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Ref. No.: IGIMS/ 2024/ 703 / Store **Date: 20/ 07/ 2024**

E-Tender Notice No.: 01/ 2024-2025/ Bio-medical Equipment/ IGIMS/ Store

CORRIGENDUM- III

Amendment Notice to the Tender Notice bearing **E-Tender Notice No.: 01/ 2024-2025/ Bio-medical Equipment/ IGIMS/ Store** for the supply, installation & commissioning of Bio-Medical Equipments / Instruments for the department of Anesthesiology, CTVS, General Surgery, G.I. Surgery, Neurology, Paediatric Surgery, Pathology, Physiology, Radiology, RIO and Urology of IGIMS-Patna.

Amendments mentioned hereunder are notified:

Description	Specifications mentioned in the Bidding Document	Should be read as follows:
Group: A – Anaesthesiology		
1: Flowtrac Cardiac Output Monitoring		
Sl. No. 01	It should have a touch screen with active area of 12.1 inch.	It should have a touch screen with active area of 12.1 inch **preferably.**
Sl. No. 04	It should be equipped with 3 expansion module & 2 cables receptacles.	It should be equipped with **minimum** 3 expansion module & 2 cables receptacles.
Sl. No. 07	It should have upgradable future facility of other technologies like Non-Invasive Continuous Cardiac Output, Pulmonary Artery Catheter Module and Cerebral/Tissue Oximetry parameter (StO2) using Near Infrared Spectroscopy (NIRS) technology with at least 5 different wavelengths and light penetration depth of at least 2.5 cm.	It should have upgradable future facility of other technologies like Non-Invasive Continuous Cardiac Output, Pulmonary Artery Catheter Module and Cerebral/Tissue Oximetry parameter (StO2).
Sl. No. 10	It should have hot swappable battery.	**Deleted**
Cons. Sl. No. 02	Cardiac Output Sensor with AI– 10	Cardiac Output Sensor with AI– 10 **(preferably)**
2: Trans Oesophageal Echocardiography		
No Change		
3: CRRT Machine		
No Change		
4: ECMO (Extracorporeal Membrane Oxygenator		
Sl. No. 1 (Vii)	Should have following modes of application	Should have following modes of application **(optional)**
Sl. No. 1 (ix)	Should have level sensor safety system	**Deleted**
5: Flexible Fibreoptic Video Bronchoscope		
Point 02	For adult outer diameter of scope should be ranging 4.8-5.5 mm with working length of 65cm or more.	For adult outer diameter of scope should be ranging 4.8-5.5 mm with working length of **60 cm** or more.
Point 05 (ii)	Monitor resolution should be minimum 1920 X 1200 pixels in 16:9 formats.	Monitor resolution should be minimum **1280 X 980** pixels in 16:9 formats.

6: Ultrasonography Machine (Portable)		
Sl. No. 05	To prevent cross contamination and infection, the system should possess a sealed & spill proof 10 inch or more touch screen customizable user interface with limited sealed physical buttons which should be easy to clean and disinfect for use in OT &ICU environment. Please specify liquid ingress protection rating for system.	**Deleted**
7: RFA (Cooled Radio Frequency Ablation)		
No Change		
8: Anaesthesia Simulation Lab		
No Change		
9: Human Patient Simulator (Adult Manikin)		
No Change		
Group: B – CTVS		
Will be uploaded shortly		
Group: C – General Surgery		
1: 4K HD Endoscopy System		
A. Sl. No. 07	It should have facility for 2xUSB port on front and rear panel.	It should have facility for **1/2 x USB** port on **front or rear panel.**
A. Sl. No. 08	It should have Port to support 4K HD image output such 12G-SDI which should support Resolution min up to 3840 X 2160.	It should have Port to support 4K HD image output such 12G-SDI which should support Resolution min up to **4K resolution (3840 X 2160).**
A. Sl. No. 09	It should have Digital output DVI, 3G-SDI, HD-SDI for 1920x1080/60 along with analogue output Y/C and digital input DVI.	It should have Digital output **DVI/ 3G-SDI**, HD-SDI for 1920x1080/60 along with analogue output Y/C and **VBS composite/** digital input DVI.
A. Sl. No. 11	It should have Auto-HDR facility to deliver a bright image from the near view to far view and minimizes noise and halation at the same time.	It should have Auto-HDR facility **or equivalent (document supported)** to deliver a bright image from the near view to far view and minimizes noise and halation at the same time.
A. Sl. No. 15	It should have latest Digital & Optical image enhanced endoscopy features both I-SCAN and OE.	It should have latest Digital & Optical image enhanced endoscopy features both I-SCAN and OE/ **Narrow Band Imaging.**
B. Sl. No. 04	It should have Depth of field 3-100 mm or more	It should have Depth of field **2/3-100 mm** or more
B. Sl. No. 07	Minimum Instrument channel should be 3.2mm or more.	Minimum Instrument channel should be **2.8 mm or more**.
B. Sl. No. 08	It should have working length of 1050mm approximately or more	It should have working length of **1030 mm** approximately or more
B. Sl. No. 09	Total length approx. 1360 mm or more	Total length approx. **1350 mm or more**
C. Sl. No. 04	It should have Depth of field 3-100 mm or more.	It should have Depth of field **2/3-100 mm** or more.
C. Sl. No. 06	Insertion Tube Diameter should be 11.6mm or less.	Insertion Tube Diameter should be **12.8-11.5 mm** or less.

C. Sl. No. 07	Minimum Instrument channel should be 3.8mm or more.	Minimum Instrument channel should be **3.5 mm** or more.
C. Sl. No. 08	It should have working length of 1700mm approximately or more.	It should have working length of **1680 mm** approximately or more.
C. Sl. No. 09	Total length approx. 2050 mm or more	Total length approx. **2000 mm** or more
C. Sl. No. 11	It should have graduated flexibility GDF feature- i-Flex and True Torque.	It should have graduated flexibility GDF feature- i-Flex and True Torque or **similar/ equivalent technology.**
C. Sl. No. 12	It should have a rotatable PVE Connector by 180 degrees to avoid damage to LG Cable.	**Deleted**
D. Sl. No. 04	It should have direction of view 102° (retroflexed view 12°)	It should have direction of view 102° (retroflexed **view 15°**)
D. Sl. No. 09	It should have working length of 1250mm approximately or more.	It should have working length of 1240 mm approximately or more.
D. Sl. No. 10	Total length approx. 2050 mm or more	Total length approx. 1560 mm or more
D. Sl. No. 12	It should have a rotatable PVE Connector by 180 degrees to avoid damage to LG Cable.	**Deleted**
E.	27" or more 4K Medical Grade Monitor	**32"** or more 4K Medical Grade Monitor from same make
F.	HD Recording Software	HD Recording Software **with computer i7 and above color printer**
G.	Trolley	Trolley **from same OEM**
2: Advance Visualization Tower- 3D in 4K resolution with Fluorescence Imaging (ICG)		
Sl. No. 01 (Point. 2)	3-Dimensional endoscopic video camera in 4K resolution (3840 *2160)	**System should come with provision of future up gradation of** 3-Dimensional endoscopic video camera ready to use by adding a monitor & Telescope.
Sl. No. 01 (Point. 3)	Slot for Video Scopes (Digital Scopes/Chip on tip) like Video Choledochoscope, Video Cystoscopes etc.	Slot for Video Scopes **or with additional separate processor slot for** (Digital Scopes/Chip on tip) like Video Choledochoscope, Video Cystoscopes etc.
Sl. No. 01 Overlay: Point. 2	Either blue or green.	**Blue or green or any other.**
Sl. No. 01 (Point. 12)	Outputs: All Compatible outputs should be there (12GSDI, Display Port) for 4K resolution and DVI for HD resolution.	Outputs: All Compatible outputs should be there **(HDMI, 12GSDI, Display Port or any other Output)** for 4K resolution and DVI for HD resolution.
SL. No. 02	**32- and 55-Inch Monitor 1 each**	**31-32" and 50-55" Monitor (Each)**
SL. No. 02	• 3D in 4K resolution • 2D in Full HD resolution • 3D in Full HD resolution Should be supplied with 3D glasses – 10 Nos.	**Deleted**
SL. No. 04 (Point. 02)	Controllable via Touch screen of size 10" or more.	Controllable via Touch screen of size **3.5" or more**.
SL. No. 04 (Point. 05)	Should have minimum of 8 inputs and 8 outputs.	Should have minimum of **4-8 inputs and 4-8 outputs**.
SL. No. 04 (Point. 06)	All inputs and outputs should be capable of routing 4K, 3D and Full HD signals in native resolution.	All inputs and outputs should be capable of routing **4K and Full HD** signals in native resolution.
Sl. No. 07	**Telescopes for 3D in 4K resolution with integrated camera head**	**Deleted**
Sl. No. 07	3D imaging via two distal 4K sensors Camera and Telescopes should be one piece 10mm 30 degrees - 1 No. Switching of 3D to 2D can be done.	**Deleted**

	Free from Focus and Depth of Filed should be 30-200mm Autoclavable. Sterilization tray for the scope should be quoted. 3D Should be able to perform both White light and Near Infrared application.	
Sl. No. 8 (Point. 02)	Adjustable flow rate of minimum 50 liter per minute or more and pressure range adjustable between 0 to 30 mm Hg	Adjustable flow rate of minimum **45 liter per minute** or more and pressure range adjustable between 0 to 30 mm Hg
3: Echo Portable Color Doppler Equipment with Tee for OT		
Sl. No. 11	Facility for independent steering of B mode and Color beam on linear probe The system should provide 100 dB or more full time input dynamic range, this should be supported by technical data sheet.	Facility for independent steering of B mode and Color beam on linear probe The system should provide **100-200 dB** or more full time input dynamic range, this should be supported by technical data sheet.
Sl. No. 18	Equipment should have in built 320 GB HDD to store images and cine loops.	Equipment should have in built **250-350 GB HDD** to store images and cine loops.
Sl. No. 27	Multi frequency convex array probe of 2 – 6 Mhz	Multi frequency convex array probe of **2 – 7 Mhz**
Sl. No. 29	Multi frequency endocavity probe of 5-8 Mhz	Multi frequency endocavity probe of **4-9 Mhz**
Sl. No. 30	**To be added**	**Should be supply with 3KVA online UPS with 30 min Battery backup**
4: Surgical Skill Lab		
Sl. No. 03	Laparoscopy training simulator/ Laparoscopy endo trainer set with TV	**Laparoscopy endo trainer set with TV**
5: Simulator for Adult Fast Examination		
Item. 05	Simulator for Adult Fast Examination	**Simulator for Robotic Surgery Training Skill**
6: Paediatric Fast and Acute Abdominal Ultra Sound Phantom		
Deleted		
7: RFA (Radiofrequency Ablation Machine)		
Deleted		
8: VAAFT System		
No Change		
9: Portable Diode Laser and Emission		
No Change		
Group- D: G.I. Surgery		
Will be uploaded shortly		
Group- E: Neurology		
Will be uploaded shortly		
Group- F: Paediatric Surgery		
1: Paediatric Laparoscopy Set 4 K with 2D- 3D display system with Fluorescence Imaging		
Sl. No. 01 (Point. 2)	3-Dimensional endoscopic video camera in 4K resolution (3840 *2160)	**System should come with provision of future up gradation of** 3-Dimensional endoscopic video camera ready to use by adding a monitor & Telescope.
Sl. No. 01 (Point. 3)	Slot for Video Scopes (Digital Scopes/Chip on tip) like Video Choledochoscope, Video Cystoscopes etc.	Slot for Video Scopes **or with additional separate processor slot for** (Digital Scopes/Chip on tip) like Video Choledochoscope, Video Cystoscopes etc.
Sl. No. 01 Overlay: Point. 2	Either blue or green.	**Blue or green or any other.**
Sl. No. 01 (Point. 12)	Outputs: All Compatible outputs should be there (12GSDI, Display Port) for 4K resolution and DVI for HD resolution.	Outputs: All Compatible outputs should be there **(HDMI, 12GSDI, Display Port or any other Output)** for 4K resolution and DVI for HD resolution.

SL. No. 02	**32- and 55-Inch Monitor 1 each**	**31" or more Monitor**
SL. No. 02	• 3D in 4K resolution • 2D in Full HD resolution • 3D in Full HD resolution Should be supplied with 3D glasses – 10 Nos.	**Deleted**
SL. No. 04 (Point. 02)	Controllable via Touch screen of size 10" or more.	Controllable via Touch screen of size **3.5" or more**.
SL. No. 04 (Point. 05)	Should have minimum of 8 inputs and 8 outputs.	Should have minimum of **4-8 inputs and 4-8 outputs**.
SL. No. 04 (Point. 06)	All inputs and outputs should be capable of routing 4K, 3D and Full HD signals in native resolution.	All inputs and outputs should be capable of routing **4K and Full HD** signals in native resolution.
SL. No. 5	Control buttons:3 (2 of them freely programmable).	Control buttons: **3 (Either of them freely programmable)**
SL. No. 6	Telescope, diameter 10 mm, length 32 cm, autoclavable, variable direction of view from 0° – 120°, adjustment knob for selecting the desired direction of view, fiber optic light transmission incorporated.	**Deleted**
Sl. No. 07	**Telescopes for 3D in 4K resolution with integrated camera head**	**Deleted**
Sl. No. 07	3D imaging via two distal 4K sensors Camera and Telescopes should be one piece 10mm 30 degrees - 1 No. Switching of 3D to 2D can be done. Free from Focus and Depth of Filed should be 30-200mm Autoclavable. Sterilization tray for the scope should be quoted. 3D Should be able to perform both White light and Near Infrared application.	**Deleted**
Sl. No. 8 (Point. 02)	Adjustable flow rate of minimum 50 liter per minute or more and pressure range adjustable between 0 to 30 mm Hg	Adjustable flow rate of minimum **45 liter per minute** or more and pressure range adjustable between 0 to 30 mm Hg
2: Flexible Upper and Lower G.I. Scopy Set		
A. Sl. No. 01	It should have dual port for the connection of both CCD and CMOS type endoscopes from same manufacturer.	It should have **single/ dual** port for the connection of both CCD and CMOS type endoscopes from same manufacturer.
A. Sl. No. 07	It should have facility for 2xUSB port on front and rear panel.	It should have facility for **1/2 x USB** port on **front or rear panel.**
A. Sl. No. 08	It should have Port to support 4K HD image output such 12G-SDI which should support Resolution min up to 3840 X 2160.	It should have Port to support 4K HD image output such 12G-SDI which should support Resolution min up to **4K resolution (3840 X 2160).**
A. Sl. No. 09	It should have Digital output DVI, 3G-SDI, HD-SDI for 1920x1080/60 along with analogue output Y/C and digital input DVI.	It should have Digital output **DVI/ 3G-SDI**, HD-SDI for 1920x1080/60 along with analogue output Y/C and **VBS composite/** digital input DVI.
A. Sl. No. 11	It should have Auto-HDR facility to deliver a bright image from the near view to far view and minimizes noise and halation at the same time.	It should have Auto-HDR facility **or equivalent (document supported)** to deliver a bright image from the near view to far view and minimizes noise and halation at the same time.
A. Sl. No. 15	It should have latest Digital & Optical image enhanced endoscopy features both I-SCAN and OE.	It should have latest Digital & Optical image enhanced endoscopy features both I-SCAN and OE/ **Narrow Band Imaging.**

B. Sl. No. 02	It should have a water proof one-touch connector	It should have a water proof one-touch connector, **connector should be fully immiscible in water**
B. Sl. No. 04	It should have Depth of field 3-100 mm or more	It should have Depth of field **2/3-100 mm** or more
B. Sl. No. 06	Insertion Tube Diameter should be 9.8 mm or less	Insertion Tube Diameter should be **5-7 mm** or less
B. Sl. No. 07	Minimum Instrument channel should be 3.2mm or more.	Minimum Instrument channel should be **2 mm or more**.
B. Sl. No. 08	It should have working length of 1050mm approximately or more	It should have working length of **1030 mm** approximately or more
B. Sl. No. 09	Total length approx. 1360 mm or more	Total length approx. **1350 mm or more**
C. Sl. No. 04	It should have Depth of field 3-100 mm or more.	It should have Depth of field **2/3-100 mm** or more.
C. Sl. No. 06	Insertion Tube Diameter should be 11.6mm or less.	Insertion Tube Diameter should be **12.8-11.6 mm** or less.
C. Sl. No. 07	Minimum Instrument channel should be 3.8mm or more.	Minimum Instrument channel should be **3.7 mm** or more.
C. Sl. No. 08	It should have working length of 1700mm approximately or more.	It should have working length of **1680 mm** approximately or more.
C. Sl. No. 09	Total length approx. 2050 mm or more	Total length approx. **2000 mm** or more
C. Sl. No. 11	It should have graduated flexibility GDF feature- i-Flex and True Torque.	It should have graduated flexibility GDF feature- i-Flex and True Torque or **similar/ equivalent technology.**
C. Sl. No. 12	It should have a rotatable PVE Connector by 180 degrees to avoid damage to LG Cable.	**Deleted**
D. Sl. No. 02	It should have a water proof one-touch connector	It should have a water proof one-touch connector, **connector should be fully immiscible in water**
D. Sl. No. 04	It should have direction of view 102° (retroflexed view 12°)	It should have direction of view 102° (retroflexed **view 12°**)
D. Sl. No. 05	It should have Depth of field 4-60 mm or more	It should have Depth of field **4/5-60 mm** or more
D. Sl. No. 07	Insertion Tube Diameter should be 11.6 mm or less.	Insertion Tube Diameter should be **10.8 mm** or less.
D. Sl. No. 08	Minimum Instrument channel should be 4.2 mm or more	Minimum Instrument channel should be **3.2 mm** or more
D. Sl. No. 09	It should have working length of 1250mm approximately or more.	It should have working length of **1240 mm** approximately or more.
D. Sl. No. 10	Total length approx. 2050 mm or more	Total length approx. **1560 mm or more**
D. Sl. No. 12	It should have a rotatable PVE Connector by 180 degrees to avoid damage to LG Cable.	**Deleted**
E.	27" or more 4K Medical Grade Monitor	**32"** or more 4K Medical Grade Monitor from same make
F.	HD Recording Software	HD Recording Software **with computer i7 and above color laser printer**
G.	Trolley	Trolley **from same OEM**
3: Hand Instruments for Open Surgery		
No change		
4: OT Light & OT Table		
OT LIGHT (Point No. 3)	The Light housing should provide for high hygiene levels by providing a closed housing with smooth contours, rounded edges without any visible screw connections to ensure optimum wiping disinfection	The Light housing should provide for high hygiene levels by providing a closed housing with smooth contours, rounded edges to ensure optimum wiping disinfection
OT LIGHT (Point No. 4)	The system should have the following controls integrated in the control keypad	The system should have the following controls integrated in the control **touch Screen**
OT LIGHT (Point No. 8)	The Domes should have light field diameter between 160/ 170 to 220/230 mm.	The Domes should have light field diameter between 160/ 170 to **180/ 250 mm.**
OT LIGHT (Point No. 10)	Illumination Depth should be more than 750mm in both major and minor dome.	Illumination Depth should be more than **750mm ±50 mm** in both major and minor dome.
OT LIGHT (Point No. 11)	The luminous efficiency of the lights should be approximately 320 lm/w in the major and minor domes	The luminous efficiency of the lights should be approximately **<240 lm/w** in the major and minor domes
OT LIGHT	Primary power requirement 55 VA + 55 VA	Primary power requirement **50 VA to 70 VA**

(Point No. 15)		
HD Camera For OT Light (Point No. 03)	The camera should have facility for zoom - 120 x zoom (10 x optical / 12 x digital)	The camera should have facility for zoom - 120 x zoom (10 x optical / **6-12 x digital**)
Technical Data (Point No. 08)	Zoom: 10x optical / 12 x digital	Zoom: 10x optical / **6-12 x digital**
Technical Data (Point No. 10)	½ to 1/10,000" S	**1/ 10 to 1/ 30,000" S**
Technical Data (Point No. 19)	Camera dimensions: 131 x 88 mm (length x diameter)	Camera dimensions: 131 x 88 mm (length x diameter)- **Compatible with Dome & interface.**
Technical Data (Point No. 25)	Wall socket connector standard: 3 x BNC socket for video signal 1 x multiple DIN socket for control signals	**Wall socket connector: standard**
Technical Specification for Operating Table (Point. 09)	Length of the table ≥2060 mm	Length of the table 2000-2060 mm
Electro-Hydraulic Functions :	Turn left ≥ 25°	Turn left 20- 25°
	Turn right ≥ 25°	Turn right 20- 25°
	Trendelendburg position ≥ 30°	Trendelendburg position 25-35°
	Reverse Trendelendburg position ≥ 30°	Reverse Trendelendburg position 25- 35°
	Back plate up position ≥ 80°	Back plate up position 70- 80°
	Back plate down position ≥ 40°	Back plate down position 35- 40°
Functions/ Accessories (Point No. 03)	Lithotomy Pole with Clamp – 1 Pair	Lithotomy Pole with Clamp for Paediatric 5x– 1 Pair
	The OT Table should be US FDA listed and European CE approved.	The OT Table should be **US FDA listed / European CE approved**
5: Image Intensifier		
A. Point. 3	FPD with 30 x 30 Cm or more size should be provided	FPD with **23 x 23 Cm** or more size should be provided
A. Point. 5	Pixel pitch should be 150µm or less.	Pixel pitch should be **160µm -150µm** or less.
C.	13" or more Touch screen console mounted on C-carriage to operate the machine & for live Image display.	**It should be 13"-15" or more** Touch screen console mounted on C-carriage to operate the machine & for live Image display.
D. Point. 1	Rotation: +180 Degrees.	Rotation: **+180 - +280 Degrees**.
D. Point. 6	Source to Image distance should be 970mm	Source to Image distance should be 970mm **or 1000 mm**
D. Point. 7	Depth of "C" should be at least 650mm	Depth of "C" should be at least 650mm **or more**
D. Point. 9	Steering handle with +/-90 degree movement for both side diagonal scan	**Double** Steering handle with +/-90 degree movement for both side diagonal scan
E. Point. 1	High Frequency (50 KHz).	High Frequency (**50 KHz-250 KHz**).
E. Point. 2	Output power should be 15KW or more	Output power should be **5KW** or more
E. Point. 4	Digital Spot: 150mA	Digital Spot: **10mA or more**
E. Point. 5	Pulse Fluoroscopic mA(peak):- up to 15mA or more (Normal Mode) up to 30mA or more (boost flouro mode)	Pulse Fluoroscopic mA(peak):- **0.2 mA-10 mA** or more (Normal Mode) **0.2 mA- 12 mA** or more (boost flouro mode)
F. Point. 2	Anode Heat Storage capacity should be min 365kHU	Anode Heat Storage capacity should be min **200kHU-365kHU or more**
Others (Point. 02)	Emergency OFF switches mounted on monitor	Emergency OFF switches **should be available**
Others (Point. 04)	Flouro, Cine & spot switches on both side of panel	Flouro, Cine & spot switches **should be available**
DSA:-	Up to 10 FPS image acquisition for DSA	Up to **10 FPS or more** image acquisition for DSA
J. Point. 02	The quoted model should be USFDA approved	The quoted model should be **European CE/ USFDA**

		approved
6: Ventilator		
No Change		
7: Forced Air Warming Machine		
Point 09	Should have CE or any other International certification of quality	Should have **CE or US FDA**
8: Vessel Sealer Energy Source		
Point. 2	The unit should have an optical support quickstep control knob/touch Key/screen button to achieve and make the settings of the unit quickly.	The unit should have an optical support quickstep control knob/**touch screen** button to achieve and make the settings of the unit quickly.
Point. 8	Should have reusable Laparoscopic Vessel Sealing Instrument with Integrated Blade	Should have reusable Laparoscopic Vessel Sealing Instrument with **& without** Integrated Blade
Point. 10	The unit should have four individual outputs 2 for monopolar, 2 for bipolar and 1vessel sealing	The unit should have four individual outputs 2 for monopolar, **1/2** for bipolar and 1vessel sealing
Point. 11	The unit should have 11 different monopolar cutting currents with different cutting qualities and capabilities	The unit should have **7 or more** different monopolar cutting currents with different cutting qualities and capabilities
Point. 13	The Bipolar should have a special cutting current with simultaneous coagulation during the use of bipolar scissors	The Bipolar should have a special cutting current with simultaneous coagulation during the use of **instruments**
Point. 14 (i)	Monopolar cut modes (minimum 8 types)	Monopolar cut modes (minimum **7 or more** types)
Point. 14 (iv)	Monopolar coagulation modes (minimum 15 types)	Monopolar coagulation modes (minimum **7 or more** types)
Point. 14 (v)	Bipolar cutting mode (minimum 3 types)	Bipolar cutting mode (**max. 3 types**)
Point. 14 (vi)	Bipolar coagulation (minimum 6 types)	Bipolar coagulation (**max. 6 types**)
Point. 17	Vessel sealing for open surgery with integrated blade (autoclavable)/ single use minimum of 10 each	Vessel sealing for open surgery **with & without** integrated blade (autoclavable)/ single use minimum of 10 each
Point. 24	Unit should be supply with cart	Unit should be supply with cart **(from original make)**
9: Plasma Steriliser		
Point. 05	It should have Cassette type sterilant (min 4 to 7 cycles per cassette).	It should have Cassette/ **bottle** type sterilant (min 4 to 7 cycles per cassette).
Point. 06	It should have 3 programmed cycles, Short, Standard & Advanced depending upon the types of products sterizing. Having min cycle time of 35 mins.	It should have 3 programmed cycles, Short, Standard & Advanced depending upon the types of products sterizing. Having min cycle time of **≥30 mins**.
Point. 14	It should have USB cycle data backup/Ethernet connection. With 10" TFT touch LCD color screen	It should have USB cycle data backup/Ethernet connection. With **7" and above** TFT touch LCD color screen
Point. 19	It should have Vertical sliding door (dual safety system.)	It should have Vertical sliding door **with sensor/ dual safety system.**
Point. 23	It should have 2- tiered shelves chamber (Load Wt. / shelf : 40 kg)	It should have 2- tiered shelves chamber (Load Wt. / shelf : **9 kg & above**)
Point. 33	System must be : US FDA & European CE	System must be : **US FDA / European CE**
Group: G- Pathology		
1. Automated IHC		
1.	The system must be **walking away** fully Automated Slide Staining System to process slides for Immuno histo chemistry (IHC), In Situ Hybridization, Immuno Fluorescence.	The system must be **walking away standalone floor top** fully Automated Slide Staining System to process slides for Immuno histo chemistry (IHC), In Situ Hybridization, Immuno fluorescence.
13.	The system should be **US-FDA** certified/Indian Standards	The system should be **US-FDA & CE-IVD** approved
17.	The system or any variants of the system with the same technology should be installed in minimum	The system or any variants of the system with the same technology should be installed in **> 30** hospitals

	10 Hospitals Labs across India	laboratories across India
	Add	**1.** Demonstration of the instrument with same or similar technology to be given by vendor for technical compliance validation. **2.** All accessories and start-up reagents (including at least 10 antibodies) for >250 slides should be provided to run the instrument at the time of installation.
2. Real-Time PCR system with accessories		
1.	System should run real-time PCR experiments without being attached to a computer. When operated as a stand-alone instrument, the instrument will save at least 1000 run files.	System should **come along with computer,** run real-time PCR experiments without being attached to a computer. **It Is connected via computer's software** When operated as a stand-alone instrument, the instrument will save at least 1000 run files.
4.	System must not have lid or drawer that extends beyond the footprint of the system nor requires additional operating clearance.	System must should have advanced easy-to-open automatic drawer which can be operated via touch screen, or it can be connected to a desktop or laptop computer's software.
6.	Thermal gradient for optimization of multiple temperatures in a single assay. Temperature differences of up to 24°C front-to-back can be created.	Thermal gradient **or better technology with six independently controlled zones in peltier for** optimization of multiple temperatures in a single assay. Temperature differences of up to 24°C **- 25°C** front to-back can be created.
7.	Peltier-driven thermal cycler with maximum ramping speed of 5°C/sec, with an average ramp rate of 3.3°C/sec.	Peltier-driven thermal cycler with maximum ramping speed of 5°C/sec **or above**, with an average ramp rate of 3.3°C/sec **or above**
9.	Sample block temperature accuracy is +/-0.2°C of programmed target at 90°C, with a uniformity of +/-0.3°C well-to-well within 10 seconds of arrival at 90°C.	Sample block temperature accuracy is **+/-0.25°C and Temperature uniformity 0.4°C, available with both chemistry capabilities Fast and standard mode**
10.	Optical system allows excitation and detection of up to five fluorescent dyes in a single reaction well.	Optical system **should** allow excitation and detection of five **or more** fluorescent dyes in a single reaction well **for better multiplexing capability**.
11.	Optics independently illuminates and detects fluorescence from each well with the same LED/detector pair per channel. The system should have six filtered LEDs for illumination and differentially detects emission using six filtered photodiodes (one for each channel plus FRET).	The instrument should use advanced technology for excitation which helps to detects fluorescence as a whole plate (all wells)/ well to well imaging with the source to cover broad light Spectrum. The system should have advanced six filters LEDs for excitation and collect data for each filter combination using advanced six filtered CMOS/photodiodes for all six channels.
12.	System must have fixed optical path, directly over each well, eliminates the need to normalize for positional bias.	System should do the data acquisition through Whole-plate/ well to well imaging and detection process. Data from all wells can be viewed at the same time with whole-plate imaging, which minimizes positional variability.
13.	Absorption spectra in the 450–684 nm; Emission spectra in the 515–730 nm range.	Absorption spectra in the 450–684 nm; Emission spectra in the **500**–730 nm range.
14.	One channel is dedicated for FRET and Protein Thermal Shift (Protein Melt) experiments.	**The system should be flexible enough to use its maximum six channels to enhanced multiplexing capabilities. The system should be compatible with Protein Thermal Shift (Protein Melt) experiments** and

		Protein Thermal Shift (Protein Melt) experiments.
15.	System should read all 96 wells with all channels within 12 seconds.	**The instrument should use advanced technology for detection in whole plate imaging format for <2 seconds which will read the 96-well at a stretch.**
16.	In "SYBR/FAM" scan mode, the system should read all 96 wells within 3 seconds.	**The instrument should use advanced technology for detection in whole plate imaging format for <2 seconds which will read whole 96well on "SYBR/FAM" scan mode.**
19.	Reaction volumes from 1–50 µl.	Reaction volumes from **10–100 µl.**
20.	Should detects ≤10 fmol of fluorescein.	**Real Time PCR instrument should be able to detect single copy of gene-target.**
28.	Software should perform t-tests and 1-way ANOVA calculations.	**System output information can be analyzed statistically through any statistical software or excel programs to interpret the data according to customer's application preference.**
30.	Should control up to 4 Instruments with one PC.	**System software configuration should be able to work for Stand-alone, all in one PC Suitable 5KVA Online UPS with at least 30 min backup connected, or direct connection to network Cloud via LAN or Wi-Fi.**
Software specifications:		
1.	Multiplex amplification and melt curve and end-point analyses should be performed on up to five fluorophores in a single reaction well.	**System Software should assist for** Multiplex amplification and melt curve **analysis with** end-point analyses for **maximum six target** fluorophores in a single tube reaction.
12	Software should be laboratory information management system (LIMS) enabled.	**System software configuration should be work for Stand-alone, PC connected, or direct connection to equipment via LAN or Wi-Fi.**
	Add	**Added points: 1.** Vendor should provide standard statistical software for analysing the raw data. **2.** All accessories (including PC with core i5, desktop 27-32-inch desktop, genuine windows, etc.,) and start-up reagents should be provided to run at least 1000 reactions. **3.** Demonstration of the instrument with same or similar technology to be given by vendor for technical compliance validation.
3. Chemidocumentation Imaging System:		
	Add	**1.**System software configuration should be work with PC connected, or direct connection to equipment via LAN or Wi-Fi.**2.**All accessories (including PC with core i5, desktop 27-32-inch desktop, genuine windows, etc.,) should be provided.**3.**Demonstration of the instrument with same or similar technology to be given by vendor for technical compliance validation.
4. Electrophoresis unit with Power Pac – (Universal power supply):		
	Add	• Vendor should provide 3 sets of ladders of DNA/ RNA/ protein and stain free gel. DNA/RNA/Protein loading dye, Ethidium bromide and 50x TAE Buffer

		(500ml). • Demonstration of the instrument with same or similar technology to be given by vendor for technical compliance validation.
5. Block Cabinet 25000 capacity		
	Capacity: 25000	Capacity: 20000-25000
	The cabinet must be US-FDA approved:	Deleted
6. Liquid based cytology:		
05	The retention of the brush head in the container eliminates the risk of any abnormal cells being discarded with The sampling device	Collection methods should have amechanism for the retention of 100% of cells collected.
07	Centrifugation process which effectively removes obscuring blood, mucus and polymorphs while still retaining the important diagnostic material.	The centrifugation/filtration technology should efficiently eliminate obscuring elements like blood andmucus,without causing any cell loss.
09	Should be capable of handlingahighthroughputof40-50slidesstainedperhour.	The system should have a high throughput Equivalentto20-50slideshour.
20	Staining to be included as an integral part of the system to ensurea high degree of standardization.	Staining to be included as an integral part of the system/ an open automated staining process or should be provided with the LBC.
	Add	**1.** Demonstration of the instrument with same or similar technology to be given by vendor for technical compliance validation. 2. All start up reagents should be provided at least for 100 samples
7 & 8. Automated urine chemistry & sediment analyser		
	Sample throughput: Up to 240 samples/hour with test strip analysis only	Sample throughput: Up to 240 samples/hour with test strip analysis and upto 100 test/ Hr. for microscopy (sediment analysis.
	Consumables: cassette with 400 strips for urine test strip analysis: cassette with 400 cuvettes for urine microscopy analysis	**Consumables:** cassette with more than 250 strips for urine test strip analysis: cassette with 400 cuvettes for urine microscopy analysis
	Measurement Principles: • Automatic image evaluation	**Measurement Principles:** • **Automatic image evaluation/ analysis by fluorescence flow cytometry**
	Storage capacity: • Operator can export all results on the analyzer, including sediment images, QC and calibration results	**Storage capacity:** • Operator can export all results on the analyzer, including sediment **images/ scattergrams**, QC and calibration results
	Add	**1.** Demonstration of the instrument with same or similar technology to be given by vendor for technical compliance validation. 2. All start up reagents should be provided at least for 1000 samples
9. Automated semen Analyzer		
Modified/ Added Points: Module for the automatic analysis of the motility and concentration of human semen sample. Main characteristics: • **Multiple configurations (including WHO standard configuration)** and the option to modify all analysis parameters. • Valid for **human semen only**. • Possibility of using **several specific digital cameras**, to analyze up to 100 frames per second and resolution up to 1024x1024 pixels. • Automatic analysis per field in less than 1 second. • Analysis under phase contrast or **fluorescence** • Possibility to capture up to 30 fields. • Possibility to eliminate any field.		

- Calculation of the **basic parameters**:
  - Sample concentration (M/ml and total ejaculate).
  - Number and percentage of the sample motility classified in the various types (progressive, non-progressive, motile, static, type a, type b, type c, type d and hyperactive).
- Calculation of the **advanced parameters**:
  - Sample concentration (M/ml and total ejaculate) per motility type.
  - Average of the head area and for velocity type.
  - Possibility to create groups/sort with specific characteristics.
- Calculation **average and by groups/types** of the kinetic parameters.
- **Intelligent filter**: Automatic correction of captured fields with high debris concentration.
- Visualization of the trajectories for all the fields.
- Visualization of the **individual** motility characteristics of every spermatozoa and option to create a report.
- Possibility to add or eliminate trajectories.
- Possibility to **save sessions** for a later analysis.
- Possibility to **export images and videos**.
- Several types of reports with **images and graphics**, with the possibility to export them to Word, PDF, Excel, XML, TXT.
- Possibility to **customize the report**, adapting the information to the customer´s needs.
- Excel report including a detailed list with all the parameters of every spermatozoa.
- Includes the **Sample Management**, that allows to retrieve the sample results to visualize them on the screen or print a wide range of reports (SQL Server database).
- Compatible with Viewer, program to visualize sessions in any computer.
- Compatible with Capture, data Share and Stage Controller.

Module for the automatic analysis of the morphology and morphometry of a semen sample.

Main characteristics:

- Possibility to create personal matrix chart for the analysis.
- Allows to use **several specific digital cameras**, with resolution up to 1024x1024 pixels..
- Automatic detection and analysis of all the spermatozoa in the field (head, acrosome, midpiece, tail and vacuoles).
- Allows to capture up to 200 fields.
- Several staining kits allowed: Diff-Quik, Sperm Stain, Sperm Blue, Papanicolau, Shorr, Hema color, Leja-SB, Cell-VU.
- Calculation of the following **basic paremeters**:
  - Percentage of normal and abnormal spermatozoa.
  - Percentage of spermatozoa with abnormal head, midpiece, tail and cytoplasmic droplet.
  - Teratozoospermy index.
- Calculation of **advanced parameters**:
  - Morphometry analysis (average and standard deviation)
    - Head: Length, width, area, perimeter, elongation, ellipticity, rugosity, regularity, percentage of acrosome, grey level.
    - Midpiece: Width, area, insertion distance, angle.
    - Tail: Length.
    - Vacuoles: Area.
  - Percentage of each morphological type (It is possible to modify the description)
    - Head: Micro, macro, elongated, pyriform, round, amorphous, normal acrosome.
    - Midpiece: Width, asimetric, angulated.
    - Tail: Short, bent, coilled, multiple, without.
- Visualization of the analysis masks and the original image.
- Visualization of each spermatozoa **individually** and possibility to print these results in an individual report.
- Possibility to add or eliminate spermatozoa.
- Manual selection of tail anomalies.
- Allows to **save a session** for a later analysis.
- Possibility to **export images**.
- Several reports are provided with **graphics and images**. Possibility to export the reports to Word, PDF, Excel, XML, TXT.
- Possibility to **customize the report**, adapting the information to the customer´s needs.
- Excel report with the list of morphology parameters of each spermatozoa.
- Includes **Sample Management**, to retrieve the sample results at any time, and visualize them on the screen or print a report (SQL Server database).
- Compatible with Viewer, that allows to display sessions in any computer.

- Compatible with Capture, data Share and Stage Controller.

Module developed to analyse, in a manual way, any sample that can be visualized with the digital camera used.
Main characteristics:

- Visualization of the sample on the screen.
- Allows to save into the database the obtained results.
- Allows the creation of customized counters (for any sample).
- Configuration of the counter keys.
- Results report with pictures that can be manually captured.
- Camera controls to modify the colours, brightness and contrast of the displayed image.

Module for the automatic analysis of the vitality in a human semen sample with brightfield or under fluorescence.
Main characteristics:

- **Multiple configurations** and the option to modify all the analysis parameters.
- Valid for **human semen** samples only.
- Allows to use **several specific digital cameras**, with resolution up to 1024x1024 pixels.
- Automatic selection and analysis of all the spermatozoa in the field.
- Analysis with **brightfield** (for example with BrighVit kit).
- Analysis under **fluorescence** (for example with FluoVit kit).
- Allows to capture up to 30 different fields.
- Allows to eliminate any field.
- Calculation of **basic parametres**:
  - Number and percentage of live and dead spermatozoa.
- Visualization of the analysis mask superimposed to the original image.
- Possibility to add or eliminate spermatozoa.
- Allows to **save sessions** for a later analysis.
- Allows to export images.
- Several reports are produced with images and graphics, that can be exported to Word, PDF, Excel, XML, TXT.
- Possibility to **customize the report**, adapting the information to the customer´s needs.
- Includes **Sample Management**, to retrieve the sample results at any time, and visualize them on the screen or print a report (SQL Server database)
- Compatible with Viewer, that allows to display sessions in any computer.
- Compatible with Capture, data Share and Stage Controller.

Module for the automatic analysis of the DNA fragmentation in human semen samples.
Main characteristics:

- **Multiple configurations** and possibility to modify all the analysis parameters.
- Valid for **human semen** only.
- Allows to use **several specific digital cameras**, with resolution up to 1024x1024 pixels.
- Automatic selection and analysis of all the spermatozoa in the field.
- Analysis under bright field or under **fluorescence** (using Halosperm kit)
- Allows to capture up to 200 fields.
- Allows to delete any field.
- Calculation of the **basic parameters**:
  - Number and percentage of fragmented and non-fragmented spermatozoa.
- Calculation of **advanced parameters**:
  - Number and percentage for spermatozoa with: Big halo, medium halo, small halo, without halo or degraded.
- Visualization of the analysis mask superimposed to the original image.
- Individual visualization of each analysed spermatozoon and possibility of individual report.
- Allows to add or delete spermatozoa.
- Allows to **save sessions** for a later analysis.
- Allows to **export images**.
- Several reports with **graphics and images** that can be exported to Word, PDF, Excel, XML and TXT.
- Allows to customize reports.
- Excel report with all the listed parameters of DNA fragmentation.
- Includes **Sample Management**, to retrieve the sample results at any time, and visualize them on the screen or print a report (SQL Server database).

- Compatible with Viewer, that allows to display sessions in any computer.
- Compatible with Capture, data Share and Stage Controller.

Module for the automatic analysis under fluorescence of the membrane acrosome reaction in human semen samples.

Main characteristics:

- Automated count of the percentage of membrane intact sperm, based on a double stain fluorescence assay.
- Automated count of sperm with damaged acrosome.

Additional module that allows sharing the database.
Main characteristics:

- Possibility to install the database in a **server**.
- Allows sharing the database with several systems.
- Allows sharing the database with the existing local database.
- Allows **exporting pictures (JPG) and videos (AVI)** in a desired folder automatically.
- Allows **exporting reports** in PDF, DOC and XLS in a desired folder automatically.
- Allows using files HL7, XML, TXT, CSV, XLS or XLSX to import new samples or patients/animals to the database, and export to external databases.
- Allows integrating with the external program.
- Compatible with **Sample Management Viewer**, program to visualize sample information and analysis results in any computer.

Computational system and microscope:

Compatible computational system and microscope should be provided with the Automated semen Analyzer.
All accessories (including microscope, PC with core i5, desktop 27-32-inch desktop, genuine windows, etc.,) and start-up reagents should be provided.

- Demonstration of the instrument with same or similar technology to be given by vendor for technical compliance validation.
- All start up reagents should be provided at least for 1000 samples/tests.

10. Cold Plate (Cooling Plate)		
3	The cooling plate should accommodate up to 80 standard cassette specimen.	The cooling plate should accommodate 60 to 80 standard cassette specimens.
4	The lowest temperature that can be achieved is ambient to -20°C.	The lowest temperature that can be achieved is ambient to -10°C.
11. Fluorescent Microscope with FISH Software		
	Infinity corrected Optical System	**Apochromatically corrected Infinity contrast and color corrected system (ICCS) beam path for Fluorescence analysis.**
	Z-focus drive with coarse step of 25 mm with adjustment limit stopper, high sensitivity fine focus Knob with minimum adjustment gradation1µm	**Motorized** Z-focus drive with step resolution of **10nm** with adjustment limit stopper.
	7 position revolving nose piece with as lot for analyzer slider	7 position **motorized** nose piece.
	14 W or more powerful transmitted white LED illumination with built-in- Koehler illumination, 50,000hrs lifetime.	**100-watt halogen/14 W or more LED illumination for Transmitted light applications.**
	PlanFluar/Semi Apochromat objective 100X (NA - 1.30, Oil immersion)	PlanFluar/Semi Apochromat objective 100X **(NA –1.30 /1.40,Oilimmersion)or63X (NA- 1.40, Oil immersion)**
	130-watt mercury bulb with 2000 hrs life time for fluorescenceobservationwith8ormore position filter turret and the following fluorescence filters DAPI Filter(forblue)	**LED based stable FL illumination for ≥ 2000 hrs fluorescence observationwith10positionfilterturret** and the following fluorescence filters
	• ASI have advance search engine to find data from single or multiple data fields even when the cases are achieved. • ASI has search engines at different level soffiltersto find cases in one click.	Optional
	Add	**1.** Artificial intelligence**/dnnbased karyot yping**

		software.2. Demonstration of the instrument with same or similar technology to be given by vendor for technical compliance validation. 3. All start up reagents should be provided at least for 100 samples/tests
Note: Published Specifications of item no. 13 of cytogenic work station will be considered in addition to existing published specifications of item no 11.		
12. Digital Slide Scanner:		
2	Scanner should have CE-IVDR Certificate	Scanner should have CE-IVD Certificate
4	Scanner should be able to Scan 15x15mm tissue at 40x Magnification under 1(One) Minute.	Scanner should be able to Scan 15x15mm tissue at 40x Magnification under **1-3 minute**.
5	Must have Slide Autoloader which can load a minimum of 70 slides per batch which canbe increased in future.	Must have Slide Autoloader which can load≥ **200 slides per batch**
13	It should be able to scan both single width (1"X3") and double width (2"X3") slides for different sample size	It should be able to scan both single width (1"X3") and double **width (2"X3") slides** for different sample size as **optional**
14	Slide image storage formats should be TIFF and JPEG2000 with ability to coverts to other common types.	Slide image storage formats should be scanner manufacturer specific native format with ability to coverts TIFF and JPEG2000**and other common types**.
20	It should have capability of both Online and Offline Tele-Pathology conference allowing sharing control and simultaneous chat and review of scanned images by multiple pathologists from remote locations.	It should have capability **of Online/ Offline** Tele-Pathology conference allowing sharing control and simultaneous chat and review of scanned images by multiple pathologists from remote locations.
	Add	1. Demonstration of the instrument with same or similar technology to be given by vendor for technical compliance validation. 2. All start up accessories/reagents should be provided at least for 100slides
13. FISH Work – Station:(Upright Fluorescence Microscope with Camera Specification)		
	100 watt mercury bulb with 2000 hrs life time for fluorescence observation with 8 or more position filter turret and the following fluorescence filters: DAPI Filter, FITC Filter,TRITC Filter	100-watt mercury bulb with 2000 hrs life time for fluorescence observation **or encoded fluorescence illuminator with LED moduleand single band pass filter for dyes** like DAPI,FITC and TRITC
	CMOS Color Camera: Resolution of at least 8.9 Mega Pixels, should be suitable for BF/PH/DIC/FL.	CMOS Camera: Resolution of≥8.0 Mega Pixels for fluorescence imaging, should be suitable for BF/PH/DIC/FL.
	Add	Demonstration of the instrument with same or similar technology to be given by vendor for technical compliance validation. 2. All start up reagents should be provided at least for 100 samples/tests
Note: Published Specifications of item no. 13 of cytogenic work station has been deleted and will be considered in existing published specifications of item no 11.		
14. Automatic Rotary Microtome:		
No Change		
15. Cytocentifuge (cytospin)		
2	The equipment should be capable of thin-layer cell preparation for retrieving cells from various body fluids especially paucicellular fluids and preserving their morphology	The equipment should be capable of cell preparation for various body fluid.
11	Speed 100 to 4,000 rpm	Speed 100 - 200 to 2500 - 4000 rpm
13	Processes about 80 samples per cycle	Processes about 12-24 samples per cycle
16. Flow Cytometry		
13	Should have single tube acquisition format along with at least 25 tubes carousal autoloader.	Should have single tube acquisition format and future upgradable to at least 25 tubes carousal autoloader along with plates.
19	The company should provide onsite full application	The company should provide onsite full application

	training for doctors and technicians along with training of all doctors at well-established and renowned centers for flow cytometry for at least 10 days free of charge.	training for doctors and technicians.
	Add	•A separate offline analysis workstation should be provided along with the analysis software for the next 10 years. •Instrument software should have predefined assay template/ or would be able to make so with automated gating strategy following ISHAGE guideline for accurate measurement pf CD34+ stem cells. Demonstration of the instrument with same or similar technology to be given by vendor for technical compliance validation.
17. Slide cabinet (Vertical 100000 capacity)		
	Vertical 100000 Capacity	Vertical Capacity within the range of 70000-100000
	The cabinet must be USFDA approved	Deleted
	Storage Capacity: 10000 / 20000 / 30000 / 40000 slides	Deleted
18. Slide cabinet (Horizontal) 5,000 capacity:		
No Change		
19. 26 head microscopic with camera		
	14-watt power LED Light source with lifetime of 50000 hrs. **Revolving nosepiece:** Interchangeable reversed Septuple nosepiece.	≥ 14-watt power LED Light source with lifetime of 50000 hrs. **Revolving nosepiece:** Coded septuple nosepiece for proper light intensity at specific objectives.
	Microscope should be upgradable with 8 channel fluorescence with 130-watt mercury fluorescence attachment& DIC application.	**Deleted**
20. Biheaded Microscope:		
No Change		
21. Triheaded Microscopic		
	Objectives: Plan ,4x(NA0.10), 10X(NA 0.25), 40X(NA0.65), & 100X (N.A 1.25, WD 0.13)	**Objectives**: Plan ,4x(NA0.10), 10X (NA 0.25), 40X(NA0.65), & 100X(N.A 1.25, **WD 0.10 to 0.13)**
	Condenser: Swing out condenser (N.A 1.1), for 2x -100x	**Condenser: Swing out/ universal colour coded** condenser (N.A 1.1), for 2x -100x
	Camera Casing- Metal Alloy, Camera Dimension- 60 X60X40 mm, Image sensor- CMOS 5.1 Mp, size- 2.2 X 2.2-micron, Resolution (Max)- 2592 X 1944 Pixels, Frame Rate- 5@2592	**Camera Casing-** Metal Alloy, Camera Dimension- 60 X60X40 mm, Image sensor- **CMOS ≥ 10.0 MP**, size- 2.2 X 2.2-micron, Resolution (Max)- 2592 X 1944 Pixels,
	Add	**Added points:**1. Microscope, camera and software must be from same OEM 2. Demonstration of the instrument with same or similar technology to be given by vendor for technical compliance validation
22. Next-generation sequencing (NGS)		
1.	System should occupy minimal lab footprint and should be offered as a single, integrated instrument capable of performing template DNA amplification, sequencing and primary analysis. Prepared libraries should be loaded directly onto the sequencer, and there should be no need of an ancillary system for template amplification.	System should occupy minimal lab footprint and should be capable of performing **automated library preparation for targeted panels,** template DNA amplification, sequencing and primary analysis.
2.	The sequencing chemistry should mimic natural biological chemistry with simultaneous addition of all four bases in the sequencing reaction for competitive addition to the DNA template. The chemistry should thus allow for highly accurate sequencing through homopolymeric regions.	The sequencing chemistry should mimic natural biological chemistry with simultaneous addition of all four bases in the sequencing reaction for competitive addition to the DNA template **or sequential addition of natural bases one by one.** The chemistry should thus allow for highly accurate sequencing through homopolymeric regions.

3.	The sequencing workflow should allow fully automated, walk-away operation, without user intervention, fortemplate amplification to analyzed data on a single machine, and support unattended operation for at least 300 sequencing cycles.	The sequencing workflow should allow automated operations for Library preparation, template amplification to analyzed data on the system, and support for at **least 400 sequencing** cycles.
4.	System should use dedicated reagents for generating data of upto7.5 Gb and 25 million single reads of high-quality data passing filter. The output should be scalable, for data between 1.65 Gb-7.5 Gb, depending on requirements.	System should use dedicated reagents for generating data of **20 Gb or more and 100 million** or more single reads of high-quality data passing filter. The output should be scalable, for data between **1 Gb 20 Gb,** depending on requirements.
5.	Sequence output should generate accurate base calls and high error free reads with greater than 80% bases withhigh quality Q30 score at 2x150 bp read length, derived directly from intensity data and not from a reference sequence-based, multiple-color encoding scheme.	Sequence output should generate accurate base calls and high error free reads with greater than 80% bases with high quality Q30 score at 2x200/1X400 bp read length, derived directly from intensity data and not from a reference sequence-based, multiple-color encoding scheme or generate at least >99% aligned or measured accuracy.
6.	Clonal amplification of DNA template should be fully automated on the sequencer, without the involvement of emulsion PCR.	Clonal amplification of DNA template should be fully automated on the **system, with/**without the involvement of emulsion PCR.
7.	The system should be offered with integrated paired-end fluidics on the instrument, supported with fully automated paired-end chemistry, without user intervention.	The system should be offered with integrated paired-end**/single-end** fluidics on the instrument, supported with fully automated paired-end/**single - end** chemistry, without user intervention.
8.	The sequencer should facilitate the sequencing Amplicon, targeted RNA, small RNA, and targeted gene panel sequencing.	The sequencer should facilitate the sequencing Amplicon, targeted **DNA and** RNA **gene panels.Manufacturer should be able to supply readymade Oncology panels covering SNVs, InDels, CNVs and Fusions from DNA and RNA in the single workflow when applicable and able to run on the system: solid tumor multi biomarker (50 genes, 160 genes and comprehensive Genomic profiling with MSI and HRD - 500 gene panel), cell free panels for lung and pan cancer (limit of detection-down to 0.1%), Myeloid assay, MRD solutions for Lymphoid and Myeloid cancer.**
9.	The system should have an option of integrating with a cloud-based computing environment, for data storage, sharing and analysis.	**A powerful server, optimized software suite with graphical user interface for data analysis of NGS data in clinical research and faster reporting. System should be built upon hardware with at least dual 10 cores or more CPU, 128 GB of RAM and at least 15 tera byte of usable storage for efficient data storage, analysis and reporting. The system should have access to decision-making software to generate report against proper guidelines, therapies, and clinical trials to assist and interpret the results of the clinical samples. System should be provided with analysis workflows to be able to support the analysis of single sample, paired sample, tumor/normal sample, CNV detection, family trio analysis and 16s Metagenomics. The database for variant calling should be update continuously throughout the warranty period.**
12.	For Library QC need to provide the fragment analyzer along with the instruments. Instrument should have capacity such application like: CRISPR QC, Total RNA QC, DNA Primer QC, PCR Product check, Genomic DNA&NGS QC Etc.	For Library QC need to provide the fragment analyzer along with the instruments**, if required in the workflow.** Instrument should have capacity such application like: CRISPR QC, Total RNA QC, DNA Primer QC, PCR Product check, Genomic DNA & NGS QC Etc.
13.	For running the NGS machine below accessories instrument will be supplied along with the	For running the NGS machine below accessories instrument will be supplied along with the instrument.

	instrument.(Workstation for Data storage and processing: 16GB RAM, 8 Core Processor10 TB Storage, Magnetic stand-96 well plate(Ambion), Magnetic stand 1.5/2 ml tubes(DynaMag 2), Vibration free table,Qsep1 Plus DNA Analyzer UPS (5 KVA) 30 Min back, Benchtop centrifuge with rotor (for Microplate and MIDI plates), Qubit Fluorometer,Vortex mixer for tubes and 96 well plate, Dehumidifier for sequencing room).	Onboard/external server for Data storage and processing: Min 256 GB RAM, 20 TB Storage, Magnetic stand-96 well plate, Magnetic stand 1.5/2 ml tubes, Vibration free table DNA Analyzer **(if required in the workflow)**, Suitable 10 KVA Online UPS with at least 30 min backup, Benchtop **cold** centrifuge with rotor (**for 1.5/2 ml tubes, 10 - 15 ml tubes,** Microplate and MIDI plates), Fluorometer, **mixer,** Vortex mixer for tubes and 96 well plate, **DNA/RNA Extraction and purification system for 6-12 samples/run**, Dehumidifier for sequencing room).
	Add	1. Along with the instrument, BRCA1 and BRCA2 gene panel (20 rxn), 50 gene (DNA+RNA fusion) panel (16 reactions) should be provided along with all other necessary kits/reagents for initial training and validation purposes. Demonstration of the instrument with same or similar technology to be given by vendor for technical compliance validation. 3. All start up reagents should be provided at least for 100 samples/tests
23. Sanger sequencer		
4	System should be capable of supporting 4 plates; 386 and 96- well standard & fast plates; 8-strip standard & fast tubes	System should be capable of supporting 4 plates; 384-86 and 96- well standard & fast plates; 8-strip standard & fast tubes.
	Add	**Added Point:** 1.System software configuration should be able to work for Stand-alone, all in one PC. Suitable 10 KVA Online UPS with at least 30 min backup connected, or direct connection to network Cloud via LAN or Wi-Fi. 2. Demonstration of the instrument with same or similar technology to be given by vendor for technical compliance validation. 3. All start up reagents should be provided at least for 100 reactions
24. Droplet Digital PCR with accessories (ddPCR)		
3	System should be able to: Determine copy number variation with high accuracy. Measure gene expression level with high precision. Perform NGS Validation and library quantification	System should be able to: Analyze **95% of the sample** input as the loaded reaction volume to determine copy number variation with high accuracy.
4	Should have water-oil emulsion droplet generator/physical partition/ microchamber with microfluidics technology.	Should have **integrated and automated** water-oil emulsion droplet generator/ physical partition / micro chamber with microfluidics technology.
9	System should be suitable for counting PCR positive and PCR negative partitions, with an option fre covering the samples after thermal cycling for any other down stream applications. Compatible for 96-deep well plate and should be capable of analysing1 to 96 samples inonego	System should be suitable for counting PCR positive and PCR negative partitions, **Compatible for multiple of 4 well plate and should be capable of analyzing same number of samples in one go.**
10	Two channel detection for FAM (Evagreen)and HEX (Vic) dyes,with capacity to detect more than 5 marker sina single well and should be upgradable for 10 or more target multiplexing from a single well.	**Four or more channel detection for FAM (Evagreen), VIC, Cy5, ABY, JUN and HEX (Vic) dyes, with capacity to detect more than 5 markers in a single well.**
11	Sample illumination/ Detection method: System should use two light emitting diodes for illumination and differentially detect emission/ photo graph using two filtered multipixel photon counter/ CMOS camera	Sample illumination/Detection method: System should use **Three or more** light emitting diodes for illumination and differentially detect emission/ photograph using two filtered multipixel photon counter/ CMOS camera
13	Gradient feature to be available in the system to run samples with different annealing Temperatures	**PCR or** Gradient feature to be available in the system to run samples with different annealing temperatures

14	Software package used for digital PCR system should be latest one to be freely used indifferent computer systems, should not use any reference dye to detect and count positive and negative droplets to avoid bias. Should not require manual setting ofexposure&cameragainfortheopticsbenchduringrunsetuptoavoidruntorun variation.	Software package used for digital PCR system should be latest one to be freely used in different computer systems, **Software should capable auto false-positive fluorescence rejection to improve quality and accuracy of the data by comparing pre and post PCR image subtraction,** should not use any reference dye to detect and count positive and negative droplets to avoid bias. Should not require manual setting of exposure & camera gain for the optics bench during run set up to avoid run to run Variation
15	Thereadermustbeabletoreadfluorescencedatafromeachsingledroplet/partitionindividually	The reader must be able to read fluorescence data from each single droplet / **Entire image.**
16	More than 8000 Publications in reputed international journal as proof of technology	**Deleted**
17	More than 75 installations in India of the Product quoted with more than 15 in clinical setup	**10 or more** installations in India of the Product quoted
	Add	1. Vendor should provide one tissue fractionation system. **System software configuration should be able to work for Stand-alone, all in one PC Suitable 5KVA Online UPS with at least 30 min backup connected, or direct connection to network Cloud via LAN or Wi-Fi. 2.** Demonstration of the instrument with same or similar technology to be given by vendor for technical compliance validation. 3. All start up reagents should be provided at least for 100 reactions/samples/tests
25. Storage Cabinet for specimen:		
No Change		
26. Bone decalcifier:		
No Change		
27. Bone cutter:		
No Change		
28. Tissue Flotation Bath:		
No Change		
29. Slide Warming Table:		
No Change		
30. Electron Microscope:		
No Change		
31. Sample preparation for Electron Microscopy, Ultra Microtome, Plunge Freezer, Automated Tissue Processor:		
No Change		
32. Integrated fully Automated Histopathology work station:		
Added Points to previous specification **F) Autostainer** Simultaneously, at different stages of staining. The racks should be made of corrosion resistant hard plastic. 7. Minimum 26 processing reagents of up to 450 ml volume and minimum 5 water stations, all of which should be corrosive resistant at user defined position. 8. Slide drying heating station. 9. Permanent memory for different recorded/recordable protocols of various staining procedures (e.g., H and E and other special stains used in histopathology) of up to at least 15 programs, in multiple batches to continuous loading, with parallel processing. 10. The programs recordable/recorded should be of up to at least 25 steps with incubation time setting from 0 sec to 99 mins or more. 11. Provision of fume extraction system with Charcoal filter. 12. Provision of continuous loading and unloading of slides via rack entry and exit ports. 13. Provision of gentle agitation/vibration of slide rack to prevent carryover 14. Provision of battery back-up or UPS of appropriate rating in case of power failure (1½hour). 15. Computer control functions including processing alarm and unload indicators with display. 16. Continuous or batch mode should be there. 17. Continuous washing of slides with fresh water.		

18. Provision of interrupting an automatic process for reloading or removing racks before the end of a run must be there.
19. A UPS backup each, of minimum 1 hours should be supplied with the instrument at no extra cost. Please note, it should not be quoted as optional requirement.
20. Essential Consumables:
a. Reagent containers (1)
b. Wash station (1),
c. Spare fume filters (1)
21. Price of consumables to be quoted separately and frozen for 5 years

G) Automated film cover slipper

1. Throughput of film cover slipper must be able to process at least 500 slides per/hr.
2. It should work both as standalone unit or compatible with getting integrated to Automated slide Stainer with a proper connecting device.
3. Should be compatible with the Automated slide Stainer.
4. System must allow user to randomly remove slides baskets from the instrument.
5. 12 Position Unload Capacity with carousel must securely hold up to 240 cover slipped slides.
6. System must have unload sensors to identify all empty and full positions, automatically rotating to the next open space.
7. System must be able to accommodate a 500 mL bottle of xylene.
8. System must allow user to select the level of xylene dispensed; 1 minimum to 5maximum.
9. System must have a computer controlled solvent dispensing technique to ensure even and complete activation of the pre-coated adhesive.
10. System must alert the user when film or solvent levels are low.
11. System must have built in safeguards to ensure all runs that are in process are completed before reagent or film supplies are depleted.
12. Slide baskets must be directly compatible with the Automated Slide Stainer.
13. System must use adhesive coated film (cover slipping film)
14. Essential Consumables:
a. cover slipping film (10 rolls)
15. Price of consumables to be quoted separately and frozen for 5 years

33. Digital Incubator		
	Microprocessor based UV-VIS Spectrophotometer with high resolution touch screen display, for operation on 220V / 50Hz	Microprocessor based UV-VIS Spectrophotometer with high resolution touch screen display/ **connected high resolution PC with display**, for operation on 220V / 50Hz with sample **and reference cuvette position.**
	True double beam optics with aberration corrected concave blazed holographic grating in Czerny – Turner mounting for high energy throughput and high-quality monochromatic light	**True double beam optics with holographic grating in Czerny - Turner mounting for high energy throughput and high-quality monochromatic light.**
	▪ resolution 1 nm spectral bandwidth over entire wavelength range ▪ Wavelength setting and display in steps of 0.1nm	▪ resolution 1 nm **and 2 nm variable** spectral bandwidth over entire wavelength range ▪ Wavelength setting and display in steps of **0.1nm or photometric display range 0.3-4.0 A.**
	▪ Variable wavelength scanning speed: ≥ 3,000 nm/min to 2 nm/min 29,000 nm/min when survey scanning ▪ stray light of <0.02%T at 220nm with NaI filter ▪ Photometric range of -4 to +4 Abs and 0 to 400 %T ▪ Photometric Accuracy of ± 0.002 Abs at 0.5 Abs	▪ Variable wavelength scanning speed: **1 nm/min to ≥ 6,000 nm/min** ▪ Atray light of <0.02%T at 220nm with NaI filter or KCl, **198 nm: ≤0.40% T, NaI, 220 nm: ≤0.027% T, NaNO2, 340 nm: <0.025% T** ▪ Photometric range of >**3.5 A** or -4 to +4 Abs and 0 to 400 %T ▪ Photometric Accuracy 1A: **±0.002 A, 2A: ±0.004 A, or**± 0.002 Abs at 0.5 Abs
	▪ Dual source – high intensity Tungsten-Halogen and Deuterium lamp with automatic changeover ▪ Guaranteed compliance with all Pharmacopoeia requirements ▪ Analysis can start the instant the user arrives at the laboratory. The instrument should require no time to	▪ Dual source – high **intensity xenon flash** with automatic changeover ▪ Guaranteed compliance with **standard international** Pharmacopoeia requirements. ▪ Analysis can start the instant the user arrives at the laboratory. The instrument should require no **more** time

	warm up.	**(< 10 minute)** to warm up.
	Add	Demonstration of the instrument with same or similar technology to be given by vendor for technical compliance validation.
34. Spectrophotometer		
	Microprocessor based UV-VIS Spectrophotometer with high resolution touch screen display, for operation on 220V / 50Hz.	Microprocessor based UV-VIS Spectrophotometer with high resolution touch screen display/ **connected high resolution PC with display,** for operation on 220V / 50Hz with sample **and reference cuvette position.**
	▪ True double beam optics with aberration corrected concave blazed holographic grating in Czerny – Turner mounting for high energy throughput and high quality monochromatic light.	▪ **True double beam optics with holographic grating in Czerny - Turner mounting for high energy throughput and high quality monochromatic light.**
	▪ resolution 1 nm spectral bandwidth over entire wavelength range ▪ Wavelength setting and display in steps of 0.1nm	▪ resolution 1 nm **and 2 nm variable** spectral bandwidth over entire wavelength range ▪ Wavelength setting and display in steps of **0.1nm or photometric display range 0.3-4.0 A.**
	▪ Wavelength reproducibility of $\pm$ 0.1nm ▪ Wavelength Slew rate: approx.. 29,000 nm/min ▪ Variable wavelength scanning speed: ≥ 3,000 nm/min to 2 nm/min 29,000 nm/min when survey scanning. ▪ stray light of <0.02%T at 220nm with NaI filter ▪ Photometric range of -4 to +4 Abs and 0 to 400 %T ▪ Photometric Accuracy of $\pm$ 0.002 Abs at 0.5 Abs	▪ Wavelength reproducibility or repeatability ≤ 0.1nm ▪ Wavelength Slew rate: approx. > 29,000 nm/min ▪ Variable wavelength scanning speed: **1 nm/min to ≥ 6,000 nm/min** ▪ Stray light of <0.02%T at 220nm with NaI filter or **KCl, 198 nm: ≤0.40% T, NaI, 220 nm: ≤0.027% T, NaNO2, 340 nm: <0.025% T** ▪ Photometric range of >**3.5 A** or -4 to +4 Abs and 0 to 400 %T ▪ Photometric Accuracy 1A: **±0.002 A, 2A: ±0.004 A, or**$\pm$ 0.002 Abs at 0.5 Abs
	▪ Dual source – high intensity Tungsten-Halogen and Deuterium lamp with automatic changeover ▪ Guaranteed compliance with all Pharmacopoeia requirements ▪ Analysis can start the instant the user arrives at the laboratory. The instrument should require no time to warm up.	▪ Dual source – high intensity **xenon flash** with automatic changeover ▪ Guaranteed compliance with **standard international** Pharmacopoeia requirements. ▪ Analysis can start the instant the user arrives at the laboratory. The instrument should require no **more** time **(< 10 minute)** to warm up.
	Add	Demonstration of the instrument with same or similar technology to be given by vendor for technical compliance validation.
35. Centrifuge		
1	Table Top version	**Floor Standing Model**
2	Tube capacity: No.24-36:Size 5-15 ml	Tube capacity: No. **48** : Size **1.5/2 ml for Fixed angel rotor and Tube Capacity No. 8 : Size 15 and 50 ml Tube for Fixed Angel rotor**
3	Digital timer	Digital timer **with Large Touch Screen color display and Health status monitoring system of Centrifuge.**
7	Maintenance free brushless drive motor with exact speed pre-selection & display. Speed range: 100 to 10,000 rpm & above, accuracy 1 rpm	Maintenance free brushless drive motor with exact speed pre-selection & display. Speed range: **300 to 15000** rpm & above, accuracy **and increment of 1 rpm and 1 xg.**
8.	Centrifuge complete with Swig 7 basic rotors & four buckets- 01 set	Centrifuge complete **with Aluminum Fixed Angel rotor 48 x 2 ml with Speed 15000 rpm or more and Carbon Fiber Fixed Angel Rotor 8 x 50 ml conical tube with speed 14500 rpm or more and Adapters for 8 x 15 ml conical tube.**
	Add	**Added points:** • Temperature range: -10 Deg C to +40 Deg C.

		• Run Time:>99 Hrs with Continuous mode. • Centrifuge must have Automatic Rotor Lock and Remove option without any Tool / Keys. • Centrifuge must have option for the Rotor 4 x 1000 ml Swing out rotor with speed 4200 rpm and 6 x 250 ml Fixed Angel rotor with Speed minimum 11000 rpm for future up gradation as per needs. • Quoted Models Specs must be available in manufacturer's website along with Printed Catalogue. • Customized Model would not be accepted without any Quality control Certification or 3rd Party Approved certification. • Prompt and Efficient after sales service must be available from direct OEM Service Engineer
36. Ultra-centrifuge with rotors and accessories		
	Rotor Specific Requirements: 1. Rotor Max Capacity :12x 38mL or more with 300,000 xg or 50,000rpm 3. Rotor Maximum Capacity: 6x14.0 mL or more with rotor maximum Force of 285,000x gand RPM of 40,000 or more.	Rotor Max Capacity:12x 36mL or more with 300,000xg or 50,000rpm **Rotor Maximum Capacity:** 6x 12.0 mL or more with rotor maximum Force of 285,000xg and RPM of 40,000 or more.
	Add	Demonstration of the instrument with same or similar technology to be given by vendor for technical compliance validation
37. CO_2 Incubator with 4-split segmented glass inner door and accessories		
	• High Capacity benchtop CO2 Incubator for better stability of temp and humidity system in compliance with GMP requirement. • Incubator should have Gel Insulation for enhanced thermal stability and uniformity. • Incubator should have laminar based horizontal airflow management system for better uniformity of temperature inspite of incubator stacked with plates. • Incubator should have display for actual humidity and should have active humidification control. • Capacitative humidity sensor • Incubator should have IR sensor-based CO2 control system for precise Co2 control • Incubator should have 7" Color display for microprocessor-based touch control system for easy and precise controlling of parameter • The controller should be able to display the trend of controlling parameter and have audio/visual alarm facility. It should have also service/calibration due alarm and should have password protection feature of unauthorized acess. • Should quote the optional accessories like gas change over unit, Regulator, CO2 cylinderetc	• High Capacity benchtop CO2 Incubator for better stability of temp and humidity system **With Minimum Volume of 150 Liters.** • Incubator should have **Polystyrene foam EPS/PPS-Compound** for enhanced thermal stability and uniformity. • Incubator should have **forced vertical airflow management system through Stainless Steel Fan** for better uniformity of temperature,**CO2 Gas and Humidity and fast recovery after every door opening.** • Temp Range: **3°C above ambient to 55°C.** • Incubator should have display for actual humidity **water level** and should have active humidification control. • Deleted Capacitative humidity sensor • Incubator should have **TC** sensor-based CO2 control system for precise Co2 control • Incubator should have **large touch screen** display for microprocessor-based touch control system for easy and precise controlling of parameter • The controller should be able to display the trend of controlling parameter and have audio/visual alarm facility. It should have also service/calibration due alarm and should have **option for door lock** feature of unauthorized acess. • Should quote the optional accessories like, **CO2 Gas** Regulator, CO2 Cylinder **and Voltage Stabilizer** etc
	Add	• Quoted Models Specs must be available in

		manufacturer's website along with Printed Catalogue. • Customized Model would not be accepted without any Quality control Certification or 3rd Party Approved certification. • Prompt and Efficient after sales service must be available from direct OEM Service Engineer • System software configuration should be able to work for Stand-alone, all in one PC Suitable 5 KVA Online UPS with at least 30 min backup connected, or direct connection to network Cloud via LAN or Wi-Fi. • Demonstration of the instrument with same or similar technology to be given by vendor for technical compliance validation.
	Delete	• Additionally, incubator should also have the dry H_2O_2vapour based sterilization system to sterilize the incubator from inside with 12 log bacterial decontamination. • The H_2O_2 sterilization should make the incubator ready in dry condition after running a 2-hour long cycle and does not leave the chamber wet that require further drying/wiping of chamber.
38. Refrigerated Micro centrifuge		
	• System should have a maximum Speed of 30,130xg /17,500 rpm, with a brushless motor • Temperature range should be from -11°C to 40°C and should be able to maintain 4°C at maximum speed • System should be possible to store programs with 5 quick access program keys • Speed setting should be possible in both RPM and RCF • System should be able to start the timer count the set centrifugation RPM reached or is reached, to support the short spin protocols • System should possess a separate short spin key for brief spin with user defined speed for brief spinning	• System should have a maximum Speed of ≥ 30,130 xg /17,500 rpm with a brushless motor • Temperature range should be from -10°C to 40°C and should be able to maintain 4°C at maximum speed • System should be possible to store ≥ 50 programs with ≥ 3 quick access program keys • Speed setting should be possible in both RPM and RCF • System should be able to start the timer count when the set centrifugation RPM reached or reached approximate within 30 sec. to support the short spin protocols • System should possess a separate short spin key for brief spin with user defined speed for brief spinning
39. Nano Drop		
3	Minimum sample volume should be 1 µL with one sample analysis at a time onto a sample pedestal.	Minimum sample volume should be 1 µL with one sample analysis at a time onto a sample pedestal or cuvette
	Add	**1.** Suitable 5KVA Online UPS 2. Demonstration of the instrument with same or similar technology to be given by vendor for technical compliance validation
40. Fully Automated Autoclave:		
No Change		
41. Walk - in Cold Room:		
No Change		
42. ICP-OES		
Added points: • Fully automated computer controlled Inductively Coupled Argon Plasma Emission Spectrometer (ICP-OES) capable to analyze all possible elements of periodic table in aqueous and non-aqueous solutions of varied samples. • True simultaneous and background correction including simultaneousmeasurementsofallanalytewavelengths,internalstandard,		

and background

- System should be able to determine, major, minor and trace elements in a dual view and in a single run measurement.
- TheinstrumentmustbeaPolychromatorbasedtruesimultaneousreadingICPusingsolid-statedetector technology having Axial, Radial and Dual view.
- The instrument must be a bench- top design with chemical resistant body.
- The instrument must be able to run aqueous matrices, and HF samples and to be offered with following Sample introduction Kits consisting of Nebulizer-1,SprayChamber-1,Torches-2,Injectors-2&necessarytubing's:
  1) AqueousSampleanalysisKit:1
  2) HF sample analysisKit:1
- Plasmaignitionandshutdownmustbecomputercontrolledandtotallyautomated.Thesystemmustinclude minimum three channels, variable speed, computer controlled peristaltic pump which allows for on-line addition of internal standards.
- WavelengthRange:167to840 nm or better
- Optics: Simultaneous echelletypeg rating
- SpectralResolution:0.007@200nmorbetter

Measurement type:

- True and simultaneous measurement of all possible elements of periodic table present in the sample

RF Generator:

- The RF generator must run at a frequency of 27 MHz or more with the facility to cool the RF source, or better.
- The RF Generator must have an optimal power output range of 750-1300 watts or wider in Axial, Radial & Dual View with capability to use maximum available power and be computer controllable Torch
- Low Flow Demountable Design, the Torch should be mounted vertically or horizontally so that it can handle high matrix or challenging matrices easily. The instrument should be capable of performing.
- Analysis both in axial and radial view so that high concentration and low concentration elements can be analyzed in the same method and in the same sample.
- Plasma ignition and shut down must be computer controlled and totally automated.
- Theinstrumentmustincludeamechanismtoeliminatethecoolendoftheplasmaforminimizingself – absorption and physical interference.

Gas flow, controls

- The instrument must be provided with mass flow controller (MFC) for all gas flows.
- The instrument must monitor all gas pressures through MFC. The interlocks must be continuously monitored and if any inter lock is interrupted, the plasma should shut down automatically. All the MFC should be factory fitted.
- The plasma flow gas consumption to operate ICP-OES instrument should be 16 L/min or better for aqueous sample.

Sample Introduction System:

- Three or more channel peristaltic pump.
- The system should be supplied with Standard spray chamber (3 nos), standard nebulizer (3 nos), standard Torch (05 nos), inner tube (3 nos), O-rings & injector and all accessories (05 sets)
- Standard Peristatic Pump Tubing set for sample intake and rinse /drainage etc.: 50 nos each of intake and drain.
- HF/ Inert kit with separate dedicated inert spray chamber (2 nos), inert nebulizer (2 Nos), inert torch/ inner tube (2 Nos) & connecting tubings from sample to torch and drain (2 sets)
- System should be offered with one additional separate dedicated Hydride/vapour generation system with 3 sets of necessary tubings for the analysis of As, Cd, Hg. Simple _T'/ _Y' tube with Cyclonic spray chamber design will not be accepted.

Detector

- Latest detector CID/CMOS/SCD with anti-blooming features and 100% active area.
- Detector optimized for performance across the entire emission spectrum, anti-blooming protection to enable the simultaneous measurement of trace level analytes in the presence of major matrix constituents.
- The detector must have Auto–Integration that allows intense and trace signal to be measured simultaneously.

Wave length library: 40,000or more

System Software

- The instrument systems of tware shall be based on the windows operating system.
- The software should provide full control of all instrument functions including plasma ignition, gas flows, viewing position, and

monitoring of safety inter locks.

- Software should feature automatic identification of possible spectral interferences when selecting wavelengths for analysis and should have search mode for identification of unknown wave lengths.
- Software should have the capability to perform background correction such as Inter Element Correction (IEC) or similar way of correcting spectral interferences.
- All standard conditions of various elements shall be built-in and one can select these conditions by entering elements involved.
- There should be the capability to capture the complete spectra of the sample irrespective of the number of elements selected in the method so that the analyst can review other elements which has not be selected previously in the method.
- Measurements shall be made in radial, axial & dual views for all the elements and should be computer controlled with no manual intervention in between.

Microwave Digestion System

- Microwave digester of reputed company with 1000 Watt or better peak output power, controllable in a microprocessor. The system must be flexible and should allow digestion of various sample weights up to 2-3 grams per vessel, and having at least 12 or more high pressure vessel rotor, having minimum 50mL vessel size capable of having temperature of 250°C or more and controlled pressure of 40 bar or higher. Instrument should be provided with library of tested methods. IR Sensor temperature monitoring for all vessels. Instrument should have safety interlocks to prevent microwave emissions and pressure vessels must be individually tested and delivered with pressure test certificate. Must be capable to digest all kinds of plant, biological and soil samples.

Accessories

Following accessories to be quoted with offered instrument:

- Branded Computer with suitable configuration required for the instrument & printer to be supplied along with the instrument from the manufacturer with preloaded licensed version software.
- Waterre-circulator for the ICP system should be provided by the manufacturer, if needed for the operation of the instrument.
- sets of Peristaltic Tubing for aqueous samples.
- Sets of Peristaltic Tubing for HF samples.
- Fume Hood Exhaust system,
- Suitable10KVA Online UPS with at least 30minbackup
- Argon gas cylinder(5nos.)
- Gas manifold, Argon Gas regulator etc. to be also supplied by the vendor along with all tubing
- Periodic mix standard/multi-element standards containing all element sof the periodic table,
- A set of Single element standard for As, Hg, Cd along with multi element standards for heavy element and trace elements will have to provide at the time of installation of equipment.
- All essential accessories (if required) including required gas/ s with cylinder, Fume Hood Chamber for chemicals, etc.
- System software configuration should be able to work for Stand-alone, all in one PC Suitable 10 KVA Online UPS with at least 30 min backup connected, or direct connection to network Cloud via LAN or Wi-Fi.
- **Training–**to operate the instrument, maintenance and troubleshooting problems at the place of installation should be imparted to the users of the institute. Application training to be provided by the bidder.
- Demonstration of the instrument with same or similar technology to be given by vendor for technical compliance validation.

Group: H- Physiology		
1: Exercise Physiology System/ Gas analyser		
Sl. No. 08	Should have a noise free multichannel wireless belts to records ECG, R-R interval, Heart rate, Skin Temp, GSR, Respiration rate, Oxygen saturation, pulse blood flow, Accelerometer activity integrated into the system. Belts of six different size to be provided.	Should have a noise free multichannel wireless belts to records ECG, R-R interval, Heart rate, Skin Temp, GSR, Respiration rate, Oxygen saturation, pulse blood flow, Accelerometer activity **integrated or independent** the system. Belts of six different size to be provided.
Add	**Additional safety & Quality Certificate**	**ISO, CE/ IEC/ BIS or other safety standards from the manufacturer**
2: Advance PFT Lab (Spirometer with diffusion DLCO)		
Sl. No. 18	Should have US-FDA & European CE certification.	**Should have US-FDA or European CE certification.**
Forced Oscillatory	It should be able to measure airway resistance through Forced Oscillatory technique at various	It should be able to measure airway resistance through Forced Oscillatory technique at various frequencies from

System	frequencies from 5Hz to 40 Hz.	**5Hz to 37 Hz or more.**
Portable system for Standardized six Minute Walk Test (Point 09)	Flow meter: Should be digital Bi-directional Turbine with a flow range of 0.08 to 16L/s, volume range 12L, Accuracy FV:+3%	Flow meter: Should be digital Bi-directional **Reusable sterilizable differential pressure pneumotach/ Bi-directional** Turbine with a flow range of 0.08 to 16L/s, volume range 12L, Accuracy FV:+3%
Forced expiratory NO system (Point. 01)	Breath nitric oxide test system is intended to measure fractional exhaled nitric oxide (FeNo).	Breath nitric oxide test system is intended to measure fractional **PC based exhaled nitric oxide (FeNo) analyser**.
Forced expiratory NO system (Point. 02)	Able to measure exhales NO in range 5-300 ppb (parts per billion).	**The ranges up to 3000ppb so that atmospheric no can also be measure in order to cross check any contamination.**
Forced expiratory NO system (Point. 07)	It should be portable battery operated instrument with weight approx 400g including batteries.	It should be **portable or battery operated instrument** with weight approx 400g including batteries.
Forced expiratory NO system (Point. 09)	Touch screen operation with built in colour Graphical display.	**PC based exhaled nitric oxide (FeNo) analyser for measurement of FeNo at Nasal, Bronchial and Alveolar.**
3: Interactive computing board with podium for seminar room		
No Change		
4: Computer Assistant Learning module for teaching UG (1st MBBS) and PG (MD)		
No Change		
Group: I- Radiology		
1: Flat Panel Detector		
A. SL. No. 1	Latest 14"x17" Flat Panel cassette sized detector, ISO 4090 compliant fits in an existing wall-stand or table bucky tray without modification.	**Latest 14"x17" Flat Panel cassette sized detector, fits in an existing wall-stand or table bucky tray without modification.**
A. SL. No. 3	The detectors should be water resistance with minimum IPX6 standard. Test certificates should be provided along with technical documents.	The detectors should be water resistance with minimum **IPX6/ IP54/ similar standard certificate**. Test certificates should be provided along with technical documents.
A. SL. No. 4	Detector must has passed drop test at minimum height of 120 cm.	Detector must has passed drop test at minimum height of **100 cm.**
A. SL. No. 5	The detectors offered should have on board memory capable of storing minimum 50 images.	**Deleted**
A. SL. No. 16	Detector weigh bearing capacity should be minimum 300 kgs.	**Detector should have minimum distributed weight bearing capacity of 350 kg and bed pressure 200 Kg or better.**
B. & D. (SL. No. 01)	Original acquisition workstation software of Flat Panel Detector must be from parent company.	Original acquisition workstation software of Flat Panel Detector must be from parent company. **If the detector and software are not from same** company, Flat panel & Software must be US FDA approved.
	Offered system should have 3 years warranty from date of installation and 7 years CAMC to be quoted separately.	Offered system should have **5 years warranty** from date of installation and **5 years CAMC** to be quoted separately.
2: 256 Slice CT Scan		
No Change		
Group- J: RIO		
1: RATCAM with LIO		
No Change		
Group : K- Urology		
Will be uploaded shortly		

Note:

1. **All other specification, terms and conditions of the original tender documents shall remain unchanged.**
2. **This amendment shall be part of the tender document and become effective immediately is supersession to the earlier corresponding version.**

The document also can be downloaded from www.eproc2.bihar.govt.in and the IGIMS website www.igims.org.

Sd/-
Director,
IGIMS – Patna.