22	Come with Ophthalmic procedures safe light bulbs with a minimum of 1000 hours lifespan.
4.23	Interference suppressed complies with VDE 0875 or equivalent.
4.24	Transformer and operating elements shall be integrated in light head housing.
4.25	Mobile Stand:
	Shall be based on light weight easily moveable stable support with at least 4 casters with locking counter balance mechanism in order to ensure stability of light head in all positions and with swivel arm. Caster must be medical chemical resistant.
4.26	Battery:
	□ Lithium ion built in rechargeable batteries with capacity sufficient for operating in battery mode (fully charged) for minimum of 3 hours.
	□ Shall include a built-in automatic battery charger with proper protection against battery damage.
	□ Shall include battery power (charge) indicator.
5	Accessories, spares and consumables
5.1	Accessories:
	□ 1 x spare halogen bulb.
	□ 1 x spare set of fuses.
5.2	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.
6	Operating Environment

6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.
7	Standards and Safety Requirements
7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND
7.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.
7.3	Electrical safety conforms to standards for electrical safety IEC 60601-1 General requirement for Electrical safety of Medical Equipment.
8	User Training
8.1	Must provide user training (including how to use and maintain the equipment).
9	Warranty
9.1	Comprehensive warranty for 1 year after acceptance.
10	Maintenance Service During Warranty Period
10.1	During warranty period supplier must ensure corrective/breakdown maintenance whenever required.
11	Documentation
11.1	User (Operating) manual in English.
11.2	Service (Technical / Maintenance) manual in English.
11.3	List of important spare parts and accessories with their part numbers and costing.
11.4	Certificate of calibration and inspection from factory.

64

Operating Table

No.	Item Specifications
1	**Description of Function**
1.1	Hydraulic operating tables are simple tables for performing surgical procedures and it works without 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.
	□ Muster supports: pair with clamps.
	□ Knee crutches: pair with damps.
	□ X-ray cassette tray.
	□ Kidney bridge.
	□ SS bowl with clamps.

	□ Infusion rod with clamp.
5.2	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.
6	**Operating Environment**
6.1	The product offered shall be designed to be stored and to operate normally under Climate, Temperature,Humidity, etc. for Sudan.
7	Standards and Safety Requirements
7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND
7.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.
8	User Training
8.1	Must provide user training (including how to use and maintain the equipment).
9	Warranty
9.1	Comprehensive warranty for 2 years after acceptance.
10	Maintenance Service During Warranty Period
10.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.
11	Documentation
11.1	User (Operating) manual in English.
11.2	Service (Technical / Maintenance) manual in English.
11.3	List of important spare parts and accessories with their part numbers and costing.
11.4	Certificate of calibration and inspection from factory.

65

Suction Machine

No.	Item Specifications
1	**Description of Function**
1.1	To extract fluid from the body during surgery or emergency treatment.
2	**Operational Requirements**
2.1	Shall operate on mains AC supply as well as on battery.
3	**System Configuration**
3.1	The system consists of:

	□ Suction machine with 2 Jar.
	□ Mains as well as battery operated.
	□ Suction tubing.
	□ Two bottles.
	□ Rechargeable battery.
4	**Technical Specifications**
4.1	The machine shall be portable on four wheels and with a handle for transportation.
4.2	The vacuum pump must be totally oil-free diaphragm type. Must have maintenance free pumps of international design for continuous use.
4.3	Motor shall be of Class "F" insulation to operate in ambient temperature to withstand up to 50 oC, with thermal cut-outs. It must run continuously on invertors /UPS.
4.4	To facilitate maintenance, the cover of the machine must be easy to open from the top & sides.
4.5	The suction machine must be capable of producing minimum vacuum of approx. 700 mm Hg and which must be adjustable and monitored by vacuum gauge of suitable range. The suction capacity must be 25 litres per minute and can be regulated.
4.6	It must have two bottles of 2L. Each made of unbreakable polycarbonate with ABS Lid with float (over flow control device).The jars must be graduated (in cc levels). The suction bottles shall be autoclaveable.
4.7	On/Off Switch and power indicator must be available.
4.8	Shall provide foot switch.
4.9	**Body material:**
	Base, top & panel made of rust proof and corrosion resistant moulded ABS.
4.1	Lithium ion inbuilt rechargeable battery with capacity sufficient for operating in battery mode (fully charged) for minimum of 1 hour. Shall provide with cable for powering suction machine from ambulance/car cigarette lighter.
5	**Accessories, spares and consumables**
5.1	**Accessories:**
	□ Spare bottle: 01 no.
	□ Lids: 02 nos.
	□ Rubber Seals: 02 nos.
	□ Blades: 02 nos.

	□ Suction tubing set at least 5 metres: 02 nos.
	□ Spare fuse: 01 set.
5.2	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.
6	**Operating Environment**
6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.
7	**Standards and Safety Requirements**
7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND
7.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.
7.3	Electrical safety conforms to standards for electrical safety IEC 60601-1 General requirement for Electrical safety of Medical Equipment.
8	**User Training**
8.1	Must provide user training (including how to use and maintain the equipment).
9	**Warranty**
9.1	Comprehensive warranty for 2years after acceptance.
10	**Maintenance Service During Warranty Period**
10.1	During warranty period supplier must ensure corrective/breakdown maintenance whenever required.
11	**Documentation**
11.1	User (Operating) manual in English.
11.2	Service (Technical / Maintenance) manual in English.
11.3	List of important spare parts and accessories with their part numbers and costing.
11.4	Certificate of calibration and inspection from factory.

66

Blood Gas Analyzer

No.	Item Specifications
1	**Description of Function**

1.1	Blood gas analysers are used to measure blood gases , electrolytes , pH values and biochemical parameters of the blood
2	**Operational Requirements**
2.1	Fully automatic, upgradeable, fast electrolyte combi analyser.
3	**System Configuration**
3.1	Fully automatic Blood Gas Analyser with electrodes and built in printer.
4	Technical Specifications
4.1	Essential Measured parameters; pH, pCO2, pO2, tHb, Barometric Pressure, Na+, K+, Ca++, Cl-, Bl urea and Sr Creatanine & Blood sugar. All these parameters must be measured simultaneously
4.2	Calculated parameters must include BE, BE ecf, HCO3, Lactate, Anion Gap, SaO2 etc.
4.3	Sample volume-less than 100ul.
4.4	Fast analysis time – less than 60 sec
4.5	Maintenance free electrodes with individual electrodes ON/OFF facility
4.6	Fully automatic liquid calibration of all parameters at user-defined intervals without the use of Gas calibrated reagents, external gases, tanks or regulators
4.7	Continuous reagent level monitoring with graphic display.
4.8	Data display on well-illuminated, adequate size LCD colour touch screen display.
4.9	Data print out on built in graphic printer.
4.1	Built in auto Quality control facility
4.11	Automatic result processing, test ordering and transmission to the LIS/HIS system(laboratory Information System/Hospital Information System)
4.12	Automatic data archiving and customizable layout. Data backup with read/write CD-ROM drive
4.13	USB ports for easy connection of e.g. flash drives, keyboards, etc.
5	**Accessories, spares and consumables**
5.1	**Accessories:**
	□ Reagents for one year at 20 samples/day or as per requirement must be provided along with the machine.
	□ Electrodes for all the parameters as specified -01 set
	□ Quality control tools/reagents for one year at 20 samples a day-01 set or as per requirement.
	□ Cost of reagents must be quoted for comparative evaluation.

5.2	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.
6	**Operating Environment**
6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.
6.3	UPS of suitable rating shall be supplied for minimum 30 min. backup for the entire system
7	Standards and Safety Requirements
7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND
7.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.
7.3	Shall 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.
10	Maintenance Service During Warranty Period
10.1	During the warranty period supplier must ensure planned preventive maintenance (PPM) along with corrective/breakdown maintenance whenever required.
11	Documentation
11.1	User (Operating) manual in English
11.2	Service (Technical / Maintenance) manual in English
11.3	List of important spare parts and accessories with their part numbers and costing.
11.4	Certificate of calibration and inspection from factory.

67

Auto CPAP

No.	Item Specifications
1	Should be an auto adjusting CPAP with pressures ranging from 4 to 20 cm H2O

2	Unit should be light weight (less than 1.5 Kg) and noise less than 30dBA
3	The unit should have an automatic altitude setting.
4	The unit should have an Automatic mode & manual mode of selection.
5	Should have an Ramp Time Automatic of 5 - 45 minutes
6	Should have a backlit LCD display for easy viewing
7	Should be able to change the settings with easy to use rotary control dial
8	The unit should have comfort feature A-Flex which adjusts air pressure based on patient need on every inhalation & exhalation
9	Unit should have C-flex/C-Flex+ mode when unit is running as manual CPAP.
10	The unit should have System one resistance control for optimized pressure delivery, no matter which mask is used
11	Mask fit and seal monitoring should be capable to check the seal of the mask.
12	Should have advanced event detection algorithm which detects and records CA, OA,CSR, RERA, Hypopnea, Vibratory snore, Large leak & Flow limitation for helping the physicians in opting for alternate therapy.
13	Should have Memory for recording the usage & compliance data .
14	The unit should have 2 years warranty
15	CE or USFDA or TUV approved certificate.
16	MASK: Should be able to select between medium and small size.
17	Mask should be provided with angled exhalation micro ports.
18	Should have blue gel with silicon membrane to create an effective self adjustment seal.
19	The mask should have silicone spring facility to enable patient to move in any direction.
20	HUMIDIFIER also should be supplied along with the System and should be of dry box technology such that it takes the room humidity into account while humidifying.
21	Tubing connection to be at the top of the humidifier unit.
22	Should have sensors both inside and outside the machine to allow it to accurately make changes in humidity and prevent condensation from forming inside the tube.
23	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.

68

Defibrillator

No.	Item Specifications
1	**Description of Functions**
1.1	To be used in emergency & critical care departments to meets various resuscitation and monitoring needs.
2	**Operational Requirements**
2.1	It shall operate on AC power supply and internal battery.
3	**System Configurations**
3.1	Defibrillator with complete accessories.
4	**Technical Specifications**
4.1	**Defibrillation function:**
4.2	It shall be a manual defibrillator for external defibrillation
4.3	Able to perform synchronized defibrillation and non-invasive pacing therapy.
4.4	Defibrillation energy selection:
4.5	External monophasic: 50 - 360J
4.6	External biphasic: 50 - 200J
4.7	External Paediatric /neonatal: 2 - 20J
4.8	System shall be user friendly, lightweight and easily transportable.
4.9	Waveform shape: biphasic.
4.10	The defibrillator paddles shall be easily interchangeable among adult, child, infant and internal paddles. It shall come with at least adult and paediatric paddles.
4.11	Can be used for neonatal/paediatric and adult defibrillation.
4.12	The unit shall be able to perform defibrillation and monitoring by using disposable electrodes.
4.13	Shall have an electrode contact-quality indicator to minimize the risk of ineffective defibrillation.
4.14	Recharge time shall not be held longer than 10 seconds before discharge.
4.15	Energy charge & discharge and other selection/control buttons shall be available at the paddle handles.
4.16	**ECG monitoring function:**
4.17	Shall have a 3-leads ECG, Lead I, II & III, monitoring capability protected from defibrillation by mean of ECG electrodes and through-the-paddles monitoring
4.18	With heart rate display and alarms

4.19	With Lead-fault indicator
4.20	Shall have an integrated thermal printer/ recorder with paper speed of 25mm/sec
4.21	**General function:**
4.22	**Shall have LCD that displaying at least dual ECG channel, HR, battery status, shock indicator and various data. Bidder to specify size of LCD screen and the no. of waveforms which can be displayed.**
4.23	**Shall have audio and visual alarms. (Please indicate in the next column type of alarms available)**
4.24	**Shall have HR limit and shockable rhythms alarms**
4.25	**Shall have a rechargeable battery when it is fully charged it shall deliver approximately 40 - 50 discharges or 2 hours of continuous ECG monitoring. Bidder to specify the type of battery used and number of discharge and monitoring hour.**
4.26	**Must have an electrode contact-quality indicator to minimize the risk of ineffective defibrillation.**
4.27	**The unit shall be portable and come with a carrying bag able to keep all required accessories and consumables.**
4.28	**Please indicate the weight in kilogram (KG) of the unit included all accessories and carrying case. It shall be within 8kg**
5	**Accessories, Spare Parts and Consumables**
5.1	**Accessories:**
	□ Rechargeable battery, 1 piece on the unit
	□ Thermal paper x 2 rolls/sets
	□ Power cord x 1 set
	□ 3 wire ECG cable x 1 set for ECG monitoring
	□ Disposable ECG electrodes, 50 pieces
	□ Carry Bag/case x 1 set
5.2	**All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.**
6	**Operating Environment**
6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.

6.2	**Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metres in length.**
7	**Standards & Safety Requirements**
7.1	**Must submit ISO13485:2003/AC:2007 for Medical Devices AND**
7.2	**CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.**
7.3	**Comply to AHA & ACLS requirements or equivalent**
7.4	**Electrical safety conforms to standards for electrical safety IEC-60601-1 General Requirements and IEC-60601-2-25 Safety of Electrocardiograms.**
8	**User Training**
8.1	**The Supplier shall conduct user training for this equipment to enable operators to use the equipment properly. The training shall include the use of all operational functions of the equipment, as well as routine checks and maintenance expected by users.**
9	**Warranty**
9.1	**Comprehensive warranty for 2 years.**
10	**Maintenance Service During Warranty Period**
10.1	**During the warranty period supplier must ensure planned preventive maintenance (PPM) along with corrective/breakdown maintenance whenever required.**
11	**Documentation**
11.1	**User (Operating) manual in English**
11.2	**Service (Technical / Maintenance) manual in English**
11.3	**List of important spare parts and accessories with their part numbers and costing.**
11.4	**Certificate of calibration and inspection from factory.**

69 **Defibrillator for Cardiology**

No.	Item Specifications
1	**Description of Functions**
1.1	To be used in emergency & critical care departments to meets various resuscitation and monitoring needs.
2	**Operational Requirements**
2.1	It shall operate on AC power supply and internal battery.
3	**System Configurations**

3.1	Defibrillator with complete accessories.
4	**Technical Specifications**
4.1	**Defibrillation function:**
4.2	It shall be a manual defibrillator for internal and external defibrillation
4.3	Able to perform synchronized defibrillation and non-invasive pacing therapy.
4.4	Defibrillation energy selection:
4.5	Internal: 5 - not more than 50 J
4.6	External monophasic: 50 - 360J
4.7	External biphasic: 50 - 200J
4.8	External Paediatric /neonatal: 2 - 20J
4.9	System shall be user friendly, lightweight and easily transportable.
4.1	Waveform shape: biphasic.
4.11	The defibrillator paddles shall be easily interchangeable among adult, child, infant and internal paddles. It shall come with at least adult and paediatric paddles.
4.12	Can be used for neonatal/paediatric and adult defibrillation.
4.13	The unit shall be able to perform defibrillation and monitoring by using disposable electrodes.
4.14	Shall have an electrode contact-quality indicator to minimize the risk of ineffective defibrillation.
4.15	Recharge time shall not be held longer than 10 seconds before discharge.
4.16	Energy charge & discharge and other selection/control buttons shall be available at the paddle handles.
4.17	**ECG monitoring function:**
4.18	Shall have a 3-leads ECG, Lead I, II & III, monitoring capability protected from defibrillation by mean of ECG electrodes and through-the-paddles monitoring
4.19	With heart rate display and alarms
4.2	With Lead-fault indicator
4.21	Shall have an integrated thermal printer/ recorder with paper speed of 25mm/sec
4.22	**Non-invasive external pacing:**
4.23	Pacing mode: at least 2 modes of demand and fixed rate.
4.24	Pacing rate: 50 - 150 ppm
4.25	Output current: 0 - 140 mA
4.26	Pulse width: > 20 msec

4.27	**General function:**
4.28	**Shall have LCD that displaying at least dual ECG channel, HR, battery status, shock indicator and various data. Bidder to specify size of LCD screen and the no. of waveforms which can be displayed.**
4.29	**Shall have audio and visual alarms. (Please indicate in the next column type of alarms available)**
4.3	**Shall have HR limit and shockable rhythms alarms**
4.31	**Shall have a rechargeable battery when it is fully charged it shall deliver approximately 40 - 50 discharges or 2 hours of continuous ECG monitoring. Bidder to specify the type of battery used and number of discharge and monitoring hour.**
4.32	**Must have an electrode contact-quality indicator to minimize the risk of ineffective defibrillation.**
4.33	**The unit shall be portable and come with a carrying bag able to keep all required accessories and consumables.**
4.34	**Please indicate the weight in kilogram (KG) of the unit included all accessories and carrying case. It shall be within 8kg**
5	**Accessories, Spare Parts and Consumables**
5.1	**Accessories:**
	□ Rechargeable battery, 1 piece on the unit
	□ Thermal paper x 2 rolls/sets
	□ Power cord x 1 set
	□ 3 wire ECG cable x 1 set for ECG monitoring
	□ Disposable ECG electrodes, 50 pieces
	□ Disposable pacing electrodes, 10 pieces
	□ Carry Bag/case x 1 set
5.2	**All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.**
6	**Operating Environment**
6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6.2	**Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metres in length.**

7	**Standards & Safety Requirements**
7.1	**Must submit ISO13485:2003/AC:2007 for Medical Devices AND**
7.2	**CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.**
7.3	**Comply to AHA & ACLS requirements or equivalent**
7.4	**Electrical safety conforms to standards for electrical safety IEC-60601-1 General Requirements and IEC-60601-2-25 Safety of Electrocardiograms.**
8	**User Training**
8.1	**The Supplier shall conduct user training for this equipment to enable operators to use the equipment properly. The training shall include the use of all operational functions of the equipment, as well as routine checks and maintenance expected by users.**
9	**Warranty**
9.1	**Comprehensive warranty for 2 years.**
10	**Maintenance Service During Warranty Period**
10.1	**During the warranty period supplier must ensure planned preventive maintenance (PPM) along with corrective/breakdown maintenance whenever required.**
11	**Documentation**
11.1	**User (Operating) manual in English**
11.2	**Service (Technical / Maintenance) manual in English**
11.3	**List of important spare parts and accessories with their part numbers and costing.**
11.4	**Certificate of calibration and inspection from factory.**

70

ECG Machine

No.	Item Specifications
1	**Description of Function**
1.1	ECG Machine is primary equipment to record ECG Signal in various configurations.
2	**Operational Requirements**
2.1	Microprocessor controlled digital 3 channel ECG machine suitable for adult, paediatric and neonate applications.
3	**System Configuration**
3.1	3 channel ECG machine with complete accessories.

4	**Technical Specifications**
4.1	3 channel ECG machine with simultaneous acquisition of 12 standard leads: aVR, aVL, aVF, I, II, III and V1-6 pre-cordials.
4.2	Internal memory for storage of up to 50 ECGs.
4.3	Splash-resistant alphanumeric keyboard with function keys.
4.4	With zeroing reset, auto-base-line correction (0.5Hz) and 1mV test/calibration signal.
4.5	Filter setting for line-frequency (50 or 60Hz) and tremor.
4.6	Continuous check on the quality of electrodes connection, audio visual alert on loss of signal.
4.7	Appropriately protected for operation during defibrillation.
4.8	Alphanumeric colour LCD display, approximately: 4”.
	Display shows ECG-curves, heart rate, patient name and ID, time, age, sex, speed and filter setting.
4.9	ECG machine shall have 3 modes of operation – Automatic, Manual & Rhythm.
4.1	Shall have measurements and analysis programs.
4.11	Measurements: QRS rate, PR interval, QRS duration, QT/QTC, P/QRT/T axes, RV5/SV1.
4.12	Shall have interpretation and waveform analysis.
4.13	Shall have maintenance free digital thermal array printer.
4.14	Printer shall be able to print ECG report and must have on/off selection.
4.15	Shall have ECG lead annotation facility.
4.16	Paper speed, user adjustable: 25 and 50mm/sec.
4.17	CMRR shall be > 100dB.
4.18	Sensitivity, automatic or user selectable: 5, 10 and 20mm/mV.
4.19	Rechargeable battery & charger integrated in the device.
4.2	Battery autonomy, approximately 2 hours.
4.21	The unit shall be compact, light in weight, easy to carry.
5	**Accessories, spares and consumables**
5.1	**Accessories:**
	□ Reusable Patient cable with reusable electrodes for adult & paediatric- 2 set.
	□ Reusable patient cable with reusable electrodes for neonate & infant- 1 set.
	□ Extremity clamp electrodes, reusable- 4 nos.
	□ Recording paper rolls- 12 rolls

	□ Bottles of electrode gel, approximately 350ml- 2 nos.
	□ Spare rechargeable battery pack- 1 no.
	□ Set of spare fuses- 1 set
	□ Plastic protective dustcover- 1 no.
5.2	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.
6	Operating Environment
6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6.2	Power supply: 220–240V AC, 50Hz fitted with appropriate plug type D round 3 pins. The power cable must be at least 3 metre in length.
7	Standards and Safety Requirements
7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND
7.2	CE (93/42 EEC Directives) or USFDA approved product certificate.
7.3	Electrical safety conforms to standards for electrical safety IEC-60601-1 General Requirements and IEC-60601-2-25 Safety of Electrocardiograms.
8	User Training
8.1	Must provide user training (including how to use and maintain the equipment).
9	Warranty
9.1	Comprehensive warranty for 2 years after acceptance.
10	Maintenance Service During Warranty Period
10.1	During the warranty period supplier must ensure preventive maintenance and corrective/breakdown maintenance whenever required.
11	Documentation
11.1	User (Operating) manual in English.
11.2	Service (Technical / Maintenance) manual in English.
11.3	List of important spare parts and accessories with their part numbers and costing.
11.4	Certificate of calibration and inspection from factory.

71

Echo Ultrasound

No.	Item Specifications
1	**Description of Function**
1.1	Colour Doppler Echocardiography System is required to study the anatomical abnormalities and blood flow in the heart and associated vessels.
2	**Operational Requirements**
2.1	Latest generation Electronic Phased array Colour Doppler system with minimum 512 electronic independent channels.
	System must be DICOM ready and capable of being interfaced with HIS/RIS/PACS.
	Must be upgradable to next generation system on site.
	Frequency compounding or better technology for better resolution and penetration.
3	**System Configuration**
3.1	Colour Doppler System with all application packages, quad loop for serial studies with high frame rate review. Harmonic imaging capability in all modes. (Tissue, Contrast, Anglo) Integrated Stress Echo Package, Digital Storage and Retrieval – 01no.
	1-3 MHz Adult Cardiac probe Electronics Phased Array probe- 01 ea.
	3-11 MHz Electronics Phased Array Probe for Vascular applications- 01 ea.
	Multi-plane TEE Probe: 4-8 MHz for Adult as well as Paediatric echocardiography.
	5-10 MHz Electronic phased array probe for Paediatric cardiology.
	Colour Printer -01no.
	B/W Video Thermal Printer -01no.
4	**Technical Specifications**
4.1	Latest generation Electronic Phased array colour Doppler system with Minimum 512 Electronic independent channels.
4.2	256 gray shades for sharp contrast resolutions
4.3	Multi-dimensional Beam former for generating two images simultaneously-one at low end of bandwidth and one at high end-then selectively retrieves and mixes the components together for finely textured 2-D or B mode image with superior contrast resolution

4.4	Adult Cardiac and Vascular Probes to be supplied which must be latest generation wide band transducers without frequency selection for higher sensitivity of response over a broader frequency range of operation. All probes to be phased array.
	Probes for paediatric application and Trans oesophageal Echo for future requirement.
4.5	Harmonic Imaging: System must have following modes in harmonic with separate setting for:
	Tissue Harmonic.
	Contrast Harmonic - both triggered and real time
	Harmonic Angio.
	Quantification of harmonics imaging
4.6	Harmonic imaging capability in Adult Cardiac, Paediatric Cardiac and linear Probe.
4.7	Gain control in two dimensions for additional level of flexibility to image quality control.
4.8	Real time high frequency 2D for higher resolution and low frequency Doppler for higher sensitivity in all probes
4.9	Frame rate must be 300 FPS or more.
4.1	Steerable PW/CW in all Phased Array probes.
4.11	High definition acoustic zoom for enlarging sections of 2D and colour flow images with more acoustic information for greater clarity and detail while maintaining an optimal frame rate.
4.12	Modes - 4D, M-Mode, Steerable PW/CW Doppler, Colour Doppler, and High Definition colour flow with capability of automatically picking up colour flow as a function of focal depth
4.13	Monitor must be 15" or more, high resolution colour monitor.
	Tilt and Swivel monitor must be able to view in all angles and all light conditions.
4.14	Colour Flow Imaging for:
	Increased lateral & spatial resolution.
	Detection of even subtle areas of turbulence, displaying a more physiological blood flow appearance without loss of frame rate.
	Colour flow with capability of automatically picking up colour flow as a function of focal depth
4.15	Tissue Colorization (B-colour) for improved contrast resolution
4.16	Application software for Adult, Paediatric, Foetal and Peripheral Vascular and Trans oesophageal applications. (All application packages must be built into the system).
4.17	Cine loop memory- more than 120MB of memory.

	□ High Frame rate review for better clarity of playback images study in slow motion.
	□ Quad loop with memory for pre and post image comparison of any procedure.
	□ Memory: 256 frames or more in quad loop. M Mode & Doppler Scroll Memory-40 seconds or more.
	□ Frame grabber facility for post analysis.
4.18	Various maps for pre and post processing.
4.19	ECG triggers facility.
4.2	User defined system and application pre-sets for multi-user department.
4.21	Minimum 4.8 GB optical disc drive for image storage and retrieval. (standard with system)
4.22	Dedicated integrated dynamic stress echo package for flexible user defined protocols with stacked sub loops facility and contrast stress protocol.
4.23	Tissue movement colorization with quantification possibility for IHD/CAD patients.
4.24	Three transducer ports will be preferred.
4.25	Colour Map resolution up to 128 levels.
4.26	Study Manager (> 1.5 GB) for on-cart digital acquisition, review and editing of complete patient studies.
4.27	Facility of Real time perfusion studies
4.28	System Peripherals shall include:
	□ CD Writer with calculation facility on playback.
	□ Colour Video Printer.
	□ B/W Thermal Printer.
5	**Accessories, spares and consumables**
5.1	**Accessories:**
	□ DVD/CD Recorder with 100 CDs and 100 DVDs
	□ Colour Print Paper- 500 sheets
	□ B/W Thermal Paper - 10 rolls
	□ ECG Cable - 02nos.
	□ MO Disc - 10pcs
5.2	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.
6	**Operating Environment**

6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.
6.3	UPS of suitable rating conforming to international standards shall be supplied for minimum 30 min. backup for the entire 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	The product shall comply to IEC 60601-2-37 ed1: Medical Electrical Equipment - Part 2-37: Particular Requirements for the Safety of Ultrasonic Medical Diagnostic and Monitoring Equipment.
7.4	Type of protection against electric shocks - Class I
	Degree of protection against electric shocks for ultrasound probes Type "BF"
	For ECG electrodes Type 'CF"
8	User Training
8.1	Must provide user training (including how to use and maintain the equipment).
9	Warranty
9.1	Comprehensive warranty for 2 years.
10	Maintenance Service during Warranty Period
10.1	During the warranty period supplier must ensure planned preventive maintenance (PPM) along with corrective/breakdown maintenance whenever required.
11	Documentation
11.1	User (Operating) manual in English
11.2	Service (Technical / Maintenance) manual in English
11.3	List of important spare parts and accessories with their part numbers and costing.
11.4	Certificate of calibration and inspection from factory.

72

EEG Machine

No.	Item Specifications
1	**Description of Function**

1.1	An electroencephalograph uses electrodes placed on a patient's scalp to measure, amplify, display in graphic form, and record the weak electrical signals generated by the brain. Electroencephalography is useful in observing and diagnosing a variety of neurologic conditions, including epilepsy, related convulsive disorders, and brain death. It can also be used to evaluate psychiatric disorders and differentiate among various psychiatric and neurologic conditions. In addition, electroencephalographic studies can assist in localizing tumours or lesions on or near the surface of the brain.
2	**Operational Requirements**
2.1	EEG System completes with software for acquisition, review and the compatible computer with necessary interface and printer is required.
3	**System Configuration**
3.1	32 Channel Digital EEG Systems for Neurology with complete accessories.
4	**Technical Specifications**
	Hardware:
4.1	□ Must be PC based with minimum following PC specifications: Core 2 duo / Corei5, 2GB DDR RAM, 300 GB HDD, CD/DVD RW, 21" LCD TFT Display, Key Board, Mouse and UPS of suitable ratings with minimum 30 min. back-up.
	□ Number of EEG Channels must be 32 with colour coding, and another eight channels for Polygraph. Also any two channels can be configured as Bipolar, AC or DC through software.
	□ Facility for simultaneous sampling of all EEG channels and multiple sampling rates.
	□ Photic Stimulator with software programmable for manual or automatic sequences.
	□ Networking facility.
	□ DICOM compatible.
4.2	CMRR must be > 110 dB or better.
4.3	Noise < 2uV peak to peak.
4.4	Input Impedance > 100 Mohm.
4.5	16 bit ADC resolution voltage of 0.153 uV.
4.6	**Acquisition Software:**
	□ Facility to combine all users defined settings into templates or protocol, for use in different applications.
	□ Facility for individual channel control, customization of montages, along with reportage capabilities.
	□ Must display a graphical view of the current montage during the EEG recording.

	Facility to define new sensors must be possible as standard i.e. assign to amplifier inputs, define traces in a mintage, define calculated channels (Average, Source/Laplacian), or define trends.
	Facility to click any point to display corresponding traces & Slide pointer to change displayed duration of the overview.
	Facility for sortable list of all events placed in the recording, both automatically and manually.
	Facility to review and add events to recorded traces.
	Facility for automatic time counters and event insertion during hyperventilation.
	Facility to controlled display Sensitivity for User defined value.
	Facility to choose low & high cut filters along with facility to enter any user defined value.
	Facility to file zip.
	Facility of configurable time base.
	Spike & seizure software.
	Trend analysis software.
4.7	**Review Software:**
	Paging facility as automatic paging, Mouse controlled paging and/ or Keyboard paging.
	Playback of EEG for one or more channels.
	Facility for zoom/ magnify EEG trace.
	Facility for copy & paste of EEG or trends to reports and presentations.
	Facility for Automatic generation of reports.
	Facility for viewing several recordings in tiled or cascading windows.
4.8	**Patient Administration Software:** Network supported patient and test management software, archive to CD or DVD, powerful search, patient folder, workspaces.
4.9	Must have an option of upgrading the digital EEG to Video EEG with day/night camera using MPEG-2 3rd generation technology.
5	**Accessories, spares and consumables**
5.1	Accessories:
	Compatible Laser Printer with 600 DPI resolution and A4 size printing facility – 01 no.
	Patient cable and connectors with electrodes and papers for at least 1000 EEG exams and all the necessary power cables and other interfaces.
	Optional requirements components for video EEG up gradation.

5.2	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.
6	**Operating Environment**
6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.
6.3	Suitable UPS with maintenance free batteries, voltage regulation and spike protection for minimum 30 min. back-up shall be supplied with the system.
7	**Standards and Safety Requirements**
7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND
7.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.
7.3	Shall be certified to be meeting the safety standards IEC- 60601-2-26 PART 2: Particular requirements for safety of EEG Systems.
8	**User Training**
8.1	Must provide user training (including how to use and maintain the equipment).
9	**Warranty**
9.1	Comprehensive warranty for 2 years.
10	**Maintenance Service during Warranty Period**
10.1	During warranty period supplier must ensure preventive maintenance and corrective/breakdown maintenance whenever required.
11	**Installation and Commissioning**
11.1	The bidder must arrange for the equipment to be installed and commissioned by certified or qualified personnel; any prerequisites for installation to be communicated to the 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.

Glucometer

No.	Item Specifications
1	Hand held type Glucometer
2	Battery operated
3	Memory up to 10 measurements
4	Sticks method measurements
5	Code of sticks interring is available
6	Indication of high and low measurements
7	With Start up kits
8	Case is included
9	One box of sticks and punctures is included
10	Operating instructions is included

74

Hot air Oven

No.	Item Specifications
1	**Description of Function**
1.1	Hot Air Oven is required for heating a sample under controlled conditions.
2	**Operational Requirements**
2.1	Microprocessor based system with PID-temperature controller with integrated auto diagnostic system with fault indicator.
3	**System Configuration**
3.1	Microprocessor based Hot Air Oven.
4	**Technical Specifications**
4.1	External: Stainless Steel Casing: w x h x d: Approx.600 x 600 x 600 mm, insulated stainless steel door with locking and rear zinc-plated steel.
4.2	Interior: w x h x d: Approx. 400mm x 400mm x 400mm. Easy to clean, interior made of stainless steel, with supports on the three sides for three adjustable perforated stainless steel shelves.
4.3	Forced air circulation by quiet air turbine/Fan to ensure uniform temperature.
4.4	Fitted with load indicator and safety thermostat take over indicator lamp. LCD/LED indicator.

4.5	Temperature Variation +/- 1.
4.6	Temperature Range- ambient to 250 oC
4.7	Output available for data acquisition.
4.8	Hot Air Oven shall be mounted on suitable epoxy powder coated support stand having 4 robust 360 deg. swivel lockable castor wheels for easy movement and repositioning.
5	**Accessories, spares and consumables**
5.1	All standard accessories/consumables/parts required for the proper operation of the above item shall be included in the offer.
6	**Operating Environment**
6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6.2	Power supply: 220-240V/ 50 Hz AC Single phase fitted with appropriate plugs. The power cable must be at least 3 metres long.
7	**Standards and Safety Requirements**
7.1	Must submit ISO 9001 or ISO 13485:2003/AC: 2007 AND
7.2	CE or USFDA or TUV approved product certificate.
8	**User Training**
8.1	User training must be provided onsite
9	**Warranty**
9.1	Comprehensive warranty for 2 years after acceptance.
10	**Maintenance Service During Warranty Period**
10.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.
11	**Installation and Commissioning**
11.1	Supplier must accomplish proper installation and commissioning of the equipment on site.
12	**Documentation**
12.1	User (Operating) manual in English.
12.2	Service (Technical / Maintenance) manual in English.
12.3	List of important spare parts and accessories with their part number and costing.
12.4	Certificate of calibration and inspection from factory.

I.C.U Beds

1	Description of Function
1.1	ICU Beds are required in the Intensive Care for comfort of the patient and to facilitate comfortable transfer to and fro emergency/OT/Wards etc. It is also required to carry out point of care procedures including radiological procedures at the bedside.
2	Operational Requirements
2.1	The system should be electrically operatable and adjustable for heights, trendelenburg etc.
	It should also be having radiotransluscent top
3	System Configuration
3.1	Electrically and pneumatically operated ICU bed with mattress.
4	Technical Specifications
4.1	Should have four section mattress base
4.2	Should have X-Ray translucent back section made up of high pressure laminate.
4.3	Should have X-Ray cassette holder underneath the back section & should allow insertion of X-Ray cassette from either side of the bed.
4.4	Base frame & support frame should be made up of steel for long life & prevention from rusting.
4.5	4.5 Should have step less electrical adjustment for the following :-
	Height : 450-840 mm
	Back section : 0- 50 degrees
	Leg Section : 0-30 degrees
4.6	Should have step less pneumatic adjustment for Trendelenburg (25° approx.), antitrendelenburg (15° approx.)
4.7	Should have a manual quick release mechanism for back section adjustment during emergency situation
4.8	Should be equipped with four articulated half-length tuck away side rails
4.9	Should be equipped with large castors (diameter 150 mm) with central braking and steering facility.
4.10	Mattress of the Bed should be made up of high density foam with Anti-Microbial agent incorporated into all components that assists in Prohibiting growth of bacteria & fungi and easy to clean.
4.11	Mattress should be fully Radiolucent for ease in performing portable X-Rays.
4.12	4.12 Should have bumpers at all four corners and place for fixing accessories

4.13	Dimensions of bed (approx.) :
	Length : 2200 -2290 mm
	Width : 850 -1020mm
	Mattress Size : appropriate as per bed size
5	Accessories, spares and consumables
5.1	Accessories:
	· I.C.U Bed Mainframe -01
	· Bed Ends, detachable : 01 pair
	· Articulated half-length tuck away side rails : 04 Nos.
	· IV Rods: 01 No.
	· Mattress 12 cm Thick : 01 No.
6	Operating Environment
6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.
6.3	Resettable overcurrent breaker shall be fitted for protection
7	Standards and Safety Requirements
7.1	The unit offered shall be certified to meeting the relevant quality and safety requirements of TUV, CE mark (MDD), USFDA, IEC,Radiation safety, safety of pressurised equipment and any other relevant quality and safety standards .
7.2	7.2 Manufacturer must have ISO certification for quality standards.
7.3	7.3 Certified to be compliant with IEC 60601-2-38 Medical Electrical Equipment part 2-38 Particular requirements for safety of Electrically Operated Hospital Beds.
8	User Training
8.1	On site operational training till the familiarity of the system and satisfaction of end user shall be provided.
9	Warranty
9.1	Comprehensive warranty for 2 years.
10	Maintenance Service During Warranty Period
10.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.

11	Documentation
11.1	User (Operating) manual in English
11.2	Service (Technical / Maintenance) manual in English
11.3	12.3 List of important spare parts and accessories with their part numbers and costing.
11.4	12.4 Certificate of calibration and inspection from factory.
11.5	Log book with instruction for daily, weekly, monthly and quarterly maintenance checklist.

76

ICU Ventilator

No.	Item Specifications
1	**Description of Function**
1.1	ICU ventilator provides artificial respiratory support to the critical patients in the intensive care units.
2	**Operational Requirements**
2.1	Microprocessor Controlled ventilator with integrated facility for ventilation monitoring suitable for new-born to adult ventilation.
3	**System Configurations**
3.1	ICU Ventilator for Infant to Adult, complete unit with all standard accessories.
4	**Technical Specifications**
4.1	Imported hinged arm holder for holding the circuit.
4.2	Colour TFT screen, 12 Inch or more.
4.3	Facility to measure and display:
	□ End tidal CO2 with capnography.
	□ 3 Waves: Pressure & Time, Volume & Time and Flow & Time.
	□ 3 Loops: P-V, F-V, P-F with facility of saving of 3 loops for reference.
	□ Graphic display to have automatic scaling facility for waves.
	□ Status indicator for ventilator mode, battery life, patient data, alarm settings, clock etc.
4.4	Trending facility for 72 hours with minimum 5 minutes resolution for recent 24 hours.
4.5	Automatic compliance & leakage compensation for circuit and ET tube.
4.6	Must have following settings :
	□ Tidal Volume up to 2000ml.
	□ Pressure (insp.).

	□ Pressure Ramp.
	□ Flow Pattern.
	□ Respiratory rate up to 100 breaths per minute.
	□ SIMV Respiratory Rate up to 40 breaths per minute.
	□ CPAP/PEEP: PEEP 50cmH2O.
	□ Pressure Support.
	□ FIO2.
	□ Pause Time.
	□ Pressure & Flow Trigger: Pressure Trigger 0-20 cmH2O below PEEP, Trigger Flow 0-100%.
	□ Inspiratory rise time:-0-20% of breath cycle time.
	□ I:E Ratio: 1:10 to 4:1
4.7	Monitoring of the following parameters:
	□ Airway Pressure (Peak & Mean).
	□ Tidal volume (Inspired & Expired).
	□ Minute volume (Inspired and Expired).
	□ Spontaneous Minute Volume.
	□ Total frequency.
	□ FIO2 dynamic.
	□ Intrinsic PEEP and PEEPi volume.
	□ Plateau pressure.
	□ Resistance & Compliance.
	□ Use selector alarms for all measured & monitored parameters.
4.8	Modes of ventilation:
	□ Volume controlled.
	□ Pressure controlled.
	□ Pressure support.
	□ SIMV (pressure control and volume control) with pressure support.
	□ CPAP/PEEP.
	□ Inverse ratio ventilation.
	□ Advanced mode like pressure controlled volume guaranteed.

	□ Non Invasive ventilation.
	□ APRV or equivalent.
	□ PRVC or equivalent.
4.9	Shall have apnoea /backup ventilation
4.1	Expiratory block must be autoclaveable and no routine calibration is required.
4.11	Shall have the ability to calculate / procedure:
	□ Intrinsic PEEP & Intrinsic PEEP Volume.
	□ Occlusion Pressure.
	□ Spontaneous breathing trial.
	□ Facility to calculate lower and upper inflection point.
4.12	Nebulizer with capability to deliver particle size of < 3 micron & to be used in both Off and On line
4.13	Shall have automatic patient detection facility.
4.14	**Medical Air Compressor:**
	□ Imported standalone medical air compressor.
	□ Snap fit with the ventilator module to provide an oil free medical air.
	□ Peak output flow shall be minimum 160 LPM.
	□ Air quality must comply with ISO compressed air purity class.
	□ Medical Air Compressor must automatically activate in the event of wall air supply loss.
	□ Replacement of internal filters must be performed without removing the compressor.
	□ Must have washable air filter.
4.15	**Reusable Face Mask & Nasal Mask:**
	□ Reusable face & nasal mask with textured dual flap silicone cushion flap for easy fit.
	□ Removable forehead support and pad to match the angle of patient's forehead.
	□ Stability selector for easy fit and angle.
	□ Ball & Socket headgear attachments.
	□ Must be autoclaveable.
4.16	Shall have battery backup for minimum 1 hour.
4.17	RS 232C interface for communications with networked devices.
5	**Accessories, spares and consumables**
5.1	Adult, Paediatric and Neonatal reusable, autoclaveable silicon breathing circuits: 02 set each

5.2	Reusable Masks (Small, Medium, and Large): 02 set each.
5.3	Connecting hose with regulator/ flow meter or probe for connection to Pin index oxygen cylinder and BOC type oxygen wall outlet, 3 meter length: 01 set.
5.4	Humidifier: Servo controlled with digital monitoring of inspired gas temperature complete with heating wire: 01 no.
5.5	Filter paper for humidifier for 100 uses.
5.6	O2 cell with O-ring.
5.7	Silicone test lung adult and child size: 01 set each
5.8	Nipple connector 15-10 mm.
5.9	Flow sensors: 05 nos.
5.1	Inspiration bacterial filter, able to filter 99.97% of all 0.3 microns particles: 05 nos.
5.11	Expiration bacterial filter, able to filter 99.97% of all 0.3 microns particles: 05 nos.
5.12	Non corrosive imported trolley with wheels & brakes and hinged arm: 01 no.
5.13	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.
6	Operating Environment
6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.
7	Standards and Safety Requirements
7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND
7.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.
7.3	Certified to be compliant with ANS/IEC60601.2.12-01 Medical Electrical Equipment—Part 2-12; Particular Requirements for the Safety of Lung Ventilators—Critical Care Ventilators.
7.4	Must meet IEC 529 Level 3 (IP3X) (spraying water) for enclosure protection, water ingress.
7.5	Certified to be compliant with ISO-7767 for Oxygen monitoring.
8	User Training
8.1	Must provide user training (including how to use and maintain the equipment).
9	Warranty

9.1	Comprehensive warranty for 2 years after acceptance.
10	Maintenance Service During Warranty Period
10.1	During the warranty period supplier must ensure preventive maintenance and corrective/breakdown maintenance whenever required.
11	Documentation
11.1	User (Operating) manual in English.
11.2	Service (Technical / Maintenance) manual in English.
11.3	List of important spare parts and accessories with their part numbers and costing.
11.4	Certificate of calibration and inspection from factory.

77

Infusion Pump

No.	Item Specifications
1	A microprocessor controlled infusion pump unit is needed to include but not limited to the following features:
2	Flat hygienic touch screen.
3	Syringe loading sensor – with KVO (keep vein open)
4	Self calibrated, self diagnosis capability
5	Volume range from 1 –999 ml/hr or better in 1 ml increment
6	High accuracy rate< /- 2%
7	Audio visual indicators
8	Multi types A/V alarms to include occlusion, door open, low battery, empty, etc…
9	Open system using standard IV lines
10	Air in line/ fluid detector
11	Built in rechargeable battery, at least two hours operation
12	Clamp pole
13	Input power supply: 220 ± 20 % V AC , 50Hz

78

I.V Stand

No.	Item Specifications

1	**Description of Function**
1.1	This IV/saline stand is used for hanging various intravenous items such as blood bag, glucose bottle etc.
2	**Operational Requirements**
2.1	Epoxy powder coated IV/Saline stand with castors.
3	**System Configuration**
3.1	Adjustable IV/saline stand with five legs, with 4 hooks and five swivels castors.
4	**Technical Specifications**
4.1	The IV stand shall be made of tubular anti-corrosive and antirust treated epoxy powder coated mild steel, with a 5 pronged base fitted on mobile on swivelling castors of approx. diameter Ø50mm. The castors must be non-rusting and non-marking.
4.2	The stand should come with stainless steel double IV hook, height adjustable from approximately 1620mm to 2340mm, with a screw knob for height adjustment.

79

Laryngoscope Set

No.	Item Specifications
1	**Description of Function**
1.1	Laryngoscopy to facilitate tracheal intubation during general anaesthesia or cardiopulmonary resuscitation or for procedures on the larynx or other parts of the upper tracheobronchial tree.
2	**Operational Requirements**
2.1	Battery powered laryngoscope unit (handle to take C-size batteries).
3	**System Configuration**
3.1	Laryngoscope set (McIntosh or equivalent)
4	**Technical Specifications**
4.1	Blades to be made of surgical grade stainless steel.
4.2	Clip-on quick release mechanism for blades, which also provides electrical contact for blade light. Light to be activated when blade is engaged.
4.3	Shall operate on battery.
4.4	Handle/battery unit to be made of non-ferrous metal.
5	**Accessories, spares and consumables**
5.1	**Accessories:**

	□ Spare bulbs: 03 nos.
	□ Blades: One each of following sizes:
	i-Neonate size 00
	ii-Adult small size 3
	iii-Adult medium size 4
	iv-Adult large size 5
5.2	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer. Bidders must specify the quantity of every item included in their offer (including items not specified above).
6	**Operating Environment**
6.1	The product offered shall be designed to be stored and to operate normally under Climate, Temperature,Humidity, etc. for Sudan.
6.2	Battery operated system.
7	**Standards and Safety Requirements**
7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND
7.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.

80

Monitor (IBP + CO)

No.	Item Specifications
1	**Description of Functions**
1.1	A bedside patient monitor to monitor physiological parameters of patients in the critical care units or operating theatres.
2	**Operational Requirements**
2.1	It shall operate on AC power supply as well as built-in battery.
3	**System Configurations**
3.1	Monitor Patient Bedside 4 chl. colour with ECG/Resp., SpO2, NIBP, Temp, 2IBP, ETCO2 , CO
3.2	All accessories, consumables and etc. required for monitoring of physiological parameters specified herein.
4	**Technical Specifications**
4.1	High resolution colour flat panel non-reflective screen: > 10" display size for at least 4 channel waveforms display

4.2	Display of up to 4 physiological parameter modules without the need for external devices
4.3	Display waveform: ECG, IBP, SpO2,CO, pulse wave and respiration.
4.4	Numeric data display: heart rate / pulse rate, respiration rate, NIBP (Systolic, Diastolic, Mean), SpO2 and current time of NIBP measurement.
4.5	Use interaction via integrated touch screen, press pad/button or rotary knob.
4.6	With storage of at least 24 hours of trend data in 30-second sampling resolution for all monitored parameters to be displayed graphically and in tabular form.
4.7	Data resolution shall be minimum of 30 second sampling.
4.8	Display of trend:
4.9	a) Trend tables in at least with 1, 5, 15, 30 or 60 -minute display formats; and
4.1	b) Trend graphs in at least 1, 2, 4, 8, 12 or 24 -hour display formats
4.11	With storage of events for event recalling, review and documentation. It shall be able to store and record at least 10 events.
4.12	The monitor shall be protected against the interference from the electric cautery and other electrical equipment.
4.13	Despite the technical requirements of the networking capability, the networking works shall not be included in this offer.
4.14	All parameters modules shall work in all monitors within the network and shall be easily interchangeable by the user. There shall be no restriction on the combination of them.
4.15	**Parameter required:**
4.16	**ECG/Respiration** with 5 system with cable (1 set) and complete reusable ECG electrodes for Adult & paediatric, 1 set each
4.17	ECG cable and patient cable 5 leads for disposable electrodes, 1 set
4.18	Disposable electrodes for adult, child and infant, 50 pcs each
4.19	Shall come with at least a 2-lead (channel) **ST analysis**
4.2	With lethal **arrhythmia detection**: at least with detection & monitoring of asystole, ventricular, fibrillation, and ventricular tachycardia and bradycardia.
4.21	**Pulse oximetry SpO2** with adult and child finger transducer, 1 each.
4.22	SpO2 reusable sensor for infant, 1pc.
4.23	Non-invasive blood pressure, NIBP with reusable NIBP Starter Kit

4.24	NIBP connection hose, 1 set
4.25	NIBP cuff & tubing for both adult & child (At least 2 different sizes for adult and 4 different sizes for child/ infant/ neonate)
4.26	Temperature: 2 type of probes required.
4.27	Core temperature probe adult, child & infant, 1 pc each
4.28	Skin Temperature probe, adult/child & infant, 1 pc each
4.29	Invasive blood pressure, IBP for monitoring of 2 IBP
4.3	Shall come with one complete set of IBP reusable accessories
4.31	EtCO2, preferably microstream but at least must be able to perform mainstream and side stream EtCO2 monitoring
4.32	Come with one complete set of EtCO2 flow sensor and accessories for mainstream and side stream monitoring, 1 set each.
4.33	In the case of microstream system, it shall come with one complete set of EtCO2 flow sensor and accessories for side stream monitoring, 1 set
4.34	Come with internal rechargeable Lithium battery complete with built-in charger
4.35	Monitor shall be operated by the battery for at least 60 minutes
4.36	Come with Alarms for all monitored parameters including: exceeding user-selectable upper and lower limits, life threatening alarms, lead/ probe/ sensor disconnection, system failure or error.
4.37	Alarm shall have at least 3 levels: Crisis, Warning, and Advisory
4.38	Alarm notification shall be given by Audible and Visual
4.39	With networking capability to interface with the central monitor
4.4	RS232 port with interface with computer
4.41	System architecture shall be designed such that deactivation or failure of any bedside or central station device on the network shall not disable, inhibit or degrade communication functions among any other devices in the system.
5	Accessories, Spare Parts and Consumables
5.1	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.
6	Operating Environment

6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metres in length.
7	Standards & Safety Requirements
7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND
7.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.
7.3	Shall meet IEC-60601-1-2:2001 General Requirements of Safety for Electromagnetic Compatibility.
7.4	Shall meet the safety requirements as per IEC 60601-2-27:1994—Medical electrical equipment—Part 2: Particular requirements for the safety of electrocardiographic monitoring equipment.
8	User Training
8.1	The Supplier shall conduct user training for this equipment to enable operators to use the equipment properly. The training shall include the use of all operational functions of the equipment, as well as routine checks and maintenance expected by users.
9	Warranty
9.1	Comprehensive warranty for 2 years.
10	Maintenance Service During Warranty Period
10.1	During the warranty period supplier must ensure planned preventive maintenance (PPM) along with corrective/breakdown maintenance whenever required.
11	Documentation
11.1	User (Operating) manual in English
11.2	Service (Technical / Maintenance) manual in English
11.3	List of important spare parts and accessories with their part numbers and costing.
11.4	Certificate of calibration and inspection from factory.

81

Nebulizer Heavy Duty

No.	Item Specifications
1	**Description of Function**
1.1	Nebuliser is a device used to administer medication to people in forms of a liquid mist to the airways. It is commonly used in treating cystic fibrosis, asthma, and other respiratory diseases.

2	**Operational Requirements**
2.1	Heavy duty compact Nebuliser is required.
3	**System Configuration**
3.1	Nebuliser, complete unit with all standard accessories.
4	**Technical Specifications**
4.1	Compact, lightweight, low noise.
4.2	Durable long life compressor. Suitable for heavy duty/ institutional (hospital) use, must be able to run uninterruptedly for one hour.
4.3	Maximum pressure: 2.0 to 2.5 bars.
4.4	Must produce particle of size 1-5 micron.
4.5	Aluminium cabinet painted with epoxy powder.
4.6	Piston-type electric aspirator that offers high performance and great durability.
4.7	Protective thermal cut out relay.
4.8	Air delivery rate app.15 L/min.
4.9	24 hours continuous work for hospital use.
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.
6	**Operating Environment**
6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.
7	**Standards and Safety Requirements**
7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND
7.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.
7.3	Electrical safety conforms to standards for electrical safety IEC 60601-1 General requirement for Electrical safety of Medical Equipment.
8	**User Training**
8.1	Must provide user training (including how to use and maintain the equipment).

9	**Warranty**
9.1	Comprehensive warranty for 1 year after acceptance.
10	**Maintenance Service during Warranty Period**
10.1	During warranty period supplier must ensure corrective/breakdown maintenance whenever required.
11	**Documentation**
11.1	User (Operating) manual in English.
11.2	Service (Technical / Maintenance) manual in English.
11.3	List of important spare parts and accessories with their part number and costing.
11.4	Certificate of calibration and inspection from factory.

82

Oxygen Concentrator

No.	Item Specifications
1	**Description of Function**
1.1	Oxygen concentrator produces oxygen from ambient air.
2	**Operational Requirements**
2.1	Integrated Oxygen sensing device (OSD) measures concentration at flow meter entrance.
3	**System Configuration**
3.1	Oxygen Concentrator set complete with Flow Splitter.
4	**Technical Specifications**
I	**Oxygen Concentrator**
4.1	Output flow: max 5 LPM (Litre per minute).
4.2	Flow meter range: 1 to 5 LPM.
4.3	Output pressure: 60 kPa.
4.4	Oxygen concentration: 95% +/- 3% at 1-3 LPM, 92% +/- 3% at 4 LPM, 90% +/- 3% at 5LPM.
4.5	Time to reach 95% the specified performance: 5 minutes.
4.6	Four-step filtering (coarse, pre, inlet and bacterial) of air-intake.
4.7	All filters replaceable, coarse filter washable/reusable.
4.8	Continuous monitoring, with visual and audible alert on:
	□ Low and high output pressure

	□ Low oxygen concentration
	□ Oxygen monitor: amber light on the front illuminates when oxygen concentrator is below 85%. If concentration remains below 85% for more than 15 minutes, an audible alarm sounds.
	□ Power failure
	□ Battery test.
4.9	Temperature operating range: 20 to 60 OC.
4.1	Sound level produced: 40 to 50 dB(A).
4.11	Shall have 4 antistatic swivel casters, 2 with brakes and with integrated handle allows for easy moving and positioning.
II	**Flow Splitter for Oxygen Concentrator**
4.12	Five way split of oxygen flow provided by an oxygen concentrator.
4.13	Each flow can be adjusted individually via its flow meter, range: 0.125 to 2 LPM (Litre per minute).
4.14	The output nozzle can either be fit with tubing or left blank.
4.15	Input pressure: approx. 50 to 350 kPa.
4.16	Flow splitter allows precise distribution of the oxygen output of a concentrator towards 2, 3, 4 or 5 patients, i.e. neonates and infants.
5	**Accessories, spares and consumables**
5.1	**Accessories:**
	□ 2 x Adult cannula, with 2m tubing.
	□ 4 x Infant/Paediatric cannula, with 2m tubing.
	□ 4 x New-born cannula, with 2m tubing.
	□ 3 x Connector for above.
	□ 4 x Humidifiers.
	□ 4 x 50' tubing.
	□ 4 x tubing adapter kit.
	□ 6 x Spare coarse filters.
	□ 3 x Spare pre-filters.
	□ 3 x Spare inlet-filters.
	□ 3 x Spare bacterial-filters.

5.2	All standard accessories/consumables/parts required for the proper operation of the above item shall be included in the offer.
6	**Operating Environment**
6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6.2	Power supply: 220-240VAC, 50Hz fitted with appropriate plug. The power cable must be minimum 3 metres long.
	Power consumption, approx.: 500 W.
7	**Standards and Safety Requirements**
7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND
7.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.
8	**User Training**
8.1	Must provide user training.
9	**Warranty**
9.1	Comprehensive warranty for 1year after acceptance.
10	**Maintenance Service During Warranty Period**
10.1	During warranty period supplier must ensure corrective/breakdown maintenance whenever required.
11	**Documentation**
11.1	User (Operating) manual in English.
11.2	Service (Technical / Maintenance) manual in English.
11.3	List of important spare parts and accessories with their part number and costing.
11.4	Certificate of calibration and inspection from factory.

83

Patient Monitor

No.	Item Specifications
1	**Description of Function**
1.1	NIBP Monitor measures and displays Blood Pressure values with inflation of the cuffs and is non-invasive in operation.
2	**Operational Requirements**
2.1	Compatible for use in new-borns to adults.

3	**System Configuration**
3.1	NIBP Monitor light weight, portable and with all standard accessories.
4	**Technical Specifications**
4.1	The monitor must be compact in size, light weight and portable.
4.2	Measurement method: Oscillometric using linear deflation.
4.3	Pressure detection: Conductor pressure sensor
4.4	Continuously display of BP (systolic, diastolic, mean and pulse rate at intervals of 2, 3,5,10,15,20,30 up to 180 minutes).
4.5	Shall have facility of self-check system/self-test.
4.6	Pressure: 00 to 300 mm of Hg, Accuracy: + - 5 mm with standard deviation not greater than 8 mm of Hg.
4.7	Pulse range: 40 -240 /minute, accuracy: +/- 2%.
4.8	Patient alarms :
	□ Systolic upper limit-60 -240 and lower limit 20-160 mm of Hg.
	□ MAP (Mean Arterial Blood Pressure) upper limit: 60 -200 mmHg and lower limit 20 -120 mmHg.
	□ DIA upper limit-50 -180 and lower limit 15-120 mm of Hg.
	□ P.R upper limit-80 -220 and lower limit 40 -140/minute.
4.9	Memory: 400 measurement capacity.
4.1	Printer facility with oscillometric graph of BP and pulse level.
4.11	Supplied with various sizes of cuffs from neonate to paediatric ranges e.g. 2.5cm, 3.0 cm, 4.0 cm, 5.0 cm, 9 cm, 12 cm and 14 cm.
4.12	Auto cuff deflation in case of over pressure (140 mm of Hg in case of neonatal mode).
4.13	Auto zero facility.
4.14	Stat mode for critical situation for rapid reading for 5 minutes with a 10 second pause.
4.15	Self-diagnostic facility for air leak, application error, dead battery, motion, over pressure, patient alarm, time out and weak signal.
4.16	Display: Colour LCD display.
5	**Accessories, spares and consumables**
5.1	Shall supply adult, paediatric and infant sizes of BP cuffs two of each size.
5.2	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.

6	**Operating Environment**
6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metres in length.
7	**Standards and Safety Requirements**
7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND
7.2	CE (93/42 EEC Directives) or USFDA Or TUV approved product certificate.
7.3	Electrical safety conforms to standards for electrical safety IEC 60601-1 General requirement for Electrical safety of Medical Equipment.
8	User Training
8.1	Must provide user training (including how to use and maintain the equipment).
9	Warranty
9.1	Comprehensive warranty for 2 years after acceptance.
10	Maintenance Service during Warranty Period
10.1	During warranty period supplier must ensure corrective/breakdown maintenance whenever required.
11	Documentation
11.1	User (Operating) manual in English.
11.2	Service (Technical / Maintenance) manual in English.
11.3	List of important spare parts and accessories with their part number and costing.
11.4	Certificate of calibration and inspection from factory.

84

Portable Ultrasound Machine

No.	Item Specifications
1	**Description of Function**
1.1	A general purpose fully digital B & W Ultrasound imaging system.
2	**Operational Requirements**
2.1	It shall operate on mains AC supply.
3	**System Configuration**

3.1	System shall come with main unit, 1 probe, 1 unit of black and white video thermal printer and Ultrasound gel warmer 1 unit.
4	**Technical Specifications**
4.1	Latest technology and all digital beam former general purpose standalone ultrasound machine with integrated light weight mobile cart.
4.2	Main applications: OB/GYN, abdominal, peripheral vessels and small parts.
4.3	The system shall have at least 12” or higher flat LCD monitor with tilt & swivel facilities.
4.4	Shall have B-mode, M-mode, B/M mode, 2B mode & 2D mode.
4.5	The system must have at least Two active probe ports for easy use and convenient operation.
4.6	256 Grey shades for sharp contrast resolutions.
4.7	Controls for depth, gain compensation, body markers with transducer position.
4.8	Shall have real time continuous dynamic focus.
4.9	Shall have facility for image zoom, freeze, text annotation.
4.1	The system shall have extensive calculation software package for Ob/Gyn and general imaging.
4.11	The system must have provision for measurement and calculation of distance, area, volume, heart rate and circumference on the image.
4.12	The system shall have Tissue Harmonic Imaging.
4.13	Near and far gain adjustable.
4.14	Contrast, adjustable.
4.15	Focus: auto adjustable.
4.16	Shall have an alpha-numeric keyboard with easy access scans controls and track ball and status display.
4.17	Cine memory of 250 frames for cine loop playback.
4.18	Frame rate: not less than 50fps.
4.19	Display depth: minimum 28-30cm.
4.2	Dynamic range, selectable up to approximately 165dB.
4.21	Image storage: Minimum 200 patient’s images on main unit.
4.22	Shall have facility for inbuilt CD writer.
4.23	System shall be DICOM ready and capable of being interfaced with HIS/RIS/PACS.
4.24	Facility for future upgradeability.
4.25	Probe: 2 to 5 MHz convex probe for Obs. /Gyn. and abdominal application is to be supplied.

5	**Accessories, spares and consumables**
5.1	**Accessories:**
	□ Black and white video thermal printer with 50 rolls of high density recording paper: 01 no.
	□ DVD/CD Recorder with DICOM media transfer.
	□ Ultrasound gel warmer: 01 unit.
5.2	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.
6	**Operating Environment**
6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6.2	**Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.**
6.3	**Shall provide UPS of suitable rating with voltage regulation and spike protection for 30 minutes back-up.**
7	**Standards and Safety Requirements**
7.1	**Must submit ISO 13485:2003/AC: 2007 AND**
7.2	**CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.**
7.3	**Electrical safety conforms to standards for Electrical Safety IEC 60601-2-37 Medical electrical equipment – Part 2-37: Particular requirements for the basic safety and essential performance of ultrasonic medical diagnostic and monitoring equipment.**
8	**User Training**
8.1	**Must provide user training (including how to use and maintain the equipment).**
9	**Warranty**
9.1	**Comprehensive warranty for 2 years after acceptance.**
10	**Maintenance Service During Warranty Period**
10.1	**During the warranty period supplier must ensure preventive maintenance and corrective/breakdown maintenance whenever required.**
11	**Documentation**
11.1	**User (Operating) manual in English.**
11.2	**Service (Technical / Maintenance) manual in English.**

11.3	**List of important spare parts and accessories with their part number and costing.**
11.4	**Certificate of calibration and inspection from factory.**

Pulse Oximeter

No.	Item Specifications
1	**Description of Function**
1.1	A pulse Oxymeter is a medical device that indirectly measures the amount of oxygen in a patient's blood (as opposed to measuring oxygen saturation directly through a blood sample) and changes in blood volume in the skin, producing a photoplethysmography.
2	**Operational Requirements**
2.1	Suitable for all types of patient range, adult, paediatric and infant and shall operate on AC mains as well as from internal rechargeable battery.
3	**System Configuration**
3.1	Pulse Oxymeter, complete unit with all standard accessories.
4	**Technical Specifications**
4.1	It shall be portable unit.
4.2	Display- LCD, backlight illuminated.
4.3	Parameters and waveform displayed- SpO2, pulse rate, system status, plethysmogram, menus for user settings.
4.4	SPO2 range: 70-100 %.
4.5	Accuracy of SPO2: 3%.
4.6	Pulse rate range must be 30-240 bpm.
4.7	Audio-visual alarms: High/low SpO2 and pulse rate, sensor off, sensor failure, low battery.
4.8	Shall have alarm override facility.
4.9	It must be suitable to operate in the presence of potentially flammable anaesthetic gases, and it shall not cause fire or explosion during operations.
4.1	RS 232C interface for data communication.
4.11	Shall have integrated printer.
4.12	Inbuilt rechargeable battery and shall have battery back-up for at least 4 hours. Battery charger along with AC adaptor to be provided if integrated charger is not there.

5	**Accessories, spares and consumables**
5.1	**Accessories:**
	□ Reusable adult SpO2 sensor with cable: 02 nos.
	□ Reusable paediatric SpO2 sensors: 01 no.
	□ Reusable infant SpO2 sensor: 01 no.
5.2	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.
6	**Operating Environment**
6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.
7	**Standards and Safety Requirements**
7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND
7.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.
7.3	Electrical safety conforms to standards for electrical safety IEC 60601-1 General requirement for Electrical safety of Medical Equipment.
8	**User Training**
8.1	**Must provide user training (including how to use and maintain the equipment).**
9	**Warranty**
9.1	**Comprehensive warranty for 2 years after acceptance.**
10	**Maintenance Service During Warranty Period**
10.1	**During warranty period supplier must ensure preventive maintenance and corrective/breakdown maintenance whenever required.**
11	**Documentation**
11.1	**User (Operating) manual in English.**
11.2	**Service (Technical / Maintenance) manual in English.**
11.3	**List of important spare parts and accessories with their part numbers and costing.**
11.4	**Certificate of calibration and inspection from factory.**

Syringe Pump

No.	Item Specifications
1	**Description of Function**
1.1	The Syringe Infusion Pump provides uniform flow of fluid by precisely driving the plunger of a syringe down its barrel. It provides accurate and continuous flow rate for precise delivery of I.V. medication in critical medical care.
2	**Operational Requirements**
2.1	The syringe pump must be programmable, user friendly, safe to use and must have battery backup and comprehensive alarm system. This must be able to integrate in the HIS.
3	**System Configuration**
3.1	Syringe infusion pump with battery backup alarm and with complete accessories.
4	Technical Specifications
4.1	Flow rate programmable from 0.1 to 200 ml/hr. or more in steps of 0.1 ml/hr. with user selectable flow set rate option. SAVE last infusion rate even when the AC power is switched OFF.
4.2	Bolus rate must be programmable to 400 – 500 ml/hr. or more with infused volume display. Reminder audio after every 0.5 ml delivered bolus. SAVE last Bolus rate even when the AC power is switched OFF.
4.3	Display of Drug Name with a provision of memorizing 10~15 names by the operator
4.4	Keep Vein Open (KVO) must be available 1.0 ml/hr. or set rate if lower than 1.0 ml. User must have choice to disable KVO whenever desired.
4.5	Selectable Occlusion pressure trigger levels selectable from 300/500/900 mmHg
4.6	Must Work on commonly available 20, 50/60 ml Syringes with accuracy of minimum of +/-2% or better.
4.7	Automatic detection of syringe size & proper fixing. Must provide alarm for wrong loading of syringe such as flanges out of slot; disengaged plunger, unsecured barrel etc.
4.8	Anti-bolus system to reduce pressure on sudden release of occlusion
4.9	Must have comprehensive alarm package including: Occlusion limit exceed alarm ,Near end of infusion pre-alarm & alarm, Volume limit pre-alarm & alarm, KVO rate flow, Low battery pre-alarm and alarm, AC power failure, Drive disengaged and preventive maintenance.
4.1	Rechargeable Battery having at least 5~6 hour backup for about 5ml/hr. flow rate with 50ml syringes. Larger battery life and indication of residual life will be preferred.
5	**Accessories, spares and consumables**

5.1	**Accessories:**
	□ Mounting device/ Docking Station for two or four pumps as per requirement so as to enable to power up to 2-4 pumps with one power cord when mounted on IV pole. -01 pc.
5.2	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer. Bidders must specify the quantity of every item included in their offer (including items not specified above).
6	**Operating Environment**
6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.
7	**Standards and Safety Requirements**
7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND
7.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.
7.3	Certified for meting IEC60601-2-24:Particular requirements for the safety of infusion pumps and controllers
7.4	Must meet IEC 529 Level 3 (IP3X) (spraying water) for enclosure protection, water ingress.
8	User Training
8.1	Must provide user training (including how to use and maintain the equipment).
9	Warranty
9.1	Comprehensive warranty for 2 years.
10	Maintenance Service During Warranty Period
10.1	During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.
11	Documentation
11.1	User (Operating) manual in English.
11.2	Service (Technical / Maintenance) manual in English
11.3	List of important spare parts and accessories with their part number and costing.
11.4	Certificate of calibration and inspection from factory.

87

Digital Thermometer

No.	Item Specifications

1	**Description of Function**
1.1	Clinical digital thermometer to check the temperature of body.
2	**Operational Requirements**
2.1	Human oral use.
3	**System Configuration**
3.1	Digital Thermometer, Clinical.
4	**Technical Specifications**
4.1	Flat type, wide thermometer, safe to use, no glass, no mercury.
4.2	Scale: Celsius scale.
4.3	Measurement range: 32°C to 45°C
4.4	Accuracy: +/- 0.1°C between 35°C to 42°C.
4.5	Display: Liquid crystal display, easy to read.
4.6	Shall works on battery. There shall be low battery indicator.
4.7	Shall have facility of beep sound and switch off.
4.8	Water proof for ease of cleaning.
4.9	Shall provide battery. Bidder to indicate the type of and number of battery to be supplied.
5	**Accessories, Spares and Consumables**
5.1	**Packing:**
	□ Single piece packing in plastic barrel with cover.
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	CE (93/42 EEC Directives) or USFDA approved product certificate.
8	**User Training**
8.1	Not applicable.
9	**Warranty**
9.1	Warranty for 1 year after acceptance.
10	**Documentation**
10.1	User’s manual to be supplied in English.

88

Vital Sign Monitor

No.	Item Specifications
1	**Description of Function**
1.1	NIBP/Vital Sign Monitor is used to continuously monitor the vital parameters including NIBP of critically ill patients.
2	**Operational Requirements**
2.1	Capability of storage of patient data and printing of patient reports.
2.2	Capability to integrate with the HIS and transfer the data through LAN / Wireless LAN to any other monitoring room / doctor's desk. Must be HL-7 compatible for transmitting and receiving data to/from LAN/HIS
3	**System Configuration**
3.1	NIBP/Vital Signs Monitor with complete accessories.
4	**Technical Specifications**
4.1	Monitoring parameters;- ECG, respiration,NIBP,SPO2 and temperature
4.2	Digital and 6 waves / traces display on minimum 9 inches TFT/LCD Display Screen.
4.3	Monitor must have audible and visual alarms capability. Alarms must have three distinct audible alarm tones to distinguish alarm levels as under. Also monitor must permit automatic viewing of alarming parameter waveform and numeric from any bedside in alarm as and when connected in a network.
4.4	Must include hemodynamic calculations and vital sign and graphic trends. Trends must be automatically stored for at least 24 hours in at least one minute intervals.
4.5	Numeric monitored data shall be viewable and recordable in a patient chart type format in at least 1, 5, 15, 60 minutes intervals.
4.6	Convenient handle for carrying the same
4.7	Able to fix with bed/trolley.
4.8	Inbuilt rechargeable battery for minimum 3 hours of operation.
5	**Accessories, spares and consumables**
5.1	**Accessories:**
	□ Patient cable -01 no.
	□ Adult Cuff – 01 no.

	□ Paediatric Cuff -01 no.
	□ Adult Probe SPO2 -02 nos.
	□ Paediatric Probe SPO2 -02 nos.
	□ Skin Temp Probe -02 nos.
5.2	All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.
6	**Operating Environment**
6.1	The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature,Humidity, etc. for Sudan.
6.2	Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.
7	**Standards and Safety Requirements**
7.1	Must submit ISO13485:2003/AC:2007 for Medical Devices AND
7.2	CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.
7.3	Shall meet IEC-60601-1-2:2001 General Requirements of Safety for Electromagnetic Compatibility or must comply with 89/366/EEC; EMC directive.
7.4	Shall meet the safety requirements as per IEC 60601-2-27:1994—Medical electrical equipment—Part 2: Particular requirements for the safety of electrocardiographic monitoring equipment.
8	User Training
8.1	Must provide user training (including how to use and maintain the equipment).
9	Warranty
9.1	Comprehensive warranty for 2 years from acceptance.
10	Maintenance Service During Warranty Period
10.1	During the warranty period supplier must ensure planned preventive maintenance (PPM) and corrective/breakdown maintenance whenever required.
11	Documentation
11.1	User (Operating) manual in English
11.2	Service (Technical / Maintenance) manual in English
11.3	List of important spare parts and accessories with their part number and costing.
11.4	Certificate of calibration and inspection from factory.

89

Wheel Chair

No.	Item Specifications
1	**Description of Function**
1.1	Wheel chair is used in hospitals for means of mobility by disabled persons/or persons who have impairments that limit their ability to walk.
2	**Operational Requirements**
2.1	It shall be a foldable BUT shall NOT a collapsible type. The mechanism of folding & unfolding must be easy. Large standard adult size hospital wheelchair fixed/ foldable type. Easy maneuverable.
3	**System Configuration**
3.1	Wheel chair invalid type.
4	**Technical Specifications**
4.1	Must be made of the highest quality materials such as Chrome polished finish or stainless steel.
4.2	Dimensions: approx. W 68 cm × D 110 cm × H 94 cm.
	Seat width: approx.450mm (18").
4.3	Wheels to have braking/locking mechanism and self-propelling SS hoops; two swivel castors (200mm dia. approx.) in front.
4.4	Tyre fitted with self-propelling hoops and brake arrangements.
4.5	Tyre sizes: Rear approx. 60cm (24") solid Mag tyres or Bicycle type spoked wheels, and Front approx. 200mm (8") Mag swivel casters.
4.6	Armrests: Padded, Fixed height and detachable.
4.7	Waterproof upholstery and easy to clean.
4.8	Padded back rest, seat and push handle.
4.9	Footrests: Fixed height and swing away foot plates and detachable, preferably made of Aluminium.
4.1	Maximum Patient weight capacity: approx. 110kg (250 lbs.).
4.11	I.V. pod shall be provided at the right side of the back rest.
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.
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 ISO 9001 or ISO 13485:2003/AC:2007 AND
7.2	CE or USFDA approved product certificate.
8	**User Training**
8.1	Not applicable.
9	**Warranty**
9.1	Comprehensive warranty for 1 year.
10	**Maintenance Service During Warranty Period**
10.1	Standard warranty conditions are applicable.
11	**Installation and Commissioning**
11.1	Must supply preassembled unit, ready to use.
12	**Documentation**
12.1	**User's manual shall be supplied in English.**