

**Conventional X-Ray Machine**

| No.        | Item Specifications   | Fill your Specification |
|------------|---|-------------------------|
| <b>1</b>   | <b>Description of Function</b>  |                         |
| 1.1        | A general purpose X-ray machine for routine X-ray examinations at healthcare facilities.                                    |                         |
| <b>2</b>   | <b>Operational Requirements</b>   |                         |
| 2.1        | It shall be suitable to be used for adult and paediatric patients in general Radiography examination.                       |                         |
| <b>3</b>   | <b>System Configuration</b>   |                         |
| 3.1        | X-ray Generator, 1 unit   |                         |
| 3.2        | X-Ray tube & tube support system, 1 unit  |                         |
| 3.3        | Radiographic patient table, fixed height 1 unit   |                         |
| 3.4        | Floor mounted bucky stand, 1 unit   |                         |
| <b>4</b>   | <b>Technical Specifications</b>   |                         |
| <b>I</b>   | <b>X-ray Generator:</b>   |                         |
|            | Bidder shall indicate brand and model information here and provide technical data document for X-ray generator offered      |                         |
| 4.1        | Microprocessor based, high frequency inverter generator, the generator shall have at least 50kHz.                           |                         |
| 4.2        | Generator Output: not less than 50 kW (500mA at 100kV)  |                         |
| 4.3        | Radiographic voltage: 40 kV to 150kV, in 1kV step.  |                         |
| 4.4        | Radiographic current: 10 to 500mA   |                         |
| 4.5        | Exposure time: 0.001sec (1msec) - 10sec   |                         |
| 4.6        | Anatomical Programmable Radiographic mode shall be available.   |                         |
| 4.7        | Manual & automatic exposure control and automatic brightness control shall be available.                                    |                         |
| 4.8        | Shall come with overload protection device.   |                         |
| 4.9        | Power supply: 3 phase, 380 - 415V 50/60Hz   |                         |
| <b>II</b>  | <b>X-Ray Tube:</b>  |                         |
| 4.10       | X-ray tube rotating: +/-120°.   |                         |
| 4.11       | Large focus not more than 1.2 mm.   |                         |
| 4.12       | Small focus not more than 0.6 mm.   |                         |
| 4.13       | Maximum tube voltage 150 KV. Maximum tube output shall match with the generator output of not less than 50 KW.              |                         |
| 4.14       | Filtration: min 2.5mm Al equivalent.  |                         |
| 4.15       | Cooling method passive or forced air and/or oil cooling.  |                         |
| 4.16       | Anode rotating speed: More than 3000 rpm.   |                         |
| 4.17       | Anode heat capacity shall not be less than 300 KHU.   |                         |
| <b>III</b> | <b>Radiography Patient Table:</b>   |                         |
| 4.18       | Radiography table shall be fixed height, 4-way floating top type with foot switch control.                                  |                         |
| 4.19       | Come with grid and cassette tray, with grid ratio: not less than 10:1. Grid line number: 40 line/cm. Focus distance: 115cm. |                         |
| 4.20       | Cassette size: accept all sizes from cassette 5" x 7" cm to 14" x 17" type.   |                         |
| 4.21       | Radiography table shall be fixed height of about 60cm.  |                         |
| 4.22       | Table top to film distance: approx. 6cm.  |                         |
| 4.23       | Table top transverse movement : approx. ±14cm.  |                         |
| 4.24       | Table longitudinal movement : approx. ± 29cm.   |                         |
| 4.25       | Table top dimension: approx. 2000 mm x 800 mm.  |                         |
| 4.26       | Shall come with a three-field AEC.  |                         |
| 4.27       | Table movement arrested by electromagnetic brakes.  |                         |
| <b>IV</b>  | <b>Floor Mounted Bucky Stand:</b>   |                         |
| 4.28       | Vertical travel: from 460-1700mm or in the range.   |                         |
| 4.29       | Moving Grid with Grid ratio not less than 10:1. Grid line number: 40 lines/cm.  |                         |
| 4.30       | Shall come with Automatic Exposure Control for vertical bucky exposures.  |                         |
| 4.31       | Cassette size: accept all sizes from 5"x7" to 14"x17".  |                         |
| 4.32       | Movement arrested by electromagnetic brakes.  |                         |

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|      | <b>V Floor Mounted Tube Stand:</b>  |                         |
| 4.33 | Longitudinal travel: approx. 1750mm.  |                         |
| 4.34 | Vertical travel: from 630 -1850mm or in the range.  |                         |
| 4.35 | Movement arrested by electromagnetic brakes.  |                         |
| 4.36 | Rotation of tube arm around vertical axis: 1800; lockable at 00 to +/- 900.   |                         |
|      | <b>VI Collimator:</b>   |                         |
| 4.37 | Manually adjustable.  |                         |
| 4.38 | Manually selectable filters.  |                         |
| 4.39 | Light localizer with timer controlled light.  |                         |
| 4.40 | Built-in light switch should be provided.   |                         |
| 4.41 | Turning angle should be min +/- 45 degree.  |                         |
| 4.42 | Halogen lamp.   |                         |
|      | <b>VII Control Console:</b>   |                         |
| 4.43 | Digital Display.  |                         |
| 4.44 | Minimum 3 Point Exposure Technique.   |                         |
| 4.45 | Status display, error display.  |                         |
| 4.46 | Shall have area dose product determination and display.   |                         |
| 4.47 | Shall come with radiography remote control in control room.   |                         |
|      | <b>5 Accessories, Spare Parts and Consumables</b>   |                         |
| 5.1  | Accessories:  |                         |
|      | <input type="checkbox"/> Lead apron, light weight with Lead equivalence 2mm- 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.  |                         |
|      | <b>6 Operating Environment</b>  |                         |
| 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: 380-415VAC 3 phase 50Hz fitted with appropriate plug for X-ray generator fitted with appropriate plug for other units. The power cable must be at least 3 metres in length.   |                         |
|      | <b>7 Standards &amp; Safety Requirements</b>  |                         |
| 7.1  | Must submit ISO 13485:2003/AC: 2007 AND   |                         |
| 7.2  | CE (93/42 EEC Directives) or USFDA approved product certificate.  |                         |
| 7.3  | Shall meet:   |                         |
|      | <input type="checkbox"/> IEC 60601-1-3 - Part 1: General Requirements for safety - Collateral Standard: General Requirements for Radiation Protection in Diagnostic X-Ray Equipment.  |                         |
|      | <input type="checkbox"/> IEC 60601-2-7 - Part 2-7: Particular Requirements for the Safety of High-Voltage Generators of Diagnostic X-Ray Generators.  |                         |
|      | <b>8 User Training</b>  |                         |
| 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. |                         |
|      | <b>9 Warranty</b>   |                         |
| 9.1  | Comprehensive warranty for 2 years from acceptance.   |                         |
|      | <b>10 Maintenance Service During Warranty Period</b>  |                         |
| 10   | During warranty period supplier must ensure preventive maintenance & corrective/breakdown maintenance whenever required.  |                         |
|      | <b>11 Installation and Commissioning</b>  |                         |
| 11   | The bidder must arrange for the equipment to be installed by certified or qualified personnel; any prerequisites for installation to be communicated to the purchaser in advance, in detail.  |                         |
|      | <b>12 Documentation</b>   |                         |
| 12   | User (Operating) manual in English.   |                         |
| 12   | Service (Technical / Maintenance) manual in English.  |                         |
| 12   | List of important spare parts and accessories with their part numbers and costing.  |                         |
| 12   | Certificate of calibration and inspection from factory.   |                         |

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**C-Arm X-Ray Machine**

| No.      | Item Specifications   | Fill your Specification |
|----------|---|-------------------------|
| <b>1</b> | <b>1 Description of Function</b>  |                         |
| 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. |                         |
| <b>3</b> | <b>3 System Configuration</b>   |                         |
| 3.1      | X-ray C-Arm Mobile with complete accessories  |                         |
| <b>4</b> | <b>4 Technical Specifications</b>   |                         |
| 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  |                         |

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|     | · 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  |                         |
|     | <b>5 System Configuration Accessories, spares and consumables</b>   |                         |
| 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.  |                         |
|     | <b>6 Operating Environment</b>  |                         |
| 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.   |                         |
|     | <b>7 Standards and Safety Requirements</b>  |                         |
|     | 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.                                      |                         |
|     | <b>8 User Training</b>  |                         |
| 8.1 | On site operational training till the familiarity of the system and satisfaction of end user shall be provided.   |                         |
|     | <b>9 Warranty</b>   |                         |
| 9.1 | Comprehensive warranty for 2 years.   |                         |
|     | <b>10 Maintenance Service During Warranty Period</b>  |                         |
| 10  | 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. |                         |
|     | <b>11 Installation, Inspections and Commissioning</b>   |                         |
| 11  | Supplier must accomplish proper installation and commissioning of the equipment on site.  |                         |
| 11  | Inspections to verify the compliance of the offered equipment as per the specifications   |                         |
|     | <b>12 Documentation</b>   |                         |
| 12  | User (Operating) manual in English  |                         |
| 12  | Service (Technical / Maintenance) manual in English   |                         |
| 12  | List of important spare parts and accessories with their part numbers and costing.  |                         |
| 12  | Certificate of calibration and inspection from factory.   |                         |
| 13  | Log book with instruction for daily, weekly, monthly and quarterly maintenance checklist.   |                         |

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|-----|---|-------------------------|
|     | <b>1 Technical Specifications</b>                     |                         |
|     | Flexible lead rubber in tear resistant plastic cover  |                         |
|     | Sleeveless, half-length at back                       |                         |
|     | Fastening with crossed elastic straps with Velcro end |                         |
|     | 0.5 lead thickness for small, medium and large sizes  |                         |
|     | 60 (two pcs) & 50 (come in one pcs)                   |                         |
|     | <b>2 Warranty</b>                                     |                         |
| 2.1 | Comprehensive warranty for 2 years from acceptance.   |                         |

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4

**Digital Panoramic X-ray Machine**

| No. | Item Specifications  | Fill your Specification |
|-----|--|-------------------------|
|     | <b>A. X-Ray Tube</b>   |                         |
|     | 1. Generator: High frequency DC generator, operating frequency at least 40kHz  |                         |
|     | 2. Line Voltage: 230V- 240V, 50-60Hz   |                         |
|     | 3. Tube voltage: 57-85KV   |                         |
|     | 4. Tube Current: 10 mA   |                         |
|     | 5. Exposure compensation: Automatic Exposure Control.  |                         |
|     | 6. Focal spot size: : Between 0.7mm X 0.7 mm and 0.5mm X 0.5 mm as per IEC standards   |                         |
|     | 7. Total Filtration: Equivalent to 2.5mm Al or more  |                         |
|     | 8. Magnification of exposures: Should have a constant magnification  |                         |
|     | 9. Effective exposure time: Adjustable Timer (Pediatric & Adult) for the available imaging programmes.   |                         |
|     | <b>B. Basic Unit</b>   |                         |
|     | 1. The x ray machine should have AERB approval certification.  |                         |
|     | 2. Should be floor or wall mounted model.  |                         |
|     | 3. Should have fully/semi motorized patient positioning system   |                         |
|     | 4. Should have 3 laser positioning lights – Mid Sagital, Frankfurt and Canine  |                         |
|     | 5. Patient positioning by Bite block, Chin rest, Chin support and motorized/manual temple support.   |                         |
|     | 6. Should have accessibility for wheel chair patients.   |                         |
|     | 7. Should have centralized control system with all functions controlled by colour TFT touch screen or PC, Graphical User Interface (GUI) with digital display of technical factors and selected programmes.  |                         |
|     | 8. Should have an adjustable form of focal trough depending on jaw shape and size of patient.  |                         |
|     | 9. Should have automatic compensation for the cervical vertebrae shadow.   |                         |
|     | 10. The imaging geometry should eliminate the redundant shadows and ghost images.  |                         |
|     | 11. Should have a test mode which disables X-ray radiation during operation.   |                         |
|     | 12. Should have exposure counters separate /or combined for Panoramic, Cephalometry and total no of images   |                         |
|     | 13. Should have the following programs:  |                         |
|     | a) Standard Panoramic Program.   |                         |
|     | b) Pediatric program (low dose, reduced exposure area for small patient)   |                         |
|     | c) Automatic Double TMJ Program  |                         |
|     | d) Sinus program   |                         |
|     | e) Lateral and PA Cephalogram.   |                         |
|     | f) Should Support carpus / hand wrist imaging.   |                         |
|     | g) Submentovertex views.   |                         |
|     | 14. Should have motorized up and down movement.  |                         |
|     | <b>C. Digital Cephalometric System</b>   |                         |
|     | 1. Should have Computerized automatic cephalometric system.  |                         |
|     | 2. Should have automatic alignment of radiation source   |                         |
|     | 3. Should have functionally designed and easy-to-use head positioner.  |                         |
|     | 4. Should have swiveling nasal support.  |                         |
|     | 5. Should have magnification scale that appear on the image  |                         |
|     | 6. Automatic soft-tissue filter based on the position of the nasion support.   |                         |
|     | <b>D. Digital Sensor System</b>  |                         |
|     | 1. Should have a high resolution CCD /CMOS flat panel sensor for panoramic and cephalometry. It should be possible to take both panoramic and cephalometric image by using the sensor provided. The cost of one additional sensor shall be quoted separately in the BOQ and the cost offered will not be taken for evaluation. |                         |

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|     | 2. CCD pixel size: between 35µm and 150 µm.  |                         |
|     | 3. CCD active surface: to be specified.  |                         |
|     | 4. Image field: to be specified.   |                         |
|     | 5. Pixel matrix: to be specified.  |                         |
|     | 6. Soft tissue filter should be software operated.   |                         |
|     | <b>E. PC Configuration Requirements</b>  |                         |
|     | Latest branded computer with following specifications  |                         |
|     | 1. Processor –core i5 4th generation or better or equivalent   |                         |
|     | 2. 8 GB RAM and 1 TB or more on Hard disk.   |                         |
|     | 3. Should include 21" LCD/TFT monitor with high resolution to ensure image quality.( Display /monitor resolution min 1024 x1024 or higher)   |                         |
|     | 4. CD/DVD Burner.  |                         |
|     | 5. Graphics card NVIDIA 2 GB dedicated GPU or equivalent.  |                         |
|     | 6. Accept images from CCD/CMOS sensor without any loss of data.  |                         |
|     | 7. Capable of archiving & printing selected image to a standard DICOM destination in DICOM 3.0 format (or newer versions).   |                         |
|     | 8. Storing images in the local disk for predefined period.   |                         |
|     | 9. Should be with upgradeable imaging software.  |                         |
|     | <b>F. Functional Requirements For Work Station</b>   |                         |
|     | 1. Built in routine for using predefined image processing parameters for image quality enhancement.  |                         |
|     | 2. Mechanisms for storing the patient image based on name, date, etc.  |                         |
|     | 3. Capability of storing user defined image processing parameters.   |                         |
|     | 4. Capability of overwriting predefined image parameter with user defined parameters & storing these two images separately.  |                         |
|     | 5. Correcting typographically in patient demographic module, in case the RIS connection was down and manually data entry was done.   |                         |
|     | 6. Capability of changing W/L, flipping, rotating, zooming, collimating annotating incoming image.   |                         |
|     | 7. Auto routing incoming image to predefined DICOM store (SCP storage) or Print destination (SCP print destination).   |                         |
|     | 8. Mechanism of printing multiple images in one film, with the possibility of slide and True size printing.  |                         |
|     | 9. The work station should let the user select a film size and lay out for hard copies with a WYSIWYG (What you see is what you get), output look up table selection, number of copies selection capabilities. |                         |
|     | 10. Minimum of 15 pre configured layouts for printing and also possibility of further configuration should be possible.  |                         |
|     | 11. Should be provided with table and chair for workstation.   |                         |
|     | 12. Should provide necessary cabling work for additional workstations.   |                         |
|     | 13. Operating system: Windows 7 or more  |                         |
|     | <b>G. Software specifications</b>  |                         |
|     | The system should include the following SW applications as standard:   |                         |
|     | 1. Special attention should be placed on pediatric applications.   |                         |
|     | 2. Software for printing on any DICOM printer.   |                         |
|     | 3. Software for storing images on any DICOM3 or newer versions compliance stations.  |                         |
|     | 4. Software for e-filming application: Any Software upgradeability for 5 years to be done by the company   |                         |
|     | <b>H. Dry Imager System</b>  |                         |
|     | 1. Print images from work stations.  |                         |
|     | 2. Should be capable of printing images in DICOM format / Direct DICOM Compatibility.  |                         |
|     | 3. Mechanism to print images of OPG, Ceph and multiple image prints of IOPA. The tray should be adjustable to (8" x 10") and (10" x 12").  |                         |
|     | 4. Resolution should be 300- 508 dpi or better.  |                         |
|     | <b>I. Accessories &amp; consumables</b>  |                         |

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|     | 1. Films for Dry Imager system – (8" x 10")- 300 numbers                                     |                         |
|     | 2. Three folded leaded protective barrier – 1 no.  |                         |
|     | 3. 5 KVA Online UPS with 30 minutes backup for operating all the above mentioned equipments. |                         |
|     | 4. Lead apron light weight Velcro type 1 no, Thyroid guard -1 No, AERB Approved              |                         |

5

**Dental X-Ray**

| No.       | Item Specifications   | Fill your Specification |
|-----------|---|-------------------------|
|           | TECHNICAL SPECIFICATIONS  |                         |
| 1         | Should be stand model with fiber wheels and locking system.   |                         |
| 2         | Should have X-ray tube current of minimum 7/8/10 mA and 60/65/70 KV adjustable preferably.  |                         |
| 3         | Should have a constant potential minimum 20 KHz high frequency X-ray generator.   |                         |
| 4         | Should have an exposure timer of minimum 0.02 to 2 seconds.   |                         |
| 5         | Focal spot size should not exceed 0.8x0.8 mm.   |                         |
| 6         | Should be compatible for digital radiograph.  |                         |
| 7         | X-ray tube head should have swing angulations of at least 290° in the vertical plane and 360° continuous rotations in the horizontal plane.   |                         |
| 8         | X-ray tube head should have angle indication.   |                         |
| 9         | Should have a counter balanced arm mechanism.   |                         |
| 10        | Should be supplied with cones.  |                         |
| 11        | Should be supplied with one light weight lead apron of 0.5mm lead equivalent.   |                         |
| 12        | Should work on 200-240Vac/50Hz.   |                         |
| 13        | The certificate should be attached with the bid.  |                         |
| 14        | Should have safety certificate from a competent authority CE / FDA (US) CB certificate or valid detailed electrical and functional safety.  |                         |
| <b>15</b> | <b>User Training</b>  |                         |
| 15        | 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. |                         |
| <b>16</b> | <b>Warranty</b>   |                         |
| 16        | The warranty period for this item shall be 24 months after acceptance of the Goods  |                         |
| <b>17</b> | <b>Maintenance Service During Warranty Period</b>   |                         |
| 17        | Preventive and corrective maintenance services during warranty period shall be included.  |                         |
| <b>18</b> | <b>Installation and Commissioning</b>   |                         |
| 18        | 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.   |                         |
| <b>19</b> | <b>Documentation</b>  |                         |
| 19        | User (Operating) manual in English  |                         |
| 19        | Service (Technical / Maintenance) manual in English   |                         |
| 19        | List of important spare parts and accessories with their part number and costing.   |                         |
| 19        | Certificate of calibration and inspection from factory.   |                         |

6

**Portable Ultrasound Machine with UPS**

| No.      | Item Specifications  | Fill your Specification |
|----------|--|-------------------------|
| <b>1</b> | <b>Description of Function</b>                                   |                         |
| 1.1      | A general purpose fully digital B & W Ultrasound imaging system. |                         |
| <b>2</b> | <b>Operational Requirements</b>                                  |                         |
| 2.1      | It shall operate on mains AC supply.                             |                         |
| <b>3</b> | <b>System Configuration</b>                                      |                         |

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| 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.   |                         |
|      | <b>4 Technical Specifications</b>  |                         |
| 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.   |                         |
| 4.10 | The system shall have extensive calculation software package for Ob/Gyn and general imaging.   |                         |
| 4.1  | The system must have provision for measurement and calculation of distance, area, volume, heart rate and circumference on the image.   |                         |
| 4.1  | The system shall have Tissue Harmonic Imaging.   |                         |
| 4.1  | Near and far gain adjustable.  |                         |
| 4.1  | Contrast, adjustable.  |                         |
| 4.2  | Focus: auto adjustable.  |                         |
| 4.2  | Shall have an alpha-numeric keyboard with easy access scans controls and track ball and status display.  |                         |
| 4.2  | Cine memory of 250 frames for cine loop playback.  |                         |
| 4.2  | Frame rate: not less than 50fps.   |                         |
| 4.2  | Display depth: minimum 28-30cm.  |                         |
| 4.20 | Dynamic range, selectable up to approximately 165dB.   |                         |
| 4.2  | Image storage: Minimum 200 patient's images on main unit.  |                         |
| 4.2  | Shall have facility for inbuilt CD writer.   |                         |
| 4.2  | System shall be DICOM ready and capable of being interfaced with HIS/RIS/PACS.   |                         |
| 4.2  | Facility for future upgradeability.  |                         |
| 4.3  | Probe: 2 to 5 MHz convex probe for Obs. /Gyn. and abdominal application is to be supplied.   |                         |
| 4.3  | Specify in details other compatible probs and their costing for each probe type  |                         |
|      | <b>5 Accessories, spares and consumables</b>   |                         |
| 5.1  | <b>Accessories:</b>  |                         |
|      | <input type="checkbox"/> Black and white video thermal printer with 50 rolls of high density recording paper: 01 no.   |                         |
|      | <input type="checkbox"/> DVD/CD Recorder with DICOM media transfer.  |                         |
|      | <input type="checkbox"/> 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. |                         |
|      | <b>6 Operating Environment</b>   |                         |
| 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.  |                         |
|      | <b>7 Standards and Safety Requirements</b>   |                         |
| 7.1  | Must submit ISO 13485:2003/AC: 2007 AND  |                         |
| 7.2  | CE (93/42 EEC Directives) or USFDA or TUV approved product certificate.  |                         |



| No. | Item Specifications  | Fill your Specification |
|-----|--|-------------------------|
| 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. |                         |
|     | <b>8 User Training</b>   |                         |
| 8.1 | Must provide user training (including how to use and maintain the equipment).  |                         |
|     | <b>9 Warranty</b>  |                         |
| 9.1 | Comprehensive warranty for 2 years after acceptance.   |                         |
|     | <b>10 Maintenance Service During Warranty Period</b>   |                         |
| 10  | During the warranty period supplier must ensure preventive maintenance and corrective/breakdown maintenance whenever required.   |                         |
|     | <b>11 Documentation</b>  |                         |
| 11  | User (Operating) manual in English.  |                         |
| 11  | Service (Technical / Maintenance) manual in English.   |                         |
| 11  | List of important spare parts and accessories with their part number and costing.  |                         |
| 11  | Certificate of calibration and inspection from factory.  |                         |

7

**Dental Unit with full accessories**

| No.  | Item Specifications  | Fill your Specification |
|------|--|-------------------------|
|      | <b>1 Description of Function</b>   |                         |
| 1.1  | A Dental chair for Dental treatment  |                         |
|      | <b>2 Operational Requirements</b>  |                         |
| 2.1  | It shall operate on AC power supply.   |                         |
|      | <b>3 System Configuration</b>  |                         |
| 3.1  | Delivery Bed with complete attachments and accessories.  |                         |
| 3.1  | Patient chair, 1 unit  |                         |
| 3.2  | Working stool, 2 units   |                         |
| 3.3  | High speed hand piece, 2 units   |                         |
| 3.4  | Low speed motor with 1 straight hand piece & 1 contra-angle hand piece, 1 set  |                         |
| 3.5  | A built-in light cure unit   |                         |
| 3.6  | A built-in ultrasonic scaler with one each of pointed and flat scaler tips   |                         |
| 3.7  | One air compressor at least 1 horse power  |                         |
| 3.8  | One suction unit at least 1 horse power  |                         |
| 3.9  | One unit of automatic amalgamator  |                         |
| 3.10 | One set of amalgam carrier with tips and one amalgam well  |                         |
| 3.1  | One set of 4 pieces of amalgam condensers  |                         |
| 3.1  | One set of 5 pieces of amalgam carvers   |                         |
| 3.1  | One set of 5 pieces of burnishers  |                         |
| 3.1  | Bidder shall indicate brand and model information here and provide technical data document for major components specified above. |                         |
|      | <b>4 Technical Specifications</b>  |                         |
| 4.1  | Patient type: adult & paediatric & deformity.  |                         |
| 4.2  | Main unit standard configuration as follow:  |                         |
|      | <b>4.3 Patient chair:</b>  |                         |
| 4.4  | With electrical chair movement and deluxe double articulated headrest.   |                         |
| 4.5  | With one left armrest as standard.   |                         |
| 4.6  | 3 pre-set chair positions: start, treatment and rinsing position.  |                         |
| 4.7  | Electrical patient chair loading capacity: not less than 1323N (135kg).  |                         |
| 4.8  | Backrest movement range 105°-175°.   |                         |
| 4.9  | The lowest position of the patient chair from the ground shall not be less then 380mm.   |                         |
| 4.10 | The highest position of the patient chair from the ground shall not be less than 780mm.  |                         |
| 4.1  | Chair movement is controllable by the 4 way foot control at the chair base without touch panel.                                  |                         |

| No.        | Item Specifications  | Fill your Specification |
|------------|--|-------------------------|
| 4.1        | No cables on the floor, hygienic and clean.  |                         |
| 4.1        | One main switch to control air, water and power.   |                         |
| 4.1        | The chair position is locked while an instrument is working.   |                         |
| 4.2        | With chair-backrest safety system, backrest and seat movement can be stopped once it meets obstacle.   |                         |
| <b>4.2</b> | <b>Dentist element:</b>  |                         |
| 4.2        | Dentist element with whip arm system.  |                         |
| 4.2        | Height of dentist element is adjustable.   |                         |
| 4.2        | 1 X-ray film viewer (12V, 2000cd/m2).  |                         |
| 4.20       | 1 silicon mat for the dentist element which can be sterilized.   |                         |
| 4.2        | 1 three way syringe.   |                         |
| 4.2        | 3 ISO 4-hole/Midwest hand piece hoses.   |                         |
| 4.2        | 1 air pressure meter.  |                         |
| <b>4.2</b> | <b>Assistant element:</b>  |                         |
| 4.3        | 1 three way syringe.   |                         |
| 4.3        | 1 strong suction hose.   |                         |
| 4.3        | 1 saliva ejector.  |                         |
| 4.3        | With suction filter system.  |                         |
| <b>4.3</b> | <b>Water unit:</b>   |                         |
| 4.30       | The cuspidor can be swivelled and removable for easy cleaning.   |                         |
| 4.3        | Cup filler and bowl rinsing systems shall prevent over filling of cup and prolong rinsing of bowl. Preferably programmable.  |                         |
| 4.3        | With automatic water heating system (24V)  |                         |
| 4.3        | With water venturi and air water separator system  |                         |
| 4.3        | Fresh water bottle, at least 1.5L  |                         |
| <b>4.4</b> | <b>Operating light:</b>  |                         |
| 4.4        | Colour temperature: 3800-4500K.  |                         |
| 4.4        | 12V, 50 Watt Halogen bulb or Better.   |                         |
| 4.4        | Dental light intensity: min 25000lux with intensity dimming function.  |                         |
| 4.4        | Working stool, 2 units.  |                         |
| 4.40       | Mobile on 5 castors.   |                         |
| 4.4        | Height of seat and backrest is adjustable.   |                         |
| 4.4        | Backrest angle is adjustable and lockable.   |                         |
| 4.4        | Come with NSK or equivalent high speed hand piece, 2 units.  |                         |
| 4.4        | Come with NSK or equivalent low speed motor with 1 straight hand piece & 1 contra-angle hand piece, 1 set.   |                         |
| 4.5        | Come with a built-in light cure unit.  |                         |
| 4.5        | Come with a built-in ultrasonic scaler with one each of pointed and flat scaler tips.  |                         |
| 4.5        | Come with one unit of automatic amalgamator.   |                         |
| 4.5        | Come with one set of amalgam carrier with tips and one amalgam well.   |                         |
|            | Bidder shall indicate brand and model/ part number information here and provide catalogue of each piece of item offered here.  |                         |
| 4.5        | Come with one set of 4 pieces of amalgam condensers, one each of serrated small size, serrated big size, smooth small size & smooth big size.  |                         |
|            | Bidder shall indicate brand and model/ part number information here and provide catalogue of each piece of item offered here.  |                         |
| 4.50       | Come with one set of 5 pieces of amalgam carvers, double-ended, made of stainless steel, one size each from small, medium up to large size.  |                         |
|            | Bidder shall indicate brand and model/ part number information here and provide catalogue of each piece of item offered here.  |                         |
| 4.5        | Come with one set of 5 pieces of burnishers, double-ended, made of stainless steel, one size each of different type.   |                         |
|            | Bidder shall indicate brand and model/ part number information here and provide catalogue of each piece of item offered here.  |                         |
| 4.5        | Come with one air compressor at least 1 horse power or capacity sufficient to supply to the Dental chair specified above, whichever higher. Bidder shall indicate capacity of the unit offered here. |                         |

| No.       | Item Specifications   | Fill your Specification |
|-----------|---|-------------------------|
|           | Air compressor must be oil less & noise less.   |                         |
| 4.5       | Come with one suction unit at least 1 horse power or capacity sufficient to supply to the Dental chair specified above, whichever higher. Bidder shall indicate capacity of the unit offered here.  |                         |
| <b>5</b>  | <b>Accessories, Spare Parts and Consumables</b>   |                         |
| 5.1       | All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer. Bidders must specify the quantity of every item included in their offer (including items not specified above). |                         |
| <b>6</b>  | <b>Operating Environment</b>  |                         |
| 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       | Environment:  |                         |
|           | <input type="checkbox"/> Temperature: 10-45 degree C  |                         |
|           | <input type="checkbox"/> Relative Humidity: not more than 98%   |                         |
| 6.3       | Air supply pressure 0.55~0.80Mpa  |                         |
| 6.4       | Water supply pressure 0.20~0.40Mpa  |                         |
| <b>7</b>  | <b>Standards &amp; Safety Requirements</b>  |                         |
| 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.  |                         |
| <b>8</b>  | <b>User Training</b>  |                         |
| 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.                                       |                         |
| <b>9</b>  | <b>Warranty</b>   |                         |
| 9.1       | The warranty period for this item shall be 24 months after acceptance of the Goods  |                         |
| <b>10</b> | <b>Maintenance Service During Warranty Period</b>   |                         |
| 10        | Preventive and corrective maintenance services during warranty period shall be included.  |                         |
| <b>11</b> | <b>Installation and Commissioning</b>   |                         |
| 11        | 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.   |                         |
| <b>12</b> | <b>Documentation</b>  |                         |
| 12        | User (Operating) manual in English  |                         |
| 12        | Service (Technical / Maintenance) manual in English   |                         |
| 12        | List of important spare parts and accessories with their part number and costing.   |                         |
| 12        | Certificate of calibration and inspection from factory.   |                         |

8

**Infant warmer (without baby bed)**

| No. | Item Specifications  | Fill your Specification |
|-----|--|-------------------------|
|     | <b>Description of Function</b>   |                         |
|     | A radiant warmer is used to keep the patient's core temperature stable at 37 oC.     |                         |
|     | <b>Operational Requirements</b>  |                         |
|     | It shall be microprocessor controlled radiant warmer with manual and servo options.  |                         |
|     | <b>System Configuration</b>  |                         |
|     | Radiant Warmer with Baby Bassinet, complete unit with all standard accessories.      |                         |
|     | <b>Technical Specifications</b>  |                         |
|     | It must have facility to display both skin and air (ambient) temperature separately. |                         |
|     | It shall have audio-visual alarm facilities for:                                     |                         |
|     | Overheating beyond set temperature range.  |                         |

| No. | Item Specifications  | Fill your Specification |
|-----|--|-------------------------|
|     | 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.   |                         |
|     | It must have manual setting for high and low alarm setting.  |                         |
|     | The light must be dazzle free.   |                         |
|     | In servo mode, the heater output must be controlled to maintain the baby at the required set temperature.  |                         |
|     | In manual mode, the heater output must be directly controlled by a setting on the front panel.   |                         |
|     | The desired temperature range from 25 to 40 oC.  |                         |
|     | The resolution must be 0.1 oC.   |                         |
|     | The height of the warmer must be adjustable for different types of bed.  |                         |
|     | Halogen based observation light must be provided for observing the baby.   |                         |
|     | It must be mounted on a pole with sturdy base with lockable castors.   |                         |
|     | <b>Accessories, spares and consumables</b>   |                         |
|     | 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. |                         |
|     | <b>Power supply</b>  |                         |
|     | Input power supply: 220/240 V AC , 50Hz single phase schuko plug   |                         |
|     | <b>Environmental factors</b>   |                         |
|     | The unit shall be capable of being stored continuously in ambient temperature of 0 -55deg C and relative humidity of 15-95%  |                         |
|     | The unit shall be capable of operating in ambient temperature of 20-50 deg C and relative humidity of 80%  |                         |
|     | <b>Standards and safety</b>  |                         |
|     | Should be FDA or CE approved product certificate.  |                         |
|     | <b>User Training</b>   |                         |
|     | Must provide operating and service trainings   |                         |
|     | <b>Warranty</b>  |                         |
|     | Comprehensive warranty for 2 years.  |                         |
|     | <b>Documentation</b>   |                         |
|     | User (Operating) manual in English Should provide 2 sets(hardcopy and soft-copy)   |                         |
|     | Service (Technical / Maintenance) manual in English Should provide 2 sets(hardcopy and soft-copy)  |                         |
|     | List of important spare parts, accessories and consumables with their part numbers and costing.  |                         |
|     | Certificate of calibration and inspection from factory.  |                         |

| No. | Item Specifications  | Fill your Specification |
|-----|--|-------------------------|
|     | <b>Technical Specifications</b>  |                         |
|     | Minimum Distilled water output: 4L/h   |                         |
|     | Maximum water supply required: 1L/min  |                         |
|     | Flow regulator for water supply  |                         |
|     | Conductivity of water produced: 2 $\mu$ S/cm or less   |                         |
|     | Automatic cut-out for low water level in the boiler  |                         |
|     | Automatic switch off when distillate reservoir is full   |                         |
|     | Heating elements should be silica glass sheathed   |                         |
|     | <b>Operating Environment</b>   |                         |
|     | The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature, Humidity, etc. for Sudan. |                         |

| No. | Item Specifications  | Fill your Specification |
|-----|--|-------------------------|
|     | Power supply: 220-240V/ 50 Hz AC Single phase with appropriate plug .The power cable must be minimum 3 Meter |                         |
|     | <b>User Training</b>   |                         |
|     | Must provide user training (including how to use and maintain the equipment).                                |                         |
|     | <b>Warranty</b>  |                         |
|     | Comprehensive warranty for 2 years after acceptance.   |                         |
|     | <b>Maintenance Service During Warranty Period</b>  |                         |
|     | During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.          |                         |
|     | <b>Installation and Commissioning</b>  |                         |
|     | Supplier must accomplish proper installation and commissioning of the equipment on site.                     |                         |
|     | <b>Documentation</b>   |                         |
|     | User (Operating) manual in English   |                         |
|     | Service (Technical / Maintenance) manual in English  |                         |
|     | List of important spare parts and accessories with their part numbers and costing.                           |                         |
|     | Certificate of calibration and inspection from factory.  |                         |

| No. | Item Specifications   | Fill your Specification |
|-----|---|-------------------------|
|     | Semi-automatic 2 channels   |                         |
|     | Twin channel coagulometer for routine tests: PT, a PTT, TT, Fibrinogen and clotting factors.                                |                         |
|     | Specify sample capacities 37 deg C dry incubation block:  |                         |
|     | To have automatic counter, to grig off when starter reagent is added to sample and to stop when clot is formed.             |                         |
|     | Results to be displayed and printed.  |                         |
|     | To have recorder output for platelet aggregation  |                         |
|     | Measuring system Photometric  |                         |
|     | Beam source Infra-red LED   |                         |
|     | Incubation 37 deg C + 0.2 deg C   |                         |
|     | Specify the Sample and reagent Capacity:  |                         |
|     | Display twin 3 digit 00.0 to 99.9 seconds.  |                         |
|     | Keyboard 6 keys   |                         |
|     | Printer 20 column, 64 characters.   |                         |
|     | Operating Environment   |                         |
|     | The unit shall be capable of operating continuously in ambient temperature of 10 -40deg C and relative humidity of 15-90%   |                         |
|     | The unit shall be capable of being stored continuously in ambient temperature of 0 -50deg C and relative humidity of 15-90% |                         |
|     | <b>Power supply:</b> 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.  |                         |
|     | Suitable UPS with maintenance free batteries for minimum 30 min. back-up shall be supplied with the system.                 |                         |
|     | Standards and Safety Requirements   |                         |
|     | Must submit ISO13485:2003/AC:2007 for Medical Devices AND   |                         |
|     | Should be FDA/CE/BIS approved product.  |                         |
|     | Shall meet internationally recognised for Electromagnetic Compatibility(EMC) for electromedical equipment: 61326-1.         |                         |
|     | Certified to be compliant with IEC 61010-1, IEC 61010-2-281, 61010-2- 101 for safety.                                       |                         |
|     | <b>User Training</b>  |                         |
|     | Must provide user training (including how to use and maintain the equipment).   |                         |
|     | <b>Warranty</b>   |                         |
|     | Comprehensive warranty for 2 years from acceptance.   |                         |
|     | <b>Maintenance Service During Warranty Period</b>   |                         |

| No. | Item Specifications  | Fill your Specification |
|-----|--|-------------------------|
|     | During the warranty period supplier must ensure planned preventive maintenance (PPM) and corrective/breakdown maintenance whenever required.   |                         |
|     | Installation and Commissioning   |                         |
|     | The bidder must arrange for the equipment to be installed and commissioned by certified or qualified personnel; any prerequisites for installation to be communicated to the user in advance, in detail. |                         |
|     | Documentation  |                         |
|     | User (Operating) manual in English Should provide 2 sets(hardcopy and soft-copy)   |                         |
|     | Service (Technical / Maintenance) manual in English Should provide 2 sets(hardcopy and soft-copy)  |                         |
|     | List of important spare parts and accessories with their part number and costing.  |                         |
|     | Certificate of calibration and inspection from factory.  |                         |

11

**Colorimeter**

| No.       | Item Specifications  | Fill your Specification |
|-----------|--|-------------------------|
| <b>1</b>  | <b>Description of Function</b>   |                         |
| 1.1       | General purpose colorimeter use in clinical laboratory.  |                         |
| <b>2</b>  | <b>Operational Requirements</b>  |                         |
| 2.1       | Microprocessor controlled system.  |                         |
| <b>3</b>  | <b>System Configuration</b>  |                         |
| 3.1       | Colorimeter with complete accessories.   |                         |
| <b>4</b>  | <b>Technical Specifications</b>  |                         |
| 4.1       | Must have 8 no of filters wave length from 340 nm to 730 nm.   |                         |
| 4.2       | Must have a 2 digit LED display calibrated directly in optical density.  |                         |
| 4.3       | Detector must be encased spill proof photocell.  |                         |
| 4.4       | Must have facilities for concentration, calculation, percentage transmission and optical density.  |                         |
| 4.5       | Lamp source: Broad spectrum LED or halogen covering full visible range   |                         |
| <b>5</b>  | <b>Accessories, spares and consumables</b>   |                         |
|           | <input type="checkbox"/> Square and round cuvette minimum volume 1ml.  |                         |
|           | <input type="checkbox"/> Cuvettes: 10 nos.   |                         |
|           | <input type="checkbox"/> Lamp: 02 nos  |                         |
|           | 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. |                         |
| <b>6</b>  | <b>Operating Environment</b>   |                         |
| 6.1       | The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature, Humidity, etc. for Sudan.                                       |                         |
| 6.2       | Power supply: 220-240V/ 50 Hz AC Single phase with appropriate plug .The power cable must be minimum 3 Meter   |                         |
| <b>7</b>  | <b>Standards and Safety Requirements</b>   |                         |
| 7.1       | Must submit ISO13485:2003/AC:2007 for Medical Devices AND  |                         |
| 7.2       | CE (93/42 EEC Directives) or USFDA approved product certificate.   |                         |
| 7.3       | Must comply with IEC 61010 Safety requirements for electrical equipment for measurement, control, and laboratory use   |                         |
| <b>8</b>  | <b>User Training</b>   |                         |
| 8.1       | Must provide user training (including how to use and maintain the equipment).  |                         |
| <b>9</b>  | <b>Warranty</b>  |                         |
| 9.1       | Comprehensive warranty for 2 years after acceptance.   |                         |
| <b>10</b> | <b>Maintenance Service During Warranty Period</b>  |                         |
| 10        | During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.  |                         |
| <b>11</b> | <b>Installation and Commissioning</b>  |                         |
| 11        | Supplier must accomplish proper installation and commissioning of the equipment on site.   |                         |

| No.       | Item Specifications  | Fill your Specification |
|-----------|--|-------------------------|
| <b>12</b> | <b>Documentation</b>   |                         |
| 12        | User (Operating) manual in English   |                         |
| 12        | Service (Technical / Maintenance) manual in English                                |                         |
| 12        | List of important spare parts and accessories with their part numbers and costing. |                         |
| 12        | Certificate of calibration and inspection from factory.                            |                         |

12

**Hormone analyzer (min. 30 test/hr)**

| No. | Item Specifications   | Fill Your Specifications |
|-----|---|--------------------------|
|     | <b>Technical Specifications</b>   |                          |
|     | Fully automated, sample selective analyzer for heterogeneous immunoassays, continuous loading, self contained Min. throughput 30 results/hr Serum, Plasma   |                          |
|     | Specify Load/unload capacity  |                          |
|     | Specify Number of Rack positions, RD standard   |                          |
|     | Specify Number of Tray (racks/ samples)   |                          |
|     | processed with priority   |                          |
|     | Primary tubes: 5 to 10ml; 16x100, 16x75, 13x100, 13x75mm  |                          |
|     | Sample cup: 2.5ml Cup on tube:  |                          |
|     | Cup on tube: Cup on top o a 16x75/100mm 5 to 50µl   |                          |
|     | Ready to use Rack Packs with 2-D barcode temperature controlled reagent compartment   |                          |
|     | (20°C) onboard capacity max. 15 tests 180 disposable cups   |                          |
|     | 360 disposable tips (Assay Tip), liquid level and clot detection, sample and test specific dilution   |                          |
|     | Colored touch-screen monitor, customized keyboard and computer  |                          |
|     | RS 232 serial interface, bi-directional, query and batch mode   |                          |
|     | Running cost details important and all start up kits neede for operation and calibration  |                          |
|     | Running cost details important and all start up kits neede for operation and calibration  |                          |
|     | <b>Operating Environment</b>  |                          |
|     | The unit shall be capable of operating continuously in ambient temperature of 10 -40deg C and relative humidity of 15-90%   |                          |
|     | The unit shall be capable of being stored continuously in ambient temperature of 0 -50deg C and relative humidity of 15-90%   |                          |
|     | <b>Power supply:</b> 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 metre in length.  |                          |
|     | Suitable UPS with maintenance free batteries for minimum 30 min. back-up shall be supplied with the system.   |                          |
|     | <b>Standards and Safety Requirements</b>  |                          |
|     | Must submit ISO13485:2003/AC:2007 for Medical Devices AND   |                          |
|     | Should be FDA/CE/BIS approved product.  |                          |
|     | Shall meet internationally recognised for Electromagnetic Compatibility(EMC) for electromedical equipment: 61326-1.   |                          |
|     | Certified to be compliant with IEC 61010-1, IEC 61010-2-281, 61010-2- 101 for safety.   |                          |
|     | <b>User Training</b>  |                          |
|     | Must provide user training (including how to use and maintain the equipment).   |                          |
|     | <b>Warranty</b>   |                          |
|     | Comprehensive warranty for 2 years from acceptance.   |                          |
|     | <b>Maintenance Service During Warranty Period</b>   |                          |
|     | During the warranty period supplier must ensure planned preventive maintenance (PPM) and corrective/breakdown maintenance whenever required.  |                          |
|     | <b>Installation and Commissioning</b>   |                          |
|     | 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. |                          |

| No. | Item Specifications   | Fill your Specification |
|-----|---|-------------------------|
|     | <b>Documentation</b>  |                         |
|     | User (Operating) manual in English Should provide 2 sets(hardcopy and soft-copy)                  |                         |
|     | Service (Technical / Maintenance) manual in English Should provide 2 sets(hardcopy and soft-copy) |                         |
|     | List of important spare parts and accessories with their part number and costing.                 |                         |
|     | Certificate of calibration and inspection from factory.   |                         |

13

**ELISA Washer & Reader with External Printer with UPS****ELISA Reader**

| No.  | Item Specifications  | Fill Your Specifications |
|------|--|--------------------------|
| I    | <b>Manufacturer Name:</b>  |                          |
| II   | <b>Model No.:</b>  |                          |
| III  | <b>Country of Origin:</b>  |                          |
| 1    | <b>Description of Function</b>   |                          |
| 1.1  | ELISA Reader is required to Read the Color Density known as OD (Optical Density) in ELISA (Enzyme  |                          |
| 2    | <b>Operational Requirements</b>  |                          |
| 2.1  | ELISA Reader complete with Printer is required.  |                          |
| 3    | <b>Technical Specifications</b>  |                          |
| 3.1  | Should have 8-12 measuring channel & reference channel   |                          |
| 3.2  | Should have wave length range of 340- 750 nm 6 filters 340, 405, 450, 492, 540, 630nm with provision for                                       |                          |
| 3.3  | Should have an absorption range of 0-4.000A  |                          |
| 3.4  | Should have a resolution of 0.001A   |                          |
| 3.5  | Should read within 6-8 seconds   |                          |
| 3.6  | The control panel should have soft color touch screen display, capable of showing graph etc.   |                          |
| 3.7  | Should have external & internal programmable time & speed shaking  |                          |
| 3.8  | Should be able to read all types of plates   |                          |
| 3.9  | Should have a single halogen lamp with save features as light source   |                          |
| 3.10 | Should have user defined programs 30 or more.  |                          |
| 3.11 | RS232/USB output for Printer, PC connectivity and Data acquisition should be there   |                          |
| 3.12 | Should have data memory of 300 plates.   |                          |
| 3.13 | Should have external printer, capable of printing complete results & graphs etc. from Elisa system   |                          |
| 3.14 | Shoud come with UPS for the sytem (Washer & Reader) of suitable rating with voltage regulation and spike protection for 30 minutes back-up.    |                          |
| 4    | <b>System Configuration Accessories, spares and consumables</b>  |                          |
| 4.1  | System as specified.   |                          |
| 4.2  | Halogen Lamps : 2  |                          |
| 4.3  | External Printer   |                          |
| 4.4  | Dust Cover -01   |                          |
| 4.5  | Set of pipettes consisting of single channel variable volume color pipettes 0.5-10 ul, 5-40 ul, 40-200 ul,200-1000 ul                          |                          |
| 4.6  | 8 channel variable volume color multi-channel pipettes 5-50 ul and 50-300 ul.  |                          |
| 5    | <b>Operating Environment</b>   |                          |
| 5.1  | The product offered shall be designed to be stored and to operate normally under Power Supply, Climate, Temperature, Humidity, etc. for Sudan. |                          |
| 5.2  | Power supply: 220-240V/ 50 Hz AC Single phase with appropriate plug .The power cable must be minimum 3 Meter                                   |                          |
| 6    | <b>Standards and Safety Requirements</b>   |                          |
| 6.1  | Must submit ISO13485:2003/AC:2007 for Medical Devices AND  |                          |
| 6.2  | CE (93/42 EEC Directives) or USFDA approved product certificate.   |                          |
| 6.3  | Must comply with IEC 61010 Safety requirements for electrical equipment for measurement, control, and laboratory use                           |                          |
| 7    | <b>User Training</b>   |                          |
| 7.1  | On site operational training till the familiarity of the system and satisfaction of end user shall be provided.                                |                          |
| 8    | <b>Warranty</b>  |                          |
| 8.1  | Comprehensive warranty for 2 years after acceptance.   |                          |
| 9    | <b>Maintenance Service During Warranty Period</b>  |                          |
| 9.1  | During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.  |                          |
| 10   | <b>Installation and Commissioning</b>  |                          |
| 10.1 | Supplier must accomplish proper installation and commissioning of the equipment on site.   |                          |
| 11   | <b>Documentation</b>   |                          |
| 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.   |                          |



| No.                 | Item Specifications   | Fill your Specification  |
|---------------------|---|--------------------------|
| 11.4                | Certificate of calibration and inspection from factory.   |                          |
| <b>ELISA Washer</b> |   |                          |
| No.                 | Item Specifications   | Fill Your Specifications |
| I                   | <b>Manufacturer Name:</b>   |                          |
| II                  | <b>Model No.:</b>   |                          |
| III                 | <b>Country of Origin:</b>   |                          |
| 1                   | <b>Description of Function</b>  |                          |
| 1.1                 | A washer for microtitre plates designed to ensure thorough washing of reagents between Enzyme-Linked Immunosorbent Assay (ELISA) steps.   |                          |
| 2                   | <b>Operational Requirements</b>   |                          |
| 2.1                 | 8 channel.  |                          |
| 3                   | <b>System Configuration</b>   |                          |
| 3.1                 | ELISA Washer, automatic, complete unit with complete accessories.   |                          |
| 4                   | <b>Technical Specifications</b>   |                          |
| 4.1                 | 8-channel strip manifold, open system.  |                          |
| 4.2                 | Rinse & prime programme.  |                          |
| 4.3                 | Wash parameters include: 16-character assay name, number of cycles, wash volume, flow rate and variable soak times.   |                          |
| 4.4                 | Dispense only and aspirate only modes for reagent addition and removal.   |                          |
| 4.5                 | Shall have built-in multi-speed shaker for improved CVs and reduced assay backgrounds.  |                          |
| 4.6                 | Shall have crosswise aspiration/double aspiration of flat bottom micro-plates for reduced residual liquid.  |                          |
| 4.7                 | Bottom wash mode for rapid dilution of reagent.   |                          |
| 4.8                 | Shall have built-in vacuum & pressure pump assembly.  |                          |
| 4.9                 | Bottles for waste rinse and wash.   |                          |
| 4.10                | Accommodates flat, U or V-shaped bottom plates.   |                          |
| 4.11                | Wash cycles: Between 1-10.  |                          |
| 4.12                | Dispensing volumes from 25 to 3000ul.   |                          |
| 4.13                | Soak time 1-600 seconds.  |                          |
| 4.14                | Fluid flow rate in 150 to 1000ul/well/second to accommodate cellular assays.  |                          |
| 4.15                | Spill-over protection & electronics isolated from fluidics.   |                          |
| 4.16                | Optional automatic buffer switch in flip out aerosol cover or similar.  |                          |
| 5                   | <b>Accessories, spares and consumables</b>  |                          |
| 5.1                 | All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer. Bidders must specify the quantity of every item included in their offer (including items not specified above). |                          |
| 6                   | <b>Operating Environment</b>  |                          |
| 6.1                 | The product offered shall be designed to be stored and to operate normally under the conditions of the purchaser's country. The conditions include Power Supply, Climate, Temperature, Humidity, etc.   |                          |
| 6.2                 | Power supply: 220 – 240 VAC, 50Hz fitted with appropriate plug. The power cable must be at least 3 meter in length.   |                          |
| 6.3                 | Suitable UPS with maintenance free batteries, voltage regulation and spike protection for minimum 30 min. back-up shall be supplied with the system.  |                          |
| 7                   | <b>Standards and Safety Requirements</b>  |                          |
| 7.1                 | Must submit ISO13485:2003/AC:2007 for Medical Devices AND   |                          |
| 7.2                 | CE (93/42 EEC Directives) or USFDA approved product certificate.  |                          |
| 7.3                 | Shall meet IEC 61010-2-081 safety requirements for electrical equipment for measurement, control, and laboratory use - Part 2-081: Particular requirements for automatic and semi-automatic laboratory equipment for analysis and other purposes.   |                          |
| 8                   | <b>User Training</b>  |                          |
| 8.1                 | On site operational training till the familiarity of the system and satisfaction of end user shall be provided.   |                          |
| 9                   | <b>Warranty</b>   |                          |
| 9.1                 | Comprehensive warranty for 2 years after acceptance.  |                          |
| 10                  | <b>Maintenance Service During Warranty Period</b>   |                          |
| 10.1                | During warranty period supplier must ensure corrective/breakdown maintenance whenever required.   |                          |
| 11                  | <b>Installation and Commissioning</b>   |                          |
| 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                  | <b>Documentation</b>  |                          |
| 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.   |                          |

| No. | Item Specifications  | Fill your Specification |
|-----|--|-------------------------|
|     | <b>Description of Function</b>   |                         |
|     | Incubators are required to incubate living culture at a uniform temperature above ambient.                                     |                         |
|     | <b>Operational Requirements</b>  |                         |
|     | System with temperatures up to 50 deg C - specifically for incubating living cultures at 37 deg C and at 45 deg C as required. |                         |
|     | <b>Technical Specifications</b>  |                         |
|     | Capacity: within 50L   |                         |
|     | Interior chamber: Stainless steel for easy cleaning and decontamination  |                         |
|     | Timer: 1 min. to 100 hours and hold position   |                         |
|     | Temp range 5 deg C above ambient to 50 deg C   |                         |
|     | Minimum 4 adjustable shelves should be available.  |                         |
|     | Internal glass door for the observation  |                         |
|     | Temp Accuracy +/-1% of required temp, with inbuilt Temp.Sensor   |                         |
|     | Adjustable safety thermostat for temp setting at 1 deg C increment   |                         |
|     | Minimum turbulence and no cross contamination  |                         |
|     | In case of total breakdown of sensor, the heating should be switched off at approx. within 3 °C above set value.               |                         |
|     | There should be a Membrane Keypad with LCD/LED to set and display operating parameters, current status, running                |                         |
|     | time and alarm conditions for time and temperature.  |                         |
|     | Interior lighting facility, insulated door fitted with heavy   |                         |
|     | System Configuration Accessories, spares and consumables   |                         |
|     | System as specified-   |                         |
|     | <b>Environmental factors</b>   |                         |
|     | The unit shall be capable of being stored continuously in ambient temperature of 0 -50deg C and relative humidity of 15-90%    |                         |
|     | The unit shall be capable of operating continuously in ambient temperature of 10 -40deg C and relative humidity of 15-90%      |                         |
|     | <b>Power Supply</b>  |                         |
|     | Power input to be 220-240VAC, 50Hz fitted with Sudanese plug   |                         |
|     | Resettable overcurrent breaker shall be fitted for protection  |                         |
|     | Suitable voltage corrector/stabilizer  |                         |
|     | Suitable UPS with maintenance free batteries for minimum one-hour back-up should be supplied with the system.                  |                         |
|     | <b>Standards and Safety</b>  |                         |
|     | Should be compliant to ISO 13485: Quality systems - Medical devices - Particular requirements for the application of ISO 9001  |                         |
|     | Should be FDA or CE or ISI approved product  |                         |
|     | Comprehensive training for lab staff and support services till familiarity with the system.                                    |                         |
|     | Attach original manufacturer's product catalogue   |                         |
|     | <b>8 Documentation</b>   |                         |
|     | Certificate of calibration and inspection from factory.  |                         |
|     | List of Equipments available for providing calibration and routine maintenance support as per manufacturer                     |                         |
|     | documentation in service / technical manual.   |                         |
|     | User/Technical/Maintenance manuals to be supplied  |                         |
|     | List of important spare parts and accessories with their part number and costing.  |                         |
|     | Log book with instruction for daily , weekly, monthly and quarterly maintenance checklist.                                     |                         |
|     | Comprehensive warranty for 2 years after acceptance.   |                         |

| No. | Item Specifications | Fill your Specification |
|-----|---------------------|-------------------------|
|-----|---------------------|-------------------------|

| No.       | Item Specifications  | Fill your Specification |
|-----------|--|-------------------------|
| <b>1</b>  | <b>Description of Function</b>   |                         |
| 1.1       | Autoclaves are required for sterilizing an object in high temperature and high pressure steam.   |                         |
| <b>2</b>  | <b>Operational Requirements</b>  |                         |
| 2.1       | Microprocessor based electrically heated vertical steam sterilizer   |                         |
| <b>3</b>  | <b>System Configuration</b>  |                         |
| 3.1       | Microprocessor based Autoclave (Vertical Model) with complete accessories.   |                         |
| <b>4</b>  | <b>Technical Specifications</b>  |                         |
|           | capacity: approx. 50 L.  |                         |
|           | Vertical type.   |                         |
|           | Stainless steel.   |                         |
|           | Digital controlled temperature and pressure system.  |                         |
|           | Steam sterilization, up to 135° C  |                         |
|           | Digital temperature and pressure gauges.   |                         |
|           | Safety devices : over heat ( low water cut-off switch , safety valve and release valve)  |                         |
|           | Automatic controlled sterilization cycle.  |                         |
|           | 2 modes sterilization (121°c - 134°c )   |                         |
|           | Exhaust system.  |                         |
|           | Stainless steel basket.  |                         |
|           | Double wall case.  |                         |
| <b>5</b>  | <b>Accessories, spares and consumables</b>   |                         |
|           | Spare heating element- 2 set   |                         |
|           | All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer.   |                         |
| <b>6</b>  | <b>Operating Environment</b>   |                         |
| 6.1       | The product offered shall be designed to be stored and to operate normally under Climate ,Temperature , Power supply , Humidity, etc. for Sudan.   |                         |
|           | Power supply: 220-240V/ 50 Hz AC Single phase with appropriate plug .The power cable must be minimum 3 Meter   |                         |
| <b>7</b>  | <b>Standards and Safety Requirements</b>   |                         |
| 7.1       | Must submit ISO 9001 or ISO13485:2003/AC:2007 for Medical Devices AND  |                         |
| 7.2       | CE or USFDA approved product certificate.  |                         |
|           | Shall meet IEC 61010-2-040 Safety requirements for electrical equipment for measurement, control and laboratory use - Part 2-040: Particular requirements for sterilizers and washer-disinfectors used to treat medical materials. |                         |
| <b>8</b>  | <b>Warranty</b>  |                         |
| 8.1       | Comprehensive warranty for 2 years.  |                         |
| <b>9</b>  | <b>Maintenance Service During Warranty Period</b>  |                         |
| 9.1       | During warranty period supplier must ensure corrective/breakdown maintenance whenever required.  |                         |
| <b>10</b> | <b>Installation and Commissioning</b>  |                         |
| 10        | The supplier must accomplish proper commissioning of the item onsite.  |                         |
| <b>11</b> | <b>Documentation</b>   |                         |
| 11        | User and/or service manual shall be supplied in English.   |                         |
| 11        | User (Operating) manual in English   |                         |
| 11        | Service (Technical / Maintenance) manual in English  |                         |
| 11        | List of important spare parts and accessories with their part numbers and costing.   |                         |
| 12        | Certificate of calibration and inspection from factory.  |                         |

| No.      | Item Specifications  | Fill your Specification |
|----------|--|-------------------------|
| <b>1</b> | <b>Description of Functions</b>  |                         |
| 1.1      | Hydraulic operating tables are simple tables for performing surgical procedures and it works without electrical power. |                         |

| No.       | Item Specifications  | Fill your Specification |
|-----------|--|-------------------------|
| <b>2</b>  | <b>Operational Requirements</b>  |                         |
| 2.1       | OT Table is required for general surgery and shall have X-Ray translucent tops.  |                         |
| <b>3</b>  | <b>System Configuration</b>  |                         |
| 3.1       | Operating Table Hydraulic with complete accessories.   |                         |
| <b>4</b>  | <b>Technical Specifications</b>  |                         |
| 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       | <b>Dimensions ( approx. +/- 10 % variations):</b>  |                         |
|           | <input type="checkbox"/> Height: 730-1040 mm.  |                         |
|           | <input type="checkbox"/> Side tilt: + 15 degrees.  |                         |
|           | <input type="checkbox"/> Back section adjustment: - 15 degrees to 70 degrees.  |                         |
|           | <input type="checkbox"/> Foot section adjustment: - 90 to 0 degree, detachable.  |                         |
|           | <input type="checkbox"/> Trendelenburg: 25 degree.   |                         |
|           | <input type="checkbox"/> Anti trendelenburg: 25 degree.  |                         |
|           | <input type="checkbox"/> Head section adjustment: -40 to -30 degrees, detachable.  |                         |
|           | <input type="checkbox"/> Maximum width: 555 mm.  |                         |
|           | <input type="checkbox"/> Length: 1950 mm.  |                         |
| <b>5</b>  | <b>Accessories, spares and consumables</b>   |                         |
| 5.1       | <b>Accessories:</b>  |                         |
|           | <input type="checkbox"/> Padded arm rest with straps: pair with damp.  |                         |
|           | <input type="checkbox"/> Anesthesia screen with clamps.  |                         |
|           | <input type="checkbox"/> Side supports: pair with clamps.  |                         |
|           | <input type="checkbox"/> Knee crutches: pair with damp.  |                         |
|           | <input type="checkbox"/> X-ray cassette tray.  |                         |
|           | <input type="checkbox"/> Kidney bridge.  |                         |
|           | <input type="checkbox"/> SS bowl with clamps.  |                         |
|           | <input type="checkbox"/> Infusion rod with clamp.  |                         |
|           | <input type="checkbox"/> Legs Support.   |                         |
| 5.2       | All standard accessories, consumables and parts required to operate the equipment, including all standard tools and cleaning and lubrication materials, to be included in the offer. |                         |
| <b>6</b>  | <b>Operating Environment</b>   |                         |
| 6.1       | The product offered shall be designed to be stored and to operate normally under Climate, Temperature, Humidity, etc. for Sudan.   |                         |
| <b>7</b>  | <b>Standards and Safety Requirements</b>   |                         |
| 7.1       | Must submit ISO13485:2003/AC:2007 for Medical Devices AND  |                         |
| 7.2       | CE (93/42 EEC Directives) or USFDA approved product certificate.   |                         |
| <b>8</b>  | <b>User Training</b>   |                         |
| 8.1       | Must provide user training (including how to use and maintain the equipment).  |                         |
| <b>9</b>  | <b>Warranty</b>  |                         |
| 9.1       | Comprehensive warranty for 2 years after acceptance.   |                         |
| <b>10</b> | <b>Maintenance Service During Warranty Period</b>  |                         |
| 10        | During the warranty period supplier must ensure corrective/breakdown maintenance whenever required.  |                         |
| <b>11</b> | <b>Documentation</b>   |                         |
| 11        | User (Operating) manual in English.  |                         |
| 11        | Service (Technical / Maintenance) manual in English.   |                         |

| No. | Item Specifications  | Fill your Specification |
|-----|--|-------------------------|
| 11  | List of important spare parts and accessories with their part numbers and costing. |                         |
| 11  | Certificate of calibration and inspection from factory.                            |                         |

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**Obs & Gyn Delivery Set**

| No.      | Item Specifications   | Fill your Specification |
|----------|---|-------------------------|
| <b>1</b> | <b>Technical Specifications</b>   |                         |
|          | 1 Mixing/solution Bowl Qt 3   |                         |
|          | 2 Iodine Cup 6 Oz 3 7/16" X 2"  |                         |
|          | 2 Emesis Basin 12 Oz  |                         |
|          | 2 Instr Tray 12 1/4x7 3/4x2 1/4"  |                         |
|          | 2 Tray Cover For 10-1877  |                         |
|          | 2 Roch Ochsner Forceps Straight 1x2 7 ¼   |                         |
|          | 2 Spencer Wells Forceps Straight 5"   |                         |
|          | 2 Spencer Wells Forceps Straight 8"   |                         |
|          | 2 Rampley Sponge Forceps 9 3/4"   |                         |
|          | 1 Scalpel Handle #4   |                         |
|          | 2 Javerts Placenta Forceps Serrated 9 1/2   |                         |
|          | 1 Umbilical Scissors 4"   |                         |
| <b>2</b> | <b>Operating Environment</b>  |                         |
| 2.1      | The system offered shall be designed to store and to operate normally under the conditions include Climate, Temperature, Humidity, etc. for Sudan |                         |
| <b>3</b> | <b>Standards and Safety Requirements</b>  |                         |
| 3.1      | Must submit ISO 9001 or ISO 13485:2003/AC:2007 AND  |                         |
| 3.2      | CE (93/42 EEC Directives) or USFDA approved product certificate.  |                         |