1. OPERATING (OT) TABLE: 1 No

Sl. No	Description
1.	Motorised height adjustment via footswitch with minimum to maximum height of 700-900 mm.
2.	With ophthalmic head piece and adjustable wrist support.
3.	Should provide with anti-bacterial, dis-infectable mattress.
4.	Locks to stabilize when in use with high quality rust-proof castors.
5.	The table should have Trendelenburg and reverse Trendelenburg movements.
6.	Minimum weightlifting of 150 kgs
7.	Should be BIS/ISO approved.

2. OPERATING MICROSCOPE:

Sl. No	Description
1.	Microscope should be a Higher-end new generation Microscope
2.	The Microscope must have Apochromatic Optics, optimized for Near Infra Red (NIR).
3.	The Microscope must have large Stereo Base (25 mm) for best 3D Perception, excellent Resolution and Depth of Field.
4.	Microscope having motorized zoom System 1:6, magnification 4.4x to 26.6x
5.	Working Distance 160-175mm
6.	Illuminated field 27 mm to 51 mm
7.	The Microscope have Motorized X / Y-movement range of up to 60mm.
8.	Provision of inversion of XY direction of travel via foot control, speed control for XY.
9.	One touch /easy re-centring of the focus and XY coupling eliminates that need for resetting also available through foot pedal.
10.	The Microscope must have electromagnetic break for head movement.
11.	The Microscope should have manual head tilting facility.
12.	The Microscope must have Motorized fine Focusing range of 50 mm. (+17 mm to -33 mm).
13.	The Microscope must have facility for changing the inclination angle of the Microscope's Eyepiece for Main Surgeon over a range of minimum 200 Deg. With 10X oculars; Assistant Surgeon: 0° assistant scope with a range of minimum 160 Deg. With 12.5X oculars & own magnification changer.
14.	The Microscope has continuous red reflex enhancer
15.	Diopter settings: +5 D to -8 D
16.	Inclination Angles: Coarse -70° to +90°, fine +/- 10°
17.	The Microscope has Day light, Soft light, Blue & UV filters.
18.	The Microscope must have a sturdy & stable Floor Stand with an integrated Halogen Light Source (with a back up lamp) of 15 V, 150 W / LED 2 X 50 W
19.	The Unit (Microscope & Floor Stand) includes a waterproof footswitch with joystick, having minimum10- 14 functions.
20.	Beam splitter should be integrated in the microscope body for additional stereo co-observation/documentation.
21.	CCD camera should be integrated in the microscope body with/without external attachment. Camera controls should be preferably integrated in the stand/footswitch.
22.	Fundus viewing system for VR Surgeries. E.g. EIBOS2 with integrated Inverter.

3. VITRECTOMY SYSTEM:

Sl. No	Description
1.	**Vacuum**
a.	Should have the facility to generate direct venture/ combined vacuum of at least up to 650 mmHg through cassette system having 2 independent aspiration ports
2.	**Cutter**
a.	Should have the ability to drive vertical guillotine vitrectomy cutter to go up to 10,000 cuts / minute.
b.	Machine should be on a upgradeable platform with the capability to drive up to 20000 cpm in future.
c.	Should have the facility to allow surgeon to select from 3 different duty cycle options at any given cut rate.
d.	Should have the 3-D technology to linearly control vacuum and cut-rate simultaneously in vitrectomy mode.
e.	The 10K cutter should have the bevelled probe design.
3.	**IOP Control**
a.	Should have the capacity to monitor infusion pressure constantly.
b.	Should have the capacity to compensate the infusion pressure constantly with results in a more stable IOP.
4.	**Illumination**
a.	The system should have dual port Xenon/LED Illumination.
b.	The System should recognize the gauge of illuminator connected and adjust the illumination accordingly.
c.	The system should have the facility to monitor the bulb life, to avoid surprises.
d.	The System should have RFID capacity, which recognizes the probe connected, and automatically loads the settings.
5.	**MIVS**
a.	Should have the capacity to support MIVS options like 23 G, 25G and 27G.
b.	Should have a single-entry system.
c.	Should have the additional stiffening feature for MIVS probes to make it sturdy.
d.	The system should preferably be capable of integrating with 3D visualization system for easy operation.
6.	**Other Features**
a.	The System should have the Vented Gas Forced Infusion Capability.
b.	The System should have the Automated Silicon Oil Injection Capability.

c.	The System should have Auto Fluid / Air Exchange.
d.	The System should have Auto Gas Fill (C3F8 and SF6) option.
e.	Should have the fully programmable footswitch with the facility to change procedural modes through footswitch.
f.	Should have the facility of proportional diathermy.
g.	Should have the capacity of Proportional Reflux.
h.	Should have the facility to digitally control the infusion pressure and the facility to toggle between a regular infusion pressure and a higher alternate pressure (to achieve tamponade effect) with the help of footswitch.
i.	Should have the facility for the extrusion of sub-retinal fluid.
j.	Should have the facility of voice re-confirmation.
k.	Should have programmability to store various parameters.
l.	Should have the facility to of Anterior Phacoemulsification, with 4 crystal Hand piece.
m.	Should be able to do perform Phacoemulsification with Torsional amplitude.
n.	Should have the facility for Anterior Vented Gas forced infusion.
o.	Should have the facility to use variety of Phaco tips like Kelman, ABS and micro tips.
p.	Should have the facility to use High Infusion Sleeve.
q.	Should have the availability of Linear, Pulse, Burst and 3D in Phaco mode.
r.	Should have the Irrigation / Aspiration mode.
s.	Should have the facility of fragmentation with the help of 4 crystal Ultrasound hand piece.
t.	Should have the ability to give an Inbuilt Video Help for setting up the accessories in the system

4. OPTICAL BIOMETER:

Sl. No	Description
1.	2000 B-scans per second
2.	Measurement range:
a.	Axial length 14 – 38 mm
b.	Corneal radii 5 – 11 mm
c.	Anterior chamber depth 0.7 – 8 mm
d.	Lens thickness 1 – 10 mm (phakic eye)
e.	0.13 – 2.5 mm (pseudo phakic eye)
f.	Central corneal thickness 0.2 – 1.2 mm
g.	White-to-white 8 – 16 mm
3.	**Upgradable to posterior corneal curvature measurement** **Display scaling:**
a.	Axial length 0.01 mm
b.	Corneal radii 0.01 mm
c.	Anterior chamber depth 0.01 mm
d.	Lens thickness 0.01 mm
e.	Central corneal thickness 1 µm
f.	White-to-white 0.1 mm
g.	Fixation check with foveal pit.
4.	**SD of repeatability:**
a.	Axial length 9 µm
b.	Corneal radii 0.07 D
c.	Cylinder > 0.75 D, axis 4.5°
d.	Anterior chamber depth 10 µm
e.	Lens thickness 19 µm
f.	Central corneal thickness 2 µm
g.	White-to-white 90 µm
5.	**IOL calculation formulas:**
a.	Barrett Suite* (includes Barrett Toric, Barrett True-K & Barrett Universal II)
b.	Haigis Suite [includes Haigis, Haigis-L (for eyes following Myopic/hyperopic LASIK/PRK/LASEK, Haigis-T (for toric IOL power calculation),
c.	Hoffer® Q
d.	Holladay 1 and 2
e.	SRK®/T

5. A-Scan and B- Scan Ultrasound:

Sl. No	Description
1.	**A-scan:**
a)	Should have the facility for the calculation of IOL power in phakic, pseudo phakic, aphakic and silicone filed eyes.
b)	Should have facility of both automatic and manual capture mode.
c)	Should have the facility of both immersion and contact measuring mode.
d)	Should have the ability to calculate unlimited IOL range.
e)	Should have maximum commonly used IOL formula in built to the system.
f)	Should have high resolution (0.016mm), frequency of 10MHz and Gain (30-100) dB
g)	Should have measuring AL Scope of 16 to 40mm.
h)	Should have finest image quality.
i)	Should have large data storage capacity.
2.	**B-Scan:**
a)	Should have frequency: 10MHZ.
b)	Should have TGC: -30-0dB.
c)	Should have high resolution (0.2 mm axis and 0.4 mm lateral).
d)	Should have scanning scope of angle 53 degree, Depth of 34mm–60mm.
e)	Should have the facility of grayscale: 256
f)	Should have Cineloop: 5.6secs/56 images; single or circle.
g)	Should have capacity of memory up to images.
h)	Should have integrated Microsoft word and snapshot format.

6. AUTO REFRACTOMETER:

Sl. No	Description
1.	Should have the ability to generate refraction automatically and accurately.
2.	Should have an easy to read out clear display screen.
3.	Should have inbuilt auto print option.
4.	Should have good Diopteric spherical range of at least – 20 D to + 20 D.
5.	Should have good Diopteric cylindrical range of at least 10 D.
6.	Should have axis angle of 0-180.
7.	Should have PD measurement range of 20 – 80 mm
8.	Should have the vertex distance of (0mm, 12 mm, 13.75 mm).
9.	Should have good corneal curvature radius range of 5 mm – 10 mm.
10.	Should have the auto fog chat to minimize accommodation errors.
11.	Should have the minimum measurable pupil diameter of 2 mm.
12.	Should have the ability to measure pupil distance automatically.

7. ETO STERILISER SPECIFICATIONS:

Sl. No	Description
1.	The steriliser should be with a chamber size of approximately 16''x16''x36'' and approximate capacity should be around 150 litres.
2.	The chamber should be double walled made of suitable material which is resistant to corrosion and gas.
3.	To minimise the gas deposit, the interior of the chamber should be smoothly finished.
4.	There should be provision for heating the chamber either with Strip Air Heater or hot water circulated through a coil of stainless steel around the chamber to maintain the chamber temperature around 30-55 degrees centigrade.
5.	The chamber shall be appropriately insulated against heat emission.
6.	The door of the steriliser should have a quick release locking arrangement, with door opening to the sides.
7.	Suitable safety interlocking arrangement shall be provided for the door so that the sterilisation process does not start unless the door is properly locked in position and should not open during the programme.
8.	The steriliser shall be provided with suitable vacuum pump and gas trap to separate and evacuate the gas.
9.	Vacuum pump should be of diaphragm or water ring type vacuum pump and should be able to achieve elevated level of air removal.
10.	The ETO steriliser should be able to operate for the minimum essential following cycles programme:
a)	Sterilisation cycle for heat sensitive objects that ensure temperature from 33-55 degrees centigrade with subsequent aeration for protection of the operating personnel.
b)	Aeration cycle/ Programme to extract residual gas out of the sterilised objects after each sterilisation cycle.
c)	Automatic Chamber Evacuation cycle with subsequent venting before releasing the Door lock for Opening, thereby prohibiting exposure of the operating personnel by gas dissolving from the chamber walls during shutdown period.
d)	There should be inbuilt gas catalytic converter for the exhausted Eton gas.
e)	Negative Pressure Cycle (100% ETO Cartridge)
f)	Cycle description: 1) Vacuuming of chamber to set value

	2) Leak hold period 3) Cartridge puncturing/ gas purging depending on the cycle selected 4) Sterilisation hold period for set time. 5) Exhaust and aeration for number of aeration pulses set
g)	The sterilisation process should be fully automatic. With two numbers sterilisation cycles with inbuilt Leak test and Aeration should be provided, which should be completed automatically.
h)	The stand should be made of appropriate material.
i)	Documentation- Thermal printer/ Dot- Matrix Printer which should print date, Batch/Load number, program type elected and program parameters which include one-point pressure and One-point Temperature Print out.
j)	The ETO steriliser shall be equipped with the following accessories: 1) Sterilisation basket of suitable size: 1 No. 2) Eon Gas Cartridges: Approximately 200 No. and should be Pea certified 3) Packaging material with chemical indicator of all sizes: 10 rolls.
k)	The ETO steriliser should have compliance to be end is 9001:2000. Certificate to be provided by Equipment Manufacturer (or equivalent).
l)	The ETO steriliser should have compliance to Iso13485:1996. Certificate to be provided by Equipment manufacturer (or equivalent).
m)	Should be US FDA / European Certified/BIS (or equivalent).
n)	The required safety and clearance certificate from the concerned department should be the responsibility of the supplier.
o)	The consumable required for 200 cycles to be provided.

8.	**DIGITAL SLIT LAMP: 1 No.**
A.	**Specifications:**
a.	**Illumination:** **1.** Light source: LED for examination (slit and background illumination)
	2. Slit width: 0-14 mm continuous
	3. Slit length: 1-14 mm continuous and fixed apertures
	4. Illumination field diameter: 8/5/3/2/1/0.2 mm, test mark with fixation star
	5. Slit image rotatability: +/- 90 degrees
	6. Swivelling of the slit illumination to the microscope axis: Horizontal +/- 90 degrees, Vertical 0-20 degrees
	7. Filters: Blurred free (green), and grey (10%)
b.	**Microscope:** **1**. Stereo angle: 13 degrees
	2. Overall magnification: 5 steps (6.3x, 10x, 16x, 25x, and 40 x)
	3. Eyepiece magnification: 12.5 x
	4. Range of adjusting eyepieces: +7 to -7 diopters
	5. Interpupillary distance: 52-78 mm
	6. Yellow filter: optional
	7. Inclined eyepiece: optional
c.	**Instrument Base:** **1**. Operation: Single handed 3-dimensional operation of the control lever
	2. Spatial adjustment of the instrument base: 100 mm (length), 100 mm (side), 30 mm (height) Measurement (W×L×H): 332mm × 305mm × 700 mm
d.	**ACCESSORIES:**
a.	**Applanation Tonometer:** IOP measurement range of 0-80 mm Hg

b.	**Image Module:** **1.** Camera - Sensor size 1/1.2'', Resolution - 1936x 1216 pixels, Dynamic range (sensor) - 73 dB, Frame rate (frames per second) - 30, Interface - USB 3.0
	2. Software – Smart digital Imaging (Patient manager, Capture Mode, Image Viewer), EMR interfaces
c.	**Fundus Module:** **1**. Camera - Image resolution 1536x1152 pixels, field of view 40 degrees, Focusing -manual, Capture mode - colour, referee, IR, fixation- 9 internal fixation targets, minimum pupil size 3.5 mm.
	2. Software –Digital smart Imaging, EMR interfaces

9. NONCONTACT TONOMETER AND PACHYMETER: 1 No

a.	**Specifications:**
i.	The instrument should be enhanced combination unit of noncontact tonometer and pachymeter.
ii.	It should be extremely accurate which automatically calculates the corrected IOP based on the CCT values
iii.	It should fast, time-saving, even print-out and paper cut-off.
iv.	It should produce accurate measuring data immediately and effortlessly.
v.	Should have the specifications of: • Ocular pressure measuring range: 1 to 30 mmHg/ 1 to 60 mmHg (1 mmHg step) • CCT measurement range: 0.4 to 0.75 mm (0.001 mm step)
vi.	It should have the auto-tracking guide display with automated 3-D tracking and focusing user-friendly animated feedback for the user, when outside of normal auto-tracking range, to help guide with the required joystick and chinrest adjustments needed.
vii.	Should have safety convenient built-in-auto sensor to prevent the air-nozzle from contacting the patient's eye.
viii.	It should have "Triple safe" patient safety measures including a pre-set distance between the cornea and nozzle, a too close warning display and an audible buzzer sound.

ix.	The instrument should be space-saving, excellent ergonomics and patient friendly.
x.	Should have the rotating touch panel monitor allowing for smaller footprint providing full control from any position around the patient.
xi.	Should have the SLD (Super Luminescent Diode) and highly sensitive CCD (charge-coupled device) device to provide Zonal Ring-Image Technology to accurately measure patients with cataract, corneal opacities, IOLs and post-LASIK.
xii.	It should give lower and upper IOP warning.
xiii.	It should measure customized IOP with smart function auto-adjustable puffing intensity (soft and smart puffing) for patient's comfort
xiv.	The device should be light weight and easily transportable.
xv.	Should have power saving sleep mode function when not in use.

10. Radio Frequency Cautery : 1 No

a.	**Specifications**
i.	Solid state circuit system
ii.	Minimum frequency of 2Mhz
iii.	Foot switch controlled functions
iv.	Auto clavable forceps ,erasers and cables
v.	Digital display for easy settings
vi.	Cutting and fulguration option should be available

11. Indirect ophthalmoscope with 20 D lens - 3 numbers

a.	**Specifications :**
i.	Synchronised convergence and parallax adjustment
ii.	Small pupil capable
iii.	Red free, cobalt blue and yellow filters
iv.	Diffusor option
v.	Xenon-halogen/LED illumination
vi.	Wireless headband with rheostat for illumination control and inbuilt battery
vii.	Teaching mirror
viii.	Charging cables
ix.	Mobile plug in option
x.	Accessories including 20D lens with case, light weight carring case, sclera depressors, fundus charts etc
12.	Bipolar cautery with standard forceps and cables : - 2 numbers

13. Routine Hand instruments for OT

i.	Cataract set with tray	- 10 nos
ii.	DCR set with tray	- 2 nos
iii.	Glaucoma set with tray	- 2 nos
iv.	Orbital and oculoplasty set	- 2 nos

14. Routine Equipments for OPD/WARD:

i.	Direct Ophthalmoscope - 5 nos
ii.	Streak Retinoscope - 3 nos
iii.	Trial set(metallic rimmed lenses) with trial frame - 4 nos
iv.	Motorised vision drum - 5 nos
v.	Schiotz tonometer with case - 4 nos
vi.	Chalazion set - 3 nos
vii.	Goldmann's Applanation tonometer - 2 nos