ANNEXURE
Technical Specifications

Sl. No.	Particulars/Specifications
1.	**ADVANCE 4TH GENERATION PHACO MACHINE**

1	Phaco power0-100% (longitudinal & torsional technology)
2	Phaco Vacuum Level: 0-700mmHg (Vaccum pressure sensor)
3	Pump Flow Rate 10 to 60 cc per min
4	Ultrasound delivery shold be available in continuous, micro pulse and burst mode - without generating significant heat.
5	For effective cold phaco it should have software for adjustable duty cycle.
6	Advanced fluidics with sensor system for vacuum and irrigation.(preferablyactive fluidcs)
7	Digital pulse pump with vertically designed fluitics panel, vacuum senstitive proportional fluid venting.
8	IA vacuum level 0-500 mm Hg. Pump Flow rate 10-40cc/min.
9	Flat panel color display screen 13-21 inches.
10	Computer microprocessors-Intel chipset for medical applications.
11	Simple to service and upgrade, customized surgeons programs, programmable power pole with automatic programmed adjustment of bottle height during each procedurals phase.
12	Advanced technology multifunctional foot switch,
13	Ant Vitrectomy attachment should be available more than 2500 cuts/minute.

2.	**OPHTHALMIC OPERATING MICROSCOPE**

1	Compact microscope body with high quality apochromatic Optics with 1:6 zoom rario, Retina Protection Device and contrast enhancement aperture.
2	Inclinable 180 Deg. Binocular tube with 12.5 X magnification eye pieces
3	Objective with 200mm focal length for convenient working distance
4	+2 Deg. Retro illumination with continuous fading mechanism of co-axial illumination from 2 Deg. to 2+6 Deg.
5	Integrated slit illumination system with horizontal and vertical moving facility.
6	Integrated Depth of Focus mechanism for improved depth of focus during surgery.
7	Motorized foot controlled X-Y coupling with automatic re-centering and X-Y inversion facility.

	8	Motorized foot controlled Zoom and focus with recentring of focussing position thru foot control.
	9	High quality progrqammable floor stand with magnetic breaks and clutches for easy positioning through handles and suspension arm.
	10	Stand should have programming facility for setting the speed of XY, Zoom and focus with storage facility of initial setting for multiple users.
	11	Stand should have cold light fiber Optic Illumination with two illumination bulb with semi automatic changeover facility.
	12	Independent integrated binocular assistant microscope with 5 Step magnification changer and focussing.
	13	3CCD Digital camera attachment and digital video recording facility with imported high quality video trolley with isolating transformer.
3.	**OPTICAL COHERENCE TOMOGRAPHY**	
	1	Tomography Imaging Purpose Cross Sectional Imaging of Fundus Signal Type Optical Scattering from Tissue Signal Source Super luminescent Diode, 820 nm Optical Power 750 Microwatts at Cornea Axial Resolution:5 Micrometer (in tissue) Transverse resolutions: 15 micrometer. Sample Size 20 mm in tissue Scanners Galvanometric Mirrors Scan Patterns Line, Circle, Concentric Rings, Radial Lines Scan Pixels Adjustable from (1024 axial x 128 transverse) to (1024 axial x 768 transverse) Longitudinal (Depth) Range 2 mm in tissue Scan Rate:25000 or more scans per second Normative Database RNFL (Retinal Nerve Fiber Layer) and Macular Thickness
	2	Purpose -Fundus Alignment, Documentation Signal Type-CCD image Field of view-290 x 230 Viewing Method-Flat Panel Display Ilumination - Near IR / Red-Free Internal Fixation - 32 x 16 LED Dot Matrix External Fixation - Slit Lamp Type Adjustable Blinking LED Minimum Pupil Diameter- 3.2 mm Power Consumption - 700VA Footprint 120 x 85cm - 48inches x 34inches
	3	PC workstation with Core 2 Duo CPU with inkjet printer(colour), 80 GB HDD, DVD Read/Write, Image capture card and software loaded for digitisation of images, 1GB RAM and interfaces to RVG
4.	**Nd YAG LASER** 1. Laser wavelength 1064nm, 2. Structure Mode: super-Gaussian for highly precise beam profile. 3. Optical breakdown 2.5 Mj or less in air 4. Pulse duration < 4ns 5. Max. Laser energy 10mj (Single Pulse), 23mj(Double pulse) 6. And 37mj (Triple pulse) 7. Minimum Energy 0.3Mj – 10mj(Single Pulse) 8. Energy levels:22 steps 9. Pulse repetition frequency Max.2 Hz. 10. Focus diameter 10 micron in air 11. Cone angle/Angle of exit aperture 16 Deg.	

	12. Aiming beam Laser diode with 670nm wave Length, It should be with Four point aiming beam system for 13. Perfect focusing/ targeting with astigmatic disorders. 14. Aiming beam focus offset +/- 150 um posterior & anterior focus shift. 15. Remote laser control unit so that laser parameters can be changed by assistant for easy use, It should not be 16. Integrated/mounted on the Slit lamp
5.	**USG A & B SCAN** A-scan mode B-scan mode :(a)25 Frames per second image acquisition rate. (b) adjustable gain 27-90dB (c) axial resolution :50 microns (d) lateral resolution 100 microns (e) scanning angle :52 degrees (f) image depth : 45 mm Dynamic movie archiving Laser & video CD recording facility Auto & manual measure function Distance & area measurement on B-scan images Vector A-scan measurement Simultaneous B-scan with vector A-scan A-scan dynamic recording with gain adjustments Facility for IOL power calculations(all formulas)
6.	**DIGITAL FUNDUS CAMERA** 1 Field angles 30-60 DEGREES 2 Image capture (Color, Fluorescein Angiography, green, blue and red) *IMAGE CAPTURE WITH UNDILATED PUPIL 3 Capture 1 chip sensor color 1 chip sensor black & white 4 Monitor 15 inches LCD for direct display 5 Fixation Light Internal and External fixation light both 6 Exposure interval 0.5 - 1 sec 7 Facility for Data storage, data transfer, image archiving, image analysis 8 Instrument table Asymmetrical motorized suitable for patients in wheel chair 9 Supporting latest computer hardware & software
7.	**NON CONTACT TONOMETER AND NON CONTACT PACHYMETER** 1 Air puff non-contact tonometer 2 To measure intraocular pressure without actual eye contact 3 Digital display of intraocular ocular pressure 4 Measurement range 4 to 59 mm of Hg Measurement mode: auto start or manual (selectable) 5 Pachymeter range: 200-900 micrometers

<table>
<tr><td>8.</td><td>NON CONTACT OPTICAL BIOMETER

Measurement range
• Axial length 14 – 40 mm
• Corneal radii 5 – 10 mm
• Anterior chamber depth 1.5 – 6.5 mm
• White-to-white 8 –16 mm

IOL calculation formulas
• Holladay 1 and 2, Hoffer® Q, Haigis, SRK® II, SRK® / T
• Clinical history and contact lens fitting method for calculation of corneal refractive power following refractive corneal surgery
• Haigis-L IOL calculation for eyes following myopic / hyperopic LASIK / PRK / LASEK surgery
• Calculation of phakic anterior and posterior chamber implants
• Optimization of IOL constants
Axial length measurement
• Normal mode and composite singnal mode

Instrument table
Printer</td></tr>
<tr><td>9.</td><td>VISUAL FIELD ANALYSER

<table>
<tr><td>1</td><td>High quality Goldman standard automated perimeter with bowl size 30cm</td></tr>
<tr><td>2</td><td>Maximum intensity 10,000Asb, Bowl illumination 31.5Asb</td></tr>
<tr><td>3</td><td>Floppy drive, internal hard disk drive with Magneto Optical Disk (MOD) drive</td></tr>
<tr><td>4</td><td>Stimulation duration 200ms, wavelenth Broad band visible light</td></tr>
<tr><td>5</td><td>Stimulus/background colour White on White, Blue on yellow (SWAP)</td></tr>
<tr><td>6</td><td>Maximum temporal range 90Deg. Suitable for central 30 as well as full field testing</td></tr>
<tr><td>7</td><td>Central field test patterns 30-2,24-2, 10-2, Macula</td></tr>
<tr><td>8</td><td>Peripheral field test pattern 60-4, Nasal Step</td></tr>
<tr><td>9</td><td>Threshold test strategies full threshold, Fast Pac, SITA or equivalent</td></tr>
<tr><td>10</td><td>Glaucoma progression analysis and Serial Analysis for patient follow up</td></tr>
<tr><td>11</td><td>Screening field test P-60, FF-240, Nasal Step for periphery.</td></tr>
<tr><td>12</td><td>Screening test strategies Two zone, Three Zone and Quantify Defects</td></tr>
<tr><td>13</td><td>Kinetic Testing, Custom Test, Automatic Pupil measurement</td></tr>
<tr><td>14</td><td>Stimulus Size I-V as per Goldman standards</td></tr>
<tr><td>15</td><td>Glaucoma hemi field test, Hail -Krakau blind spot monitor</td></tr>
<tr><td>16</td><td>Video eye monitoring, trial Lens Holder, Gaze tracking System</td></tr>
<tr><td>17</td><td>Head tracking, Vertex Monitoring, Touch screen on CRT, Keyboard</td></tr>
<tr><td>18</td><td>Motorized chinrest, Original Manufacturer Motorized table with Laser Jet Printer</td></tr>
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<tr><td>10.</td><td>GREEN LASER WITH SLIT LAMP</td></tr>
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	1. Should be a diode pumped frequency doubled solid state laser. 2. Should have a 532 nm operating wavelength. 3. Should have a forced air cooling system. 4. Should have a aiming laser wavelength of 635 nm. 5. Should have a out put power ranging from 30 mW to 2000 mW (2W). 6. Should have a exposure time of 10 ms – 2000 ms and continuous wave. 7. Should be supplied with Good Slit Lamp. 8. Should have provision to connect two doctors filter. 9. Should have provision for remote interlock 10. Should have dual laser ports. 11. Should have LED illumination at the ports for visual verification. 12. Should have power control in the footswitch. 13. Should have Ready – Standby control in the footswitch. 14. Should have voice confirmation from the machine. 15. Should have power source for LIO on the Console itself. 16. Should have electric requirement of 220V. 17. Should have LED in the footswitch for visualization in the dark OT.
11.	**AUTOREFRACTOMETER WITH KERATIOMETER** Objective and subjective mode and measuring corneal astigmatism. Low contrast glare acuity testing. Measureable range-sphere plus/minus 20D, Cyl 0 to 7D, Axis 0 to 180. Min. pupil size 2mm. Vertex dist. 10.5, 12.0, 13.5, preferably with IOL mode and print out facility. High accuracy measurements of corneal and contact lens radii and determination of corneal astigmatism. Distance independent co-independent measuring technique. Prism cells for contact lens measurement with power supply unit. Range 4 mm to 13mm radius with 0.01mm increments. Halogen lamp illumination, Steel balls standard radius for calibration.
12.	**PHOTO SLIT LAMP** 1 • Slit width - 0-14 mm adjustable 2 • Slit length 0.1 –14mm 3 •Slit angle +90 – 90 adjustable in steps continuous 4 • Decentering of slit image +4 to –4 horizontal 5 • Diaphragm sizes 0.2 – 14mm 6 • Rotation 0-180 degrees 7 • Light source halogen lamps 8 • Slit tilt 0-20 degrees 9 • Filters cobalt blue, red free, neutral, UV protection 10 • Binocular microscope with standard objective and eyepieces 11 • 5x----40x magnification in steps with drum rotation 12 • 6------40 mm field of view 13 • Movement base movement (x, y, vertical), adequate chin rest movement 14 • Motorized imported table for slit lamp 15 • Applanation tonometer

	16	• Beam splitter
	17	• Slit lamp camera
13.	**INDIRECT OPHTHALMOSCOPE** • Binocular Indirect6 Ophthalmoscope with precision viewing upto 1.0 mm pupil size. • Spot size: 3 integrated spot size small spot, medium spot and large spot. • Filters: 4 integrated filters to choose from red filter, cobalt blue filter, yellow filter and diffuser. • Vertical adjustment, +/- 4° • Integrated flip up adjustment optics which can be flipped and locked at 0°, 12.5°, 47.5°, 60°. • Aperture and filter adjustment levers: can be locked to the desired position required. • Locking apertures and filter adjustment (Safety clutch): protect mechanism from the forced adjustment while in the lock position. • P.D. Range from 46-74 mm. • 6V Halogen Xenon Bulb. • Teaching Mirror. • Rechargeable Li-ion battery transformer with LED indicator • Desk Top-cum- Wall Transformer. • Transformer compatible with voltage system of AC 220- 240 Volts. • Large & small depressors • Carrying case • + 20D lens.	
14	**DIRECT OPHTHALMOSCOPE** 1. Should be rechargeable battery with Charger / mains operated. 2. Should have halogen / LED light source 3. Should have red-free filters 4. Should have small and large spot sizes, fixation targets, slit aperture, hemi-spot and cobalt blue filter 5. Should have wheel control with lens powers ranging from +20D to -35D in single diopter steps up to 10D and 5D steps above that. 6. Should have illuminated lens dial. 7. Should have rubber brow rest. 8. Should have dust free optics and a spherical optical system 9. Should be supplied with a carrying case. 10. If halogen lamp is used, then the following additional accessories should be supplied a. Bulb – 1 no b. Bulb holder c. Bulb cover	
15	**STREAK RETINOSCOPE** 1. Should have an external focusing sleeve which is easy to grip and manipulate. 2. Should have crossed-linear polarizing filter. 3. Should allow one-hand operation for streak focus and 360º streak rotation. 4. Should be interchangeable to plane mirror and concave mirror mode by sleeve movement. 5. Should use halogen/Xenon streak lamp. 6. Should have 100% dust proof housing and multi-coated optics. 7. Should have detachable brow rest for spectacle wearer 8. Should be battery/ rechargeable battery operated. 9. Should have a carrying case. 10. Should be supplied with the following accessories. • Bulb – 5 nos. • Bulb holder • Bulb cover	

16	**Ophthalmic refraction Unit** 1. One fully upholstered comfortable ophthalmic chair with facility of full motorized recline and up & down movements for 300 mm ± 15 mm 2. One stand and console with illuminating light for examination. 3. The strand should have adequate space for placing Keratomter or autorefractomter, NCT, Lensometer, Direct Ophthalmoscope and streak retinoscope, Chart projector & Trial lens set.
17	**SURGICAL SETS** **1. CATARACT SET (TITANIUM & STEEL)** **2. GLAUCOMA SETS** **3. DCR SETS** **4. ENTROPION SET** **5. ENUCLEATION SET** **6. EVISCERATION SET** **7. SQUINT SET**