Annexure-C

DETAILED TECHNICAL SPECIFICATIONS

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Schedule –I A

1.SLIT LAMP BIOMICROSCOPE

TECHNICAL SPECIFICATION

1.	Main Microscope	Galilean, 5 Steps Magnification
2.	Eye pieces	12.5x
3.	Diopter Adjustment	From + 6 to -6
4.	Interpupilary Distance	Adjustable from 55mm-75mm
5.	Working Distance	100mm
6.	Magnification Mannual 5 Step	6x, 10x, 16x, 25x, 40x
7.	Field of View (in mm)	35, 23, 14, 8, 7, 5, 6
8.	Slit Width	0 to14 mm
9.	Slit length	0 to 14 mm
10.	Slit Appertures	0.2, 1.3, 4.6, 10,14mm/
11.	Slit Angles	0-180 deg.
12.	Slit inclination	5,10,15,20 Deg
13.	Filter	Heat Absorbing Filter and UV, GREEN and BLUE Filters
14.	Light source	12V/30W,Halogen
15.	Movement Ranges :	
	i. Longitutional in/out	118mm
	ii. Lateral (left/Right)	99mm
	iii. Vertival (Up/Down)	30mm
	iv. Chinrest Range	55mm
16.	Voltage	220-240V,50/60Hz.

2 PHOTOSLIT LAMP

Imaging and Documentation System :

It should have the following features and facilities :

1) Live on screen view
2) Should come with Sony Firewire camera for still and movie capture documentation software
3) Comprehensive Database with search and querry functions.
4) Unique patient identification.
5) User definable database.
6) Single and 4 –up image display.
7) Automatic archiving.
8) System Administration with password protection..
9) Import & export functions.
10) Image copy to email
11) User definable image compression
12) Brightness, contrast and gamma control
13) Image Zoom and resize
14) Red – Free, Negative, Green filter
15) Rotate & Invert image
16) Sharpening and Box Enhancement
17) Patient and Image Notes
18) Image annotation
19) Grading and Reporting
20) Multiple Print format and contact sheey print
21) Crash protection
22) Stereo image viewing
23) On-line help
24) It should have the facility of DICOM export.
25) Compatible PC should be provided

Slit lamp with specifications:

1) Should have illumination from top using tungsten filament bulb capable of giving illumination intensity up to 600,000Lux.
2) Magnification from 6.3X to 40X in 5 steps having steps at 6.3, 10,16, 25 and 40X.
3) Diameter of field should be from 32 mm to 5.1mm.
4) Slit length 0.2 to 8mm
5) Eyepieces of 12.5X.
6) Facility to tilt the slit image up to 20deg should be available.
7) Should have the facility for stereoscopic examination of fundus where in Angle on stereoscopic observation can be reduced from 13deg to 4.5deg to have better view of eyes with small pupil or high myopia.
8) Adaptor for Inclined Eye- piece to enable the viewing into the microscope is inclined at 20° to the horizontal – thus enabling the examiner to keep his head in a fatigue free position.
9) Should have the facility to attach beam splitter and adaptor for digital camera.
10) Imaging with this slit lamp should be flash free.
11) Should have the facility of background illumination through a cold light source.
12) Original Goldman Applanation tonometer
13) Spring balanced table for slit lamp.

3.DIRECT OPHTHAL MOSCOPE

1. Battery operated
2. Light source –halogen bulb 3.5 V
3. Red-free filter should be available
4. Should have 6 more apertures for use: small and large spot sizes, fixation target, slit aperture, hemi spot and Cobalt blue filter.
5. Wheel control, with lens powers ranging from +20D to -35D in single diopter steps up to 10D and 5D steps above that.
6. Illuminated lens dial
7. Rubber brow rest
8. Dust free sealed optics and a spherical optical system
9. Good quality carrying box(original)
10. Sturdy large battery handles, with rheostat adjustment.
11. Standard accessories : spare halogen bulbs {10 Nos.}

4. INDIRECT OPHTHALMOSCOPE

1. Weight of Head band with Light weight 500-600 gm with soft cushioning and non slip contoured ophthalmoscope metallic head band.
2. Bulb 6V with easy fit, push in (halogen bulb)
3. Illumination 2000lux, rheostat-On head band & Illumination should be adjustable from 100% to 2% of max required
4. Diffuser Should have both wireless and must run for100min with battery rechargeable on lithium batteries with 2 extra batteries with charger
5. Transformer runs with wide angle run.
6. Filters 4
    a. Diffuse,
    b. Yellow
    c. Blue
    d. Green
7. Barriers UV & IR barriers
8. Mirror Height Controllable
9. Hi Magnification Lens with flipped in & out facility.
10. Apertures Adjustable for large, intermediate & small pupil.
11. Independent image alignment control
12. Original case
13. Teaching Mirror
14. Illumination control from head band & also from step down transformer
15. Scleral Indentor Large & small
16. With +20D aspheric lens.

5.AUTO REFRACTOMETER

a) Refraction Measurement : Sphere – 25 + 25D (0.01/0
0.25D
cylinder 0~ ± 10D (0.01/0.12)
0.25D step
Axis Angle 0~ 180˚ (1˚ step).

b) Vertex Distance : 0, 10, 12, 13.5, 15mm

c) Minimum Pupil Diameter : dia 2.3mm

d) Pupillary Distance : Measurement range 85m (1mm step)

e) Printer : should have the facility to take print outs .

f) Internal Monitor : 5.6 inch LCD display (color)

g) Movable distance : Back/force ± 17mm right/left ± 43mm,
up/down ± 17mm

h) Movable distance of
chinrest : ± 30 mm

6.TONOMETER- NON CONTACT

1. Air Puff non contact tonometer to measurer IOP without actual eye contact.
2. Should have facility for Digital display of IOP ,
3. The minimum measuring range should be from 4 to 59 mmHg.
4. Displayed accuracy ± 1mmHg.

7.APPLANATION TONOMETER

1. It can be use for the rapid and accurate intraocular pressure measurements.
2. It should have micro strain guage Transducer
3. The range of measurements should be 5-80 mmHg
4. It should have rapid scan facility at the rate of 500 samples /second.
5. It should have battery operating facility

8. KERATOMETER

1. It should have facility for High accuracy measurements of corneal and contact lens radii
2. The facility for determination of corneal astigmatism should be there.
3. It should have minimum Range from 4mm to 13mm radius with 0.01mm increments.
4. It should have Halogen lamp illumination and Steel balls standard radius for calibration.

9.MOTORIZED TABLE

1. Instrument table can able to operate with both push button and foot pedal
2. It should ensure Upward and downward movements,
3. It should have powder coated body
4. It should mount on base with four castor wheels with lock.
5. Height adjustment up to 16 inches approx.

6. It should have well finished ,good quality top.

10 A – SCAN

1. A scan probe - 13 MHz transducer
2. Scan Depth - 40-60 mm
3. Gain- 30-110 dB
4. Measurement of volume area
5. Accessories
    i. Motorized Table
    ii. Video/Thermal printer
    iii. LCD Monitor

11.B – SCAN

1. B scan probe - 10 MHz transducer
2. Scan Depth - 40-60 mm
3. Gain- 30-110 dB
4. Measurement of volume area
5. Accessories
    iv. Motorized Table
    v. Video/Thermal printer
    vi. LCD Monitor

12.FUNDUS CAMERA

1.	Optical system	Three Telescopic
2.	Field angles	50 ◦, 30◦, 20◦
3.	Viewing Magnification	11X, 19X, 30X
4.	Photo graphic Magnification	1.77, 2.90,4.39
5.	Observation	Monocular, special 10X eyepiece with reticle
6.	Working Distance	42mm(front lens of patient's eye)
7.	Ametropia compensation	± 30 diopter
8.	Flash rate	1/sec.
9.	Maximum flash energy	360W
10.	(25 steps increment)	
11.	Illumination for observation	12V,50W;Halogen
12.	Filters	Green (red free),Blue ,Red, Fluorescein Angiography (Motorized Change over)
13.	Documentation port	Automatic motorized change over
14.	Image size on film	26 mm dia, Vertical 24 mm
15.	Swivel Range	±45◦ Horizontally + 15◦/-10 ◦ vertically by hand wheel
16.	Flash generator	Table mounted
17.	Instrument table chair	Asymmetrical, motorized, suitable for patients in wheel

Image Sensors:

18. Minimum resolution of 5.0 mega pixel for colour, Red free FFA photography (DSLR camera not to quoted.)
19. Minimum 2 Mega pixel B/W camera for IGIC and Auto Fluorescene photography.
20. Fundus camera must have the Auto Fluorescene filters.
21. 35mm still camera with Data Back.
22. Facility to mount colour camera, B/W camera,digital camera and 35 mm film camera simultaneously and switch between sensors via software.
23. Software should have facility for automontage/auto panaroma

24. Software should have Diabetic grading feature.

Hardware for the work station.

25.	Processor	Pentium IV, 2.4 GHz or Higher
26.	Operating system	windows 2000 professional or higher
27.	Hard disk	120 GB or Higher
28.	Monitor	17 ” color (1280X1024)
29.	Drive for Archiving	Magneto Optical Disc
30.	Floppy Drive/CD-RW drive	1.44MB/ CD-RW

31. The part y should supply the Printer
32. Network capability should be there

Software

33. Powerful SQL database for patient’s data and images
34. Retina Atlas
35. Image Post processing
36. Brightness
37. Contrast
38. Sharpness
39. Smoothing
40. Inversion
41. Anti flicker
42. Rotation 180◦
43. Global grey level stretching
44. Zoom
45. Drawing
46. Mapping
47. Overlay
48. User friendly searching
49. Measurement
50. Tone value correction
51. Slideshow

52. Data import/export DICOM
53. System should allow DICOM anonymous export of patient data /images

13.YAG LASER :

1. Full slit lamp function including 3 step magnification changer
2. Excellent Quality Optics
3. Microprocessor Control with built-in safety features
4. 8 Micron spot size.
5. Longer focal length
6. Anterior and posterior YAG Laser offset of + 500 microns
7. Output energy 10mJ
8. Pulse length 4 n Sec.
9. Frequency 1 Hz

14.HUMPHREY VISUAL FIELD ANALYSER

1. High quality Goldman standard automated perimeter with bowl size 30 cm
2. Maximum intensity 10,000 Asb, Bowl illumination 31.5 Asb
3. Stimulation duration 200 ms, testing distance – 30 cm, stimulus wavelength - Broad band visible light.
4. Stimulus / Background color -White on White, with Blue on yellow (SWAP) option also available
5. Stimulus Size I-V as per Goldman standards
6. Maximum temporal range 90 Deg.
7. Central field test patterns (30-2, 24-2, 10-2, Macula) and Peripheral field test pattern(60-4, Nasal Step) should be available

8. Threshold test strategies- full threshold, Fast Pac, SITA standard/SITA fast , Glaucoma hemi field test, and Screening test strategies with standard printout formats
9. Glaucoma progression analysis and Serial Analysis for patient follow up
10. Custom Static Testing, Kinetic Testing options, upgradeable software analysis(if any),Automatic Pupil Measurement should be available
11. Should have fixation monitoring with
    i. Heijll- Krakau blind spot monitor
    ii. Video eye monitoring,
    iii. Trial Lens Holder,
    iv. Gaze tracking System
    v. Head tracking
    vi. Vertex Monitoring
    vii. Touch screen on CRT,
    viii. Keyboard
    ix. Floppy drive
    x. internal hard disk with Magneto Optical Disk (MOD) drive for data storage
12. Original Manufacturer Motorized table, with Laser jet Printer should be available.

15. DIODE LASER WITH LIO FACILITY & SLIT LAMP DELIVERY SYSTEM

1. Treatment Laser Infrared diode laser (810 mm)
2. Cooling No external air or water cooling required
3. Break Power Upto 3000 mW
4. Aiming Laser Red diode laser variable/Hene beam
5. Power 0≤ 1.0 mw
6. Delivery Devices Endo Probe
7. Exposure Variable from 0.01 secs to continuous
8. Repeat interval 0.2 to 1.0 secs
9. It should have slit lamp delivery system facility

16. CRYO UNIT

1. Console diameter width 5 inch (13.3 cm)
2. Height 6.5 inch (16.5 cm)
3. Depth 11.0 inch (27.9 cm)
4. Weight 16 pounds (7.3 kg)
5. Front panel gauze indicates incoming cylinder gas pressure
6. Temp. Selection - 25deg, -55deg,-85deg, tolerance +/-5deg.
7. Front panel On/off switch turns console on/off
8. Foot switch controls freezing operation (Depress to freeze & release to defrost)
9. Power source run on CO2 & N 2O gas (No electricity required)
10. Freezing & thawing should be fast (instant)
11. Probe handles should be durable & made of stainless steel
12. Tip & tach should have protective cover
13. Dual switch over valve should remain at comfortable temperature on 2 cylinders allowing continuous operation of cryo while on empty cylinder is remove for refill
14. Cryo tube enhanced flexibility, 9 ft long, reduced coil memory
15. Probes
    a) curved retinal probe 2.8 mm dia X17.3mm length
    b) Curved glaucoma probe 3.4 mm dia*X19 mm length
    c) Vitreous probe 1.5 mm dia X27 mmLength

17. SYNAPTOPHORE .

Specifications:

1. Autoflashing device
2. After image test
3. Haidinger brushes
4. Slides including simultaneous macular perception

5. Simultaneous parafoveal perception
6. Simultaneous foveal perception
7. Set of slides for fusion
8. Set of slides for steropsis
9. Set of slides after image test
10. Set of slides for angle kappa
11. Set of slides for measurement of torsional deviation

18.STREAK RETINOSCOPE

1. External focusing sleeve that's easy to grip and easy to manipulate.
2. Crossed-linear polarizing filter.
3. Magnetic age-appropriate targets for dynamic retinoscopy.
4. Allows easy one-hand operation for streak focus and 360° streak rotation.
5. Interchangeable – to plane mirror and concave mirror mode by sleeve movement
6. Fiber optic illuminated red and green fixation points
7. 3.5v Halogen Streak Lamp
8. ParaStop Setting. .
9. 100% Dustproof Housing high quality, Multi-Coated Optics.
10. Should be battery operated
11. Good quality carrying case(original)
12. Standard Accessories & spare parts
    a. Bulb holder
    b. Bulb-cover
    c. Detachable brow rest for spectacle-wearers
    d. Fixation cards with holder for dynamic retinoscopy

19. SNELLEN'S DRUM: -

1. To measure visual acuity for distant vision
2. Light fitted in the instrument.
3. Test type charts for English & Hindi alphabets.
4. C Type letters for illiterates.

20. OPHTHALMIC REFRACTION UNIT

It should have the following

1. Motorized Up-Down Movement of the Chair.
2. Motorized back & forward Movement of the Chair.
3. Retinoscope/Opthalmoscope.
4. Near vision arm.
5. Over head reading lamp.
6. Indirect arm.
7. Sliding Table Top for Twin instrument.
8. The choice of either of the various colors.
9. Easy operation by foot control switch.
10. 360 degrees rotatable trial lens tray
11. The Smooth touch control panel to control the up/down movement as well as 180 degree maximum to flat horizontal Inclination * Automatically.
12. The 360 degrees rotable feature is for trial sets/Instruments.
13. The following instruments can be mounted on the table top.

    i. Overhead lamp
    ii. Slit lamp

iii. Auto-refractometer
iv. Ophthalmoscope/Retinoscope
v. Trial lens tray
vi. Near Vision Arm
vii. Chart Projector /Vision Drum
viii. Indirect ophthalmoscope

16. It should satisfy following

i. Seat minimum height- 550 mm
ii. Seat maximum height- 710 mm
iii. Up & Down stroke- 160 mm
iv. Seat Rotation- 0 to 180 degrees
v. Back & Forward movement- 95 to 175 degrees
vi. Power Supply- 220 V AC,50Hz
vii. Power consumption- 600 mA
viii. Load Lifting- 200 Kg
ix. Motor Available- 230V AC- 24 DC
x. Stabilizer- 0.5 KVA min
xi. Minimum area required- 8 feet 10 feet
xii. Voltage Range- 0,1.5,2.5,3.0,4.0,6.0,9.0,12.0V

21. OCULAR THORPE FOUR MIRROR GONIO

1. Four 62 degree mirrors give a 360 degree view of the anterior chamber angle with only slight lens rotation.
2. Posterior pole can be viewed through center of lens.
3. Lens height 32.2mm
4. Contact diameter 18mm.

Lens Height	Image magnification	Laser spot magnification	Contact Dia.	Static FOV
32.2 mm	.93X	1.08X	18mm	150 degree

22.OCULAR THORPE SURGICAL GONIOSCOPE

1. Magnified view of anterior chamber angle.
2. Designed for Goniotomy or checking the placement of of an anterior chamber intraocular lens
3. It can be used with operating microscope or loupe
4. Lens height 32.5mm
5. Contact diameter 10mm

23. KOEPPE GONIO LENS SET

Image magnification	Contact dia.	Static FOV.	Style
1.47 X	19 mm	160 degree	Large
1.5X	18mm	160 degree	Medium
1.55X	17mm	160 degree	Small

24.LATINA SLT GONIO LENS

1. It should have 1.0X magnification for maintaining laser spot size and 1 to 1 laser energy delivery.
2. It should have tilted anterior lens surface
3. It should be suitable for standard laser trabeculoplasty.
4. It should have 63 degree mirror

Lens height	Image magnification	Laser spot magnification	Contact dia.	Static FOV.
24mm	1X	1X	14.6 mm	130 degree

25.OCULAR ABRAHAM IRIDOTOMY LENS

It should have a 8mm dia,66 D magnifying lens for viewing iris.

The Power density of laser beam at iris should be able to increase 2.5X compared with a flat lens.

It should have a 50 micron spot size setting that yields a 31 micron spot on the iris.

The lens should provide additional safety by reducing the power density at the cornea and retina by 2.8 X.

Lens height	Image magnification	Laser spot magnification	Contact dia.
16.5mm	1.6X	0.63 X	15mm

26 OCULAR SWAN-JACOB AUTOCLAVABLE GONOPRISM

1. It should have anodized aluminium handle for easy manipulation.
2. The glass design should allow steam sterilization.
3. Contact diameter 10 mm
4. Handle 77.6mm

27. GOLDMAN PERIMETER

1. Original goldman spherical projection perimetry for staticand kinetic perimetry with recording device.
2. It should have the facility of colour perimetry {red and green}

28. ULTRASONIC PACHYMETER

It should have following Specifications:

1. Measurement range: 0.2 - 1.3 mm
2. Resolution : 1 micron
3. Accuracy : +/-3 microns
4. Transducer frequency : 20 MHz focused
5. Battery powered : 4x 1.5V batteries

29. PHACOEMULSIFIER

1. Peristaltic/Venturi pump technology
2. Four crystal piezo electric titanium hand piece
3. I/A – 2 hand pieces
4. Ultra sound tip frequency of 29 to 40 KHZ
5. Ultrasound power modulation with conventional, pulse and burst mode.
6. Advanced fluidics with anti surge mechanism
7. User friendly software
8. LCD touch screen and automatic IV pole option
9. Foot pedal with multi program options and remote control availability
10. Disposable and reusable tubing set / unit facility
11. Variable designer tips for phaco power delivery.
12. Phaco vacuum level 0 to 500mm in 5mm increments,
13. Phaco power 0 to 100% in 5% increments,
14. I/A vacuum range 5 to500mmHg.
15. Aspiration flow rate 1 to 40 cc/min.
16. High speed anterior and posterior vitrectomy and wet field bipolar coagulator.
17. Customized surgeon program with different sets of parameters.

30.OPHTHALMIC OPERATING MICROSCOPE

1.	Main microscope	5 step magnification
2.	Eye pieces	10X wide field (optional 12.5X wide field)
3.	Diopter Adjustment	from +6 to -6
4.	Inclination to vertical	45◦ off vertical
5.	Interpupilary distance	from 55mm to 75 mm by knob
6.	Working distance	175 mm or 200 mm
7.	Magnification Manual step	0.4X, 0.6X,1.0X,1.6X,2.5X
8.	Field of View (in mm) with	
	175 mm Objective	55,36,22,14,9
	200 mm Objective	63,42,25,16,10
9.	Fine focusing	Adjustable by motorized foot control
10.	Intensity	Minimum 8000lux
11.	Brightness	Continuously variable
12.	Filters	Built in heat absorbing filter and UV,Green and Blue filters with Switcahable facility
13.	Light source	12 V, 100 W ;Halogen Lamp
14.	Light transmission	Fiber optic cable
15.	Arms	Counter balanced spring arms
16.	Rotation of arms	355◦ with lock
17.	Floor stand	Mobile floor stand and five caster wheels
18.	Power supply	AC 220-240 V.

31. OPERATING MICROSCOPE WITH VIDEO RECORDING

1. Illumination
    i. Coaxial
    ii. Oblique for red reflex
    iii. Retro Illumination
    iv. Bright reflex preferable
2. Integrated slit illumination
    i. Vertical 2.5 mm
    ii. Horizontal 2.5mm wide and 5mm
3. Focal Length 175/200 mm
4. Focusing range 50 mm
5. Movement X-Y coupling. Key should be available for X-Y coupling and focus
6. Foot Control for
    i. Illumination
    ii. X-Y Movement
    iii. Zoom
    iv. Focus
7. Assistant Microscope
8. 12v/Halogen/Xenon bulb
9. Automatic exchange following bulb failure.
10. Apochromatic/Advance optics with anti reflex coating
11. Motorized zoom system
12. Eye piece 12.5X (10x Optional)
13. Beam splitter and TV adaptor
14. Video system
15. CCTV with camera attachment

32. WET FIELD BIPOLAR COAGULATOR

1. It should incorporate with Solid State Circuitry.
2. It should have LED indicator for power output
3. It should be supplied with Disposable / Auto cleavable cords.
4. It must be Footswitch operated
5. It should be supplied with A wide selection of bipolar forceps and haemostatic erasers to facilitate most ophthalmic surgical procedures
6. Power supply should be AC 220-240 Volts;50Hz.

33.LENSOMETER

1. Type	:	External Reading type
2. Target	:	Corona and cross, Rotable 360 degree
3. Vertex power range		
i. (0,25 Diopter step)	:	0 to +(or)- 10 Diopters
ii. (0,50 Diopter step)	:	+(or) – 10 to 25 Diopters
4. Cylindrical axis	:	0 degree to 180 degree (1 degree steps
5. Prismatic power	:	0 to 5 (1 step)
6. Acceptable Lense		
i. Diameter	:	20 to 80 mm dia.
ii. Tiltable angle	:	Continuously variable from 30 degree to 90 degree
7. Eyepiece focusing range	:	0 to 5 Diopters

34. SURGEON'S CHAIR (MOTORIZED)

1. It should have facility for Foot regulated height adjustment
2. It should have multi position arm support
3. Electric height level adjustment
4. The range of height adjustment should be apporx.150mm
5. It can be Easily movable with personal handle
6. It should have Back wheels lock.
7. It should have Hand height controls
8. It should be Operated with motor
9. It should have Position foot support
10. It should have Ergonomic seat foam
11. It should have motor driven Fixed or rotating seat
12. Dimension of seat should be minimum 550 mm approx. to maximum 700 mm approx.
13. It should have castor with lock
14. Power supply AC 110V/220V (50/60 Hz)
15. Lifting Capacity: 200Kgs.
16. Stroke Value should be 150 mm approx.
17. It should have Hand support, back rest & wheels
18. It should ergonomically Adjustable

Schedule- I B

1. TELLER ACUITY CARDS

Seventeen thick card boards gray colour base with black & white strips of different size.

2. CONTRAST SENSITIVITY CHARTS

Contrast Sensitivity Charts-Pellirobson charts for use at 1 meter / Cambridge low contrast Gratings / Functional Acuity Contrast Charts for distance and near .

3. ETDRS CHARTS

One illuminated plastic sheets printed with different size alphabets

4.ISHIHARA CHAT

Ishihara Pseudoisochromatic Charts should be in Original form and good quality prints.

38 plates (complete edition)

5.IOL KIT

1. Acrylic foldable IOL (hydrophobic) UV absorbing single piece, biconvex 6.00 mm Optic with square edge, planar haptic. Overall diameter of 13.00 mm.
2. Acrylic pseudo accommodative single piece acrylic foldable IOL, 6 mm optics, overall diameter 13.0mm(-10 lenses)
3. All PMMA PC IOL : 6.50 mm Optic. Overall diameter of 13.50 mm with modified C loop PMMA haptic.
4. All PMMA PC IOL : 5.25 mm – 5.50 mm Optic. Overall diameter of 12.00 – 12.50 mm with modified C loop PMMA haptic.
5. All PMMA Kelman Multiflex AC IOL : 5.00 mm – 5.50 mm Optic. Overall diameter of 12.50 mm – 13.00 mm

6. Acrylic hydrophobic multipiece foldable IOL, 6.0mm optic with overall diameter of 12-13mm.
7. Acrylic hydrophobic foldable IOL with yellow chromophores 6.0m optics, 13.0mm overall diameter.
8. Micro Surgical Phaco Knife .
    1. Crescent Knife for dissection of Phaco Tunnel
    2. 3.2 mm slit knife.
    3. 2.75 mm slit knife
    4. 5.2 mm slit knife
    5. Side Port Entry knife (20G)
    6. 1.5 mm slit

6. TRIAL LENS SET

1. The lenses should be20mm in aluminum, amount of 38mm diameter, anodized red for minus and black for plus. The Sphere lenses with handle and cylinder without handle.
2. Trial lenses of good quality, the case made of melamine polished wood, sturdy and attractive finish.
3. lenses--Spheres
    a. Concave and convex-0.12
    b. 0.25 to 4.0 in 0.25 steps
    c. 4.5 to 6.0 in 0.5 steps
    d. 7.0 to 14.0 in 1.0 steps
    e. 16.0 to 20.0 in 2.0 steps
    f. 0.25 to 3.5 in 0.25 steps
    g. 4.0 to 6.0 in 0.5 steps
    h. Prisms-1/2,1,2,3,4,5,6,8,10,12.
4. Accessories-Trial frames, one adult size and one for child, adjustable with slots
    i. -Red glass
    ii. green glass
    iii. -Pin hole
    iv. -Slit
    v. -Two blank discs

vi. two occluder

vii. -cross cylinder +/- 0.25 and +/- 0.5

7. SURGICAL INSTRUMENTS

1. Lim's Corneal forceps 1 x 2 teeth small.
2. Moorfield suture and conjunctval forceps
3. Troutman Superior rectus forceps
4. Pierse type Micro forceps No.15. 0.2mm tip
5. Pierse type Micro forceps curved No.24, 0.5mm tip
6. Barraquer tying forcep straight
7. Barraquer tying forcep curved.
8. Mc-pherson forceps 10mm straight
9. Mc-pherson forceps 10mm angled
10. Dodick nucleus cracker cross action
11. Clayman lens holding forceps delicate angled jaws without lock
12. De-weckers iris scissor sharp
13. Vannas scissors sharp tips straight 7mm blades.
14. Vannas scissors sharp tips straight 10mm blades
15. Vannas scissors sharp tips Curved 7mm blades
16. Vannas scissors sharp tips Curved 10mm blades
17. Mcpherson westcott conjunctival scissors curved blunt tips small blades.
18. Micro Corneal scissors slighty curved blunt tips small blade
19. Micro Corneal scissors half curved blunt tips small blade
20. Weiss eye speculum
21. Barraquer's wire speculum small
22. Barraquer's wire speculum Medium
23. Barraquer's wire speculum Large
24. Vectis
25. Sinskey lens hook & manipulator
26. Twist hook for scleral fixation
27. Dastoor pupil & Irish repositer
28. Lens expressor
29. Phaco Chopper
30. Rycroft Air injection cannula
31. Simcoe irrigating aspirating cannula with silicon tube
32. Jenson posterior capsule polisher sand blasted olive tip
33. Simco cannula I/A "U" shaped for 12'0 clock
34. Jaffe Needle Holder
35. Hydro- Dissection Cannula
36. Towel Clip
37. Colibri forcep

38. Bone Punch
39. Nasal Speculum
40. Bone rougeur
41. Hammer
42. Chunck handle
43. Muller Eye speculum
44. Lacrimal Cannula straight
45. Lacrimal Cannula curved
46. Pigtail probe
47. Lacrimal probe set
48. Bishop forceps
49. Suturing forceps
50. Utility forceps
51. Cat paw Retractor
52. Stevens Scissors
53. Ring Scissors
54. Needle Holder
55. Stitch Scissors.
56. Enucleation Scissor half curved
57. Enucleation Scissor full curved
58. Muscle Hook
59. Lester – Burch Eye Speculum
60. Wells enucleation spoon
61. Bunge evisceration spoon small large
62. Mule evisceration scoop
63. Boll point cautery
64. Desmarres lid retractor
65. Capsulorrehxis Forcep curved shaft Utrata 85mm
66. Capsulorrehxis Forcep curved shaft Castroviejo 109mm
67. Fixation Forcep Toothed 1x2 90mm
68. Superior rectus Forcep toothed 115mm
69. Lens holding Forcep Dalgit 85mm
70. Castroviejo Needle Holder curved without lock 113mm
71. Phaco Acrylic lens folder
72. Phaco acrylic lens inserter
73. Phaco acrylic lens injector
74. Iris repository round ended
75. Sinsky hook extra fine single ended 115mm
76. Phaco chop cum 'Y' rotator 145mm
77. Phaco chop blunt 1mm chopping edge single ended 115mm
78. Scissor curved 3" 4"
79. scissorstraight 3" 4"
80. Tooth forcep straight 3" 4"
81. plain forcep 3" 4"
82. Instrument lifter 200mm
83. Allis tissue forcep 2x3 tooth 155mm
84. sponge holding forcep 200mm

85. Bonn Iris scissor straight sharp pointed tips 90mm
86. Bonn Iris scissor curved
87. Eye scissors Straight 115mm
88. Eye scissors curved
89. Castroviejo caliper straight 20mm
90. Castroviejo caliper curved 20mm
91. Ball cautery copper ball 6mm
92. Dieffenbach Bull dog clamp straight
93. Dastoor iris retractor 3.5mm wide for cryo
94. Bowman Decision needle sharp cutting edge
95. Graefe Iris hook tip2mm round blunt
96. Castrviejo Synechia spatula
97. Conjunctival scissor straight
98. Conjunctival scissor curved
99. Stevens Tenotomy scissors straight round blunt tip
100. Stevens Tenotomy scissors Curved round blunt tip
101. Kalt needle holder 12mm jaw
102. Castroviejo Blade breaker and holder 12mm jaw
103. Knolle irrigating vectis angled blunt tip blunt tip
104. Irrigating vectis for SICS serrated tip pointed tip
105. Bishop- Harmon Anterior chamber wash cannula 20G
106. Lacrymal cannula half curved 20G
107. Lacrymal cannula full curved
108. Wildar lacrymal dilator
109. Nettle ship punctual dilator
110. Lacrymal sac Retractor Mueller
111. Knapp Sac Retractor 8mm wide four prongs
112. West bone chisel
113. West bone Gouge
114. Mallet for DCR
115. Kerrison bone nibbling Ronguer 1.5mm, 2mm, 3mm, 4mm, wide
116. Lang lacrymal sac dissector and curette
117. Dastoor Lacrimal sac dissector double ended
118. West bone gauze
119. Tilley Nasal packing forcep
120. Ferris smith punch
121. Citelli's punch 1.5mm 2mm 3mm 4mm
122. Barkan Goniotomy knife
123. Toooke cornel knife Blade 3x18mm
124. Cyclodialysis cannula spatula Elschnig angled shaft
125. Kelly glaucoma punch
126. Goniotomy knife
127. Nicati foreign Body spud 26x1.25mm
128. Beer cilia or epliation 4.5mm long roundd platform
129. lambert chalazion forcep 10mm
130. Lambert Chalazion forcep 15mm
131. Desmarres Chalazion forcep 20mm

132. Meyer Hoefer Chlalazion curette 1.5mm
133. Meyer Hoefer Chalazion curette 2mm
134. Meyer Hoefer Chalazion curette 3mm
135. Wells enucleation Spoon
136. Evisceration Scissor Mule
137. Evisceration Scissors Bunge
138. Kennerdell Bayonet foecep
139. Orbit retractor with muscle hook
140. Jaeger Lid plate
141. Stallard Ptosis plate broad
142. stallard Ptosis plate narrow
143. Swiss advancement forcep Right
144. Swiss advancement foecep Left
145. Berke ptosis multi curved shaft 20mm
146. Berke ptosis multi curved shaft 27mm
147. Snellen Entropin forceps Right
148. Snellen Entropin forceps Left
149. Knapp Strabismus scissor Straight round blunt tip
150. Knapp Strabismus scissor Curved round blunt tip
151. Graefe Strabismus hook 10.5mm
152. Graefe Strabismus hook 8mm
153. Chavasse strabismus hook curved shaft

Schedule II

II.1 O.T .TABLE

It should satisfy following Specifications

1. Suitable for ophthalmic surgery
2. Motorized
3. It should have Head rest and wrist support.
4. Maximum height : 900 mm approx.
5. Minimum Height : 580 mm approx.
6. It should have height adjustment facility. The approximate range for Height adjustment should be 300 mm.
7. Length : 1900 mm approx.
8. Width : 700 mm approx.
9. Trendelenberg : 28 degree approx.
10. Reverse Trendelenberg : 15 degree approx.
11. It should have facility for instrument tray.

II.2 O.T .LIGHT

1. The light should comprise of 2 units,
    i. one major which should have output between 120 k lux and 160 k lux
    ii. One minor which should have output between 80 k lux and 100 k lux.
2. Each unit should have a central light bulb.
3. Should have a facility of continuous brightness adjustment.
4. Should be shadow free.
5. It should be multiple or single reflector Prismatic or Optical Block based system.
6. Should have provision of direct recording & display of operating field via an auto focus, motor driven zoom lens, with digital video camera with high definition resolution recordable on hard drive/ DVD/ Mini DV tapes. Preferably mounted into the sterilizeable handle.
7. All cables should be through the central supporting pillar/column of light.
8. Should have dichroic mirrors and KG type glass filter for better thermal filtration so that the light on the incident area is free from thermal properties and cold.
9. Bulbs should should be of standard Quartz Halogen 12/24 V ;50,75,100,150 Watts 2 pin base. Nonstandard bulb with special f product which is using proprietary items such as bulbs with special pins or wings with clips or base should not be considered because of non-availability of such items in the market.
10. Changing of bulbs should be easy with no tools or with very simple tools like screw drivers only and bulb base mounting should be independent of the sterilizable handles.
11. Changing of bulbs should not take more than 3-5 minutes.
12. The increase in the ambient temp of the room with the lights on should not be more than 3-5 degrees centigrade.
13. The light should be easily maneuverable and should have a swivel radius of at least 150 cms and height adjustment of at least 100 cms
14. The optimum colour temperature of the light should be between 3400-4200 Kelvin, with colour rendering index of at least 90%
15. Each unit should provide a pre-focused beam of light with at least 50 cms depth of field.
16. It should be a cool light and should not interfere with the laminar air flow system. The absorption of infrared radiation should be more than 95% and infrared radiation to feet at 100000 lux should be less than 35 w /sq meter
17. Each unit should have quartz halogen lamp of average life of 1000 hours
18. 25 numbers of spare bulbs should be included
19. The light should have 360 degree turning radius with unbreakable head Glass.
20. Light should have battery back up automatic switch over facility

21 The handle should be Autoclavable & detachable.

22 Shall meet IEC-60601-1-2 :2001(Or Equivalent BIS) General Requirements of Safety for Electromagnetic Compatibility. Or should comply with 89/366/EEC; EMC-directive.

23 The unit shall be capable of being stored continuously in ambient temperature of 0 -50deg C and relative humidity of 15-90%

24 The unit shall be capable of operating continuously in ambient temperature of 10 -40deg C and relative humidity of 15-90%

25 It should be fitted with appropriate Indian plugs and sockets.

26 It should have Suitable Servo controlled Stabilizer

27 It should conforms to standards for electrical safety IEC-60601-1 General Requirements

28 It should supply with User/Technical/Maintenance manuals in English.

29 It should be supplied with Certificate of calibration and inspection.

30 List of important spare parts and accessories with their part number and costing should beattached.

31 Log book with instructions for daily, weekly, monthly and quarterly maintenance checklist should be attached. The job description of the hospital technician and company service engineer should be clearly spelt out.

32 List of Equipments available for providing calibration and routine Preventive Maintenance Support should be attached, as per manufacturer documentation in service/technical manual.

Schedule III

III.1 BOYLE'S APPARATUS

1. Boyle's Apparatus should have rigid steel structure with four antistatic castors wheels having front with brakes.
2. It should have Appro. (10") long rotating bobbin flow meters, (rotameters) with colour coded control knobs, calibrated in multiple scales for accurate reading.
3. It should have Oxygen (1st tube)-10 cc/mm to 3.5 liter/min
4. It should have Oxygen (2nd tube)- 3.5 liter/min to 10 liter/min
5. It should have Nitrous oxide (1st tube)- 200 cc/ min to 5 liter/min
6. It should have Nitrous oxide (2nd tube)- 5 liter / min to 12 liter/min
7. It should have Air-100 cc/min to 12 liter/min
8. It should have It should be Gas specific, gas blocks pin indexed yokes, two each for oxygen & nitrous oxide & one for air suitable for pin- indexed cylinder. The equipment shall also have attachment for connection of compressed air.
9. It should be Fitted with pressure gauges 100 mm diameter mounted on O2 and N2O cylinder (2 each) for clear visibility.
10. It should have Vaporizer for ether, penlon type with graduated jar with mounted selectatec. There should be Temperature compensated vaporizer for halothane/isoflourine {optional}
11. It should be Fitted with regulators and non return cum pressure release valves for gases.
12. It should have Two Numbers oxygen pneumatic power outlets operating at 50 psi to operate ventilator.
13. It should have Extended rear platform for mounting two nos additional 10 litre water capacity cylinders.
14. It should have Patient circuit to include elephantine tubing reservoirs bag, connections for changeover from open to closed circuit and vice versa.
15. It should have Top tray for monitoring equipment
16. It should have Drawer for keeping instruments.
17. In other respects the equipment shall comply with IS-11378-1985.
18. It should have adjustable pressure limiting valve, breathing circuit pressure measuring device.

19. It should have a bag/ventilator selecting valve integrated onto the absorber.
20. It should be suitable to use low flow techniques - Facility to attach oxygen sensor.
21. It should have CO2 absorbent Dual chamber canister
22. It should have Automatic cutoff of nitrous oxide in case of oxygen supply {nitro lock system}falls.
23. It should have Pneumatic device with audible alarm mechanical (not electrical) when oxygen supply falls to 10-15 psi.
24. It should have Hypoxic safety device to ensure that the patient is never subjected to pure N2O in flow out doses (shall ensure protection against singular flow of N2O) until a minimum flow of 1 liter-1.5 liter oxygen released.
25. Unit shall incorporate optional oxygen analyzer (oxygen concentration level indicator).
26. The Regulator and Yoke should force with S.S fittings.
27. The machine should have 3 inlets for O2 and N2O
28. It should have 2 oxygen outlets{optional}
29. There should at least one operating pressure gauge for O2 and N2O separately.
30. The operating pressure should be 4.22 kgf/sq.cm +/-0.5%
31. There shall be provision of adequate supply of oxygen to the patient even if the flow meter knobs are fully turned off.
32. Unit shall conform to relevant safety standards and general safety standards as per IS-8607.

Schedule IV

IV.1 MULTIPARA MONITOR

1. Compact portable, suitable for all patient categories, i.e. adults,paediatric and infants.
2. Parameters monitored: ECG, HR, Respiration rate, SpO2, NIBP and temperature.
3. Display: colour TFT, approx 10.1 inch and above, 4-channel.
4. Soft touch keys, durable and easy to clean .
5. Measurements, ranges:
6. ECG: I, II, III
7. HR: approx 30 to 250 bpm <3 bpm>
8. NIBP: approx 20 to 290 mmHg (systolic) <1 mmHg>
9. SpO2: approx 40 to 100 % <1%>
10. ECG div. respiration: approx 6 to 180 bpm <1 bpm>
11. Temperature: approx 10 to 45 degree Celsius< 0.1 degree Celsius>
12. NIBP oscillometric step deflation, manual/automatic, initial inflation pressure user selectable
13. Sweep, adjustable: 12.5, 25 or 50 mm/s
14. Sensitivity (amplitude) of all signals user adjustable
15. Standardising voltage marker, 1 mV
16. User preset of high/low alarms on all monitored parameters
17. Audio visual alarm in case measurements are outside preset range
18. Silencing feature for audio alarms
19. Trend display from 2 to 24 hours
20. RS232 serial data output provision (peripheral printer or network), analogue output for ECG
21. Defibrillator sync and protection
22. Pacemaker detection/rejection
23. Display reports system errors, leads and sensors failure and built-in battery status
24. Unit can be mounted on standard bed/wall rail or mobile pole/stand.
25. Automatic switch from mains to batteries in case of power failure
26. Monitor: constructed of durable shock proof plastic
27. Power requirements: 220 V / 50 Hz (with adapter) or internal re-chargeable batteries (autonomy approx 3 hrs, automatic recharge)

28. Battery backup minimum 2 hrs.

It should Supplied with following accessories:

1. 3 x cuff hose infant
2. 2 x sets of 5 neonate BP cuffs (No 1 (3.1-5.7 cm), No 2 (4.3-8 cm), No 3 (5.8-10.9), No 4 (7.1-13.1cm), No 5 (9.6-14.3 cm)
3. 1 x patient cable
4. 1 x box neonatal ECG-electrodes (200 sets of 3 electrodes, chest and/or extremities, diameter approx 22mm, ultra soft gel, self adhesive)
5. 2 x skin temperature transducers
6. 2 x reusable SpO2 sensors neonate, clip-on type (including connection cable)
7. 10 x reusable SpO2 sensors neonate, wrap around type (including connection cable)
8. 1 x spare rechargeable battery
9. 1 x spare set of fuse

IV.2 DEFIBRILLATOR (Bi-Phasic)

1. Should be a Low Energy Biphasic defibrillator monitor with Recorder, having capability to arrest all arrhythmia within a maximum energy of 360 Joules.
2. Should work on Manual and Automated mode.
3. Should monitor ECG through paddles, pads and monitoring electrodes and Defibrillate through pads and paddles.
4. Should compensate for body impedance for a range of 25 to 1500hms. 4
5. Should be capable of doing synchronized cardioversion.
6. Should have a built in 50mm strip printer.
7. Should have charging time of less than 5 seconds for maximum energy.
8. Should have bright electroluminescent display for viewing messages and ECG waveform of 4 seconds.
9. Should have external paddles with paddles contact indicator – for good paddle contact. Both Adult and pediatric paddles should be available.
10. Should have event summary facility for recording and printing at least 250 events and 50 waveforms.
11. Should have facility to store patient data in internal memory and on data card typically more than 90 minutes of patient ECG &events.
12. Should have a battery capable of usage for at least 90minutes or 40 discharges.
13. Should be capable of printing Reports on Event summary, configuration, self test, battery capacity etc.
14. Should have facility for self test/check before usage and set up function.
15. Should have SP02 and non invasive pacing facility.
16. Should be capable of delivering energy in increments of 1-2 joules up to 30J and increments of maximum 50J thereafter.

Vital Sign Monitor

17. Monitor should be able to monitor ECG (5 leads). NIBP, Pulse Oximeter, Body Temperature and Respiration.
18. Monitor should preferably have colour display and should display at least two traces of different Colours.
19. Should have trend and listing facility for all parameters.
20. Alarms should be audio-visual and should have automatic and manual alarm setting for all parameters. Should display alphanumeric alarm messages.
21. Monitor should have inbuilt battery and inbuilt 1 channel thermal recorder.
22. Should have 5 leads ECG (I, II, III, AVR, AVL, AVF and V)
23. Should measure NIBP from Neonates to adults. Should be supplied with cuffs for neonates, pediatrics and adults.
24. Should have the facility to record BP when there are rapid circulation changes between the cuff interval measurements.
25. Should also display the trend of circulation changes over a period of time.
26. Should have an indicator displaying on screen the increase / decrease in circulation status and also the normal /Alarming range.
27. Should be capable of Measuring Oxygen Saturation even in case of Motion Artifact.
28. Should have selectable cuff interval from 1min. up to 3 hours.
29. Should have cuff measurements ending time.

30. Monitor should automatically measure the BP on any alarm condition.
31. Should display the waveform graph and pulse bar graph.
32. SpO2 should be ECG synchronized.
33. Should have change in pulse tone with rate.
34. Should be user friendly.

IV.3 ECG MACHINE

1. Digital recorder of rest Electro Cardio Gram (ECG)
2. Records 12 standard leads simultaneous: aVR, aVL and aVF, I, II, III and V1-6 pre-cordials.
3. Automatic and manual printout mode
4. Internal memory for data storage
5. Splash-resistant alphanumeric keyboard and direct function keys
6. Reset zeroing, auto-base-line correction (0.5 Hz) and 1mV test
7. Electrode connection quality check
8. Filter setting for line-frequency (50 or 60 Hz) and tremor
9. Large back-lit LCD displays recorded data and failure announcements: ECG-curves, leads, heart rate, patient name and ID, electrode control, clock, leads, speed and filter setting
10. Integrated high-resolution 300 dpi thermal printer, width 210 mm
11. Print-out, folded thermo-reactive paper, format A4
12. Number of channels, selectable: 3, 6 or 12
13. Standard combination of channels or manually selectable
14. Paper speed, selectable: 5, 25 and 50 mm/sec
15. Sensitivity, automatic or selectable: 5, 10 and 20 mm/mV
16. Copy function
17. Built-in batteries and charging unit
18. When fully charged, the battery gives approx. 50 readings
19. Power requirements: 220 V / 50 Hz (with adapter) or internal re-chargeable batteries (autonomy approx 6 hrs, automatic recharge)
20. Supplied with:
    i. 1 x patient cable
    ii. 6 x suction ball-type chest electrodes, reusable
    iii. 4 x extremity clamp electrodes, reusable
    iv. 1 x bottle of gel for electrodes
    v. 1 x box of recording paper
    vi. 1 x box ECG-electrodes (200 sets of 3 electrodes, chest and/or extremities, diameter approx 22mm, ultra soft gel, self adhesive)
    vii. 1 x spare set of fuses

Schedule V

V.1 PULSE OXI-METER

1. Oximeter must have the provision for all 3 types of probes connection i.e. finger, toe or ear for both adult as well as pediatric and neonates.
2. It must have provision to use both disposable and reusable probes.

3. The display must indicate the oxygen saturation, heart rate, alarm limits for oxygen saturation and pulse rate, bar graph indicating the pulse amplitude, the plethysmograms and various system messages and error messages.

4. Alarms should be present to indicate the violation of the set pulse limits or set oxygen saturation limits.
5. Unit must also indicate the disconnection of the probe or the poor contact of the probe and the patient, low perfusion, and low battery.

6. It must be compatible with the other equipments like patient monitors, printers etc. for interfacing with them.

7. Unit must be light weight and portable, with a battery back-up of minimum 6 hours.

8. The system should supplied with following

   i. System as specified- 01
   ii. Reusable SPO2: Adult SPO2 sensor with cable- two nos. per monitor, Paediatric and Neonate SPO2 sensors - one no. per monitor.

Schedule VI

VI.1 AUTOMATIC STEAM STERILISER

1. Rectangular, horizontal, double door, high pressure, high vacuum fully automatic and microprocessor based autoclave for sterilizing hospital materials.
2. Double, Jacket Autoclave with latest Product Specific Quality Certification- IS 1/1 nternational.
3. Electrically operated in built compatible electric steam generator with the unit.
4. Temperature adjustable from 121° to 134°C
5. Working pressure range from 15 to 32 psi
6. Sterilization cycles: The autoclave residence time should not be les than 60 minutes if the autoclave operates at the working temperature (inner chamber) of 121°C at a pressure of 15 pounds per square inch (psi) and should be adjustable as per standards at different temperature and pressure.
7. Capacity: Sterilization capacity should be 30-36 cu ft/cycle.
8. Autoclave should be properly equipped with door safety locks, steam traps, pressure gauges and safety valves for chamber and jacket.
9. Autoclave should have insulation jacket with glass wool, covered with aluminum foil.
10. The unit should have integral alarms that ring, flash, or otherwise display information when temperature set-points are exceeded or fall below.
11. Pressure safety valve, over-temperature limiter, anti-scorch limiter, door (lid) interlock, overpressure limiter, current fuse.
12. The unit includes a data logger or chart recorder for monitoring operational history.

13. Integral controls, keypad, and/or display on the panel of the unit. The control panel must document all cycle information including key transition points in the cycle, alarms and deviations that may jeopardize the sterilization process, resulting in inadequate sterilization.

14. The Sterilizer should be supported on a steel stand, appropriately, coated for corrosion protection.
15. Boiler 36 KW (Certified by competent authority in case required), fitted with appropriate safety features and having protective cover should be provided.
16. Electric vacuum pump of appropriate power should be provided.
17. Carriage trolley with at least three SS trays and roller shelves.
18. The firm should provide all piping connections made up of SS required in the installation and should install the machine at the identified site in the Hospital.

VI.2 FLASH STERILIZER

1. It shall guarantee express sterilization of instruments for Operation Theatre at 140 degree centigrade for 7 minutes.
2. Chamber capacity shall be 40 Litres.
3. Chamber temperature shall be 140 Degree Centigrade
4. Chamber shall be fabricated from stainless steel 304 with high quality argon welding.
5. It will have stainless steel 316L racks for easy loading & unloading
6. It will have high vacuum ejector to ensure effective air removal for excellent steam penetration & efficient post sterilization drying.
7. It shall have inbuilt steam generator fabricated from high quality stainless steel with water feeding & pressure control
8. Process Interlock as a safety feature to avoid opening of the door when the process is on
9. Provision of alarm if the door is open during the process.
10. There should be alarm when the water in the chamber is low & there should be process cut off facility when this happens.
11. Equipment shall be microprocessor based automatic system from add water to sterilization & dry cycle.
12. Material of construction shall be Stainless steel S.S 304.

13. System shall have attached thermal printer
14. It will have safety features like temperature control, Overheat protection, Safety valve, Electronic Circuit safety system, Low water indicator, Sterilization complete indicator, Emergency Exhaust Switch, Automatic preheating programme.

VI.3 ETO STERILISER

1. The ETO sterilizer should be of 8 Cubic Feet Capacity.
2. The system should work with 100% ETO .
3. ETO Gas should be provided in Cartridges clearly marked “100% ETO” and should be approved by ‘EPA’, ‘FDA’ and OSHA for safety and quality.
4. Shall be Microprocessor controlled with Digital Printer.
5. Microcomputer shall monitor & control system operations & functions.
6. Sterilizer Should Have A Built In Aerator.
7. Machine should operate at a negative Pressure (of At least Upto 200mm Of Hg) during Operation.
8. Machine Should Operate at Dual Temperature at 37^{o}C and 55^{o}C.
9. Should Operate In 3 Phase: Pre-Conditioning, Exposure, and Aeration.
10. Total Sterilization Cycle Time Not To Exceed 5.75 Hrs for Warm Cycle And 7.75 Hrs for A Cool Cycle.
11. Should Be Provided With An alphanumeric display and Graphical Printer.
12. The system should have a soft touch buttons for operations and programming, flushed to the surface of the system and not rotating knobs.
13. Video Screen Display to Check Cycle Status.
14. Continuous RH Display on Screen for Humidity level inside the chamber.
15. Built In Local Exhaust For Removal Of Residual ETO.
16. System should have a self-diagnosis for errors.
17. Compressor should be included in case there is no provision for Compressed Air Line for the equipment.
18. Standard international safety measure such as locking of door (cannot be opened during operation either by accident or intend by un-authorized personnel) for occupational and Fire hazards.
19. An independent body should certify system for compliance with OSHA Regulation for Safety.
20. Installation to include complete Copper Ducting from the CSSD to the Hospital Building Terrance and to be left 10 Feet beyond in Atmosphere.

21. The tender has to guarantee supply of GAS at least for a period of 10years. Certificate from at least 20 existing users required for satisfactory usage and supply of gas.
22. Detailed cost of consumables, such as gas, indicators, sterilization bags, or any other such items required need to specify clearly.

VI.4 ULTRA SONIC CLEANER

1. Construction: External AISI 304 stainless steel and Internal AISI 304 or AISI 316Ti (20/10)
2. Tank capacity: usable volume of approximately 40 liters. Should allows fitting of instruments up to 600 mm of length.
3. It should have a large stainless steel basket with 6 rubber outlets, to connect tubing of any diameter and plastic stands to hold the instruments.
4. Should have minimum eight ultrasonic transducers with operating frequency from 28-34 KHz placed underneath the tank for an optimum spread of ultrasonic across the whole tank volume, for a effective cleaning of all the instruments in short times
5. Should have minimum eight washing programs, each selectable by a pushbutton, that can be used to wash canulated instruments and non canulatde instruments at the same time. 6) Should have Pause facility for washing programs.
6. Should provide for Water load, water drain and water leveling operations.
7. RS232 printer output with Printer to keep record of performed washing cycles
8. Should have alarm and safety features for water level control, cover closure control, water temperature control, sensor failure control.
9. Cleaning programs parameters should be adjustable as per following::
    i. Time : from 1 to 99 minutes
    ii. Heating: from 20 deg C to 50 deg C
    iii. Water flow: off, linear, pulsed, mixed
    iv. Time parameters according to the selected type of flow
10. Automatic water drain after selected number of cycles (from 1 to 99) or function excluded.
11. The control panel should have the following::
    i. LCD alphanumerical display 4 rows x 20 columns

ii. 16 keys control keyboard

iii. Water level (min, max, over) and cover closure light indicators

12. Should be able to work on 230V/50 Hz Electric Power Supply
13. Should be provided with transparent Lid/cover.

VI.5 DRYING CABINET

1. Chamber volume approximately 600 litres-1000 litre
2. Sound and heat insulated double walls of the cabinet should made of AIS304 stainless steel.
3. Single left hinged door.
4. There should be a microprocessor controlled panel. The system should provide three programs with varying duration with upto five program stations.
5. Should provide for temperature adjustment up to +90 deg C and time regulation 1to 99 mins or continuous.
6. The panel should have Integrated digital thermometer and phase indicators and program start switch with autometer end after particular fixes time by operator and CD displayed.
7. Power supply- Should operate on three phase supply 400v,3N, 16A
8. Heating effect should be greater than 5 KW
9. Air discharge volume should be more than 25 Litres per minute.
10. System should be complete with high quality air filter, ventilation connection sleeve,
11. Should be vertical system and should occupy not more than 1 sq. meter of floor space.
12. Should have adjustable feet for uneven surfaces.
13. Rails to support upto eight wire shelves.
14. The following accessories should be supplied with the system:
    i. 5removable wire shelves.
    ii. Holder shelf for app 30 long anesthesia hoses
    iii. 2 hose cassettes for 6+6 hoses
15. Price for additional wire shelf for future should be made available.
16.

VI.6 FUMIGATION MACHINE

1. Multipurpose, heavy-duty portable fumigation machine capable of producing aerosols with particle size of less then 5 microns, for use in critical and semi critical areas of hospital.
2. Body should be compact, durable, leak proof and made of stainless steel /heavy duty plastic. The blower head should be rust proof and deliver aerosols uniformly.
3. Machine should be compatible with all disinfectant solutions containing silver nitrate, hydrogen peroxide in usual concentration. Machine should be compatible with maximum Ph range (both acid and alkali).
4. The tank capacity should be 4-6 liters, with easy cleaning facility.
5. The machine should operate on 220 +/- 10 volts, 50 Hz, single phase, A.C supply commonly used in Indian conditions.
6. The discharge rate should not be less than 1Liter/25 minutes.
7. The tank capacity, discharge rate and timer on the machine should be so that the disinfectant should be able to disinfect 4000-5000 cubic feet in one cycle of 2 hours (max).
8. The equipment should be of good quality and conform to national/international standards.
9. Machine should be user friendly and have safety features.
10. Cable should be at least 5 meters in length, ISI marked.
11. Company should be able to demonstrate and train users on proper usage of the fumigation machine in the user areas.

SCHEDULE VII

VII.1 SEALING MACHINE: PLAIN SEALER

1. Smooth easy cleaning surfaces
2. Ergonomic handling with anti fatigue movement 3.
3. Should have automatic sealing indicator
4. Quick sealing time with sealing width of 12mm
5. Should be microprocessor controlled and with constant temperature 6.
6. Should be provided with roll stand
7. It should be a table top system
8. Should work on 230V, 50 Hz electric power supply.
9. Compact system with app 50cm x 20cm x 40cm (±2cm)

Schedule VIII

VIII.1 SUCTION MACHINE (Electrical)

1. High vacuum suction unit run on electricity.
2. It should be mobile unit
3. With two suction jars of approx 3 liters capacity each.
4. Auto cut off device for preventing entry of fluid in pump.
5. Fast and efficient jar change facility.
6. Easy access and control
7. It should be heavy duty and noiseless.
8. Should be able to create desired maximum vacuum in- least possible time.
9. One plastic suction jar cover, steam sterilisable to be provided extra.
10. Two extra suction jars (Plastic) of capacity 3 liters should be quoted with accessories like lid, tubing etc.

VIII.2 SUCTION APPARATUS { FOOT OPERATING}

1. High vacuum suction unit run on manual (foot)
2. With two suction jars of approx 1 and 1 liters capacity each.
3. Auto cut off device for preventing entry of fluid in pump.
4. Fast and efficient jar change facility.
5. Easy access and control
6. It should be portable
7. Should be able to create desired maximum vacuum in- least possible time.
8. One plastic suction jar cover, steam sterilisable to be provided extra.
9. Two extra suction jars (Plastic) of capacity 1 and 1 liters should be quoted with accessories like lid, tubing etc.

Schedule IX

IX.1 SORTING TABLE / TABLE UTILITY WITH SS TOP

1. It should have size approx 1200 x 650 x 900 mm (LxWxH)
2. The top will be of S.S. 304 grade, 16 SWG sheet
3. It will have one under shelf of S.S. 304; 18 SWG sheet
4. Legs frame will be of 40 x 40 mm square pipe, 16SWG
5. It will also have adjustable bullets for legs
6. The corners will be smooth rounded so that there are no sharp edges
7. The welding will be with TIG argon arc, smooth finished and polished with mat finish

IX.2 CLEAN UP COUNTER (WASH STATION) WITH DOUBLE SINK, ONE MIDDLE PLATFORM AND FLASH BACK

1. It should have approximate size 2000 x 650 x 900 mm LxWxH
2. Top will be from S.S. 304 grade sheet, 16 SWG
3. The sinks will be made of S.S. 304; 16 SWG with inside ground and polished

4. The legs will be of S.S. 304 square pipe 40 x 40 mm; 16 SWG and will also have nylon bullets for adjustment
5. The corners will be rounded and the bottom pitched to the drain
6. A sink of adequate size as per lay out at the site of installation should be provided along with provision of manual tap for hot and cold water.
7. Each sink will be provided with a provision for drain.
8. The welding will be with TIG Argon arc, fine polished and finally with mat finish

IX.3 CLEAN UP COUNTER (WASH STATION) WITH ONE SINK, ONE PLATFORM AND FLASH BACK

1. It should have approximate size 1500 x 650 x 900 mm LxWxH
2. Top will be from S.S. 304 grade sheet, 16 SWG
3. The sink will be made of S.S. 304; 16 SWG with inside ground and polished
4. The legs will be of S.S. 304 square pipe 40 x 40 mm; 16 SWG and will also have nylon bullets for adjustment
5. The corners will be rounded and the bottom pitched to the drain
6. A sink of adequate size as per lay out at the site of installation should be provided along with provision of manual tap for hot and cold water.
7. Each sink will be provided with a provision for drain.
8. The welding will be with TIG Argon arc, fine polished and finally with mat finish

IX.4 WORK TABLE / TABLE UTILITY WITH SS TOP

1. It should have approximate size 1800 x 650 x 900 mm LxWxH
2. The top will be of S.S. 304 grade, 16 SWG sheet
3. It will have one under shelf of S.S. 304; 18 SWG sheet

4. Legs frame will be of 40 x 40 mm square pipe, 16SWG
5. It will also have adjustable bullets for legs
6. The corners will be smooth rounded so that there are no sharp edges
7. The welding will be with TIG argon arc, smooth finished and polished with mat finish

IX.5 TABLE TROLLEY WITH ONE UNDER SHELF

1. It should have approximate size 900 x 600 x 850 mm LxWxH
2. The top will be of S.S. 304 grade sheet 18 SWG
3. The top railing at 3 sides and bottom railing at 4 sides will be of S.S. 304; 8 mm rod
4. It will have one undershelf of S.S. 304; 18 SWG
5. The legs will be of 25 x 25 mm S.S. 304 grade square pipe, 16 SWG
6. The welding will be of argon arc, smooth finished and polished with mat finish
7. It will also have 5" size castor wheels (4 Nos.); swiveling type - 2 Nos. with brakes and 2 Nos. without brakes

IX.6 GAUZE CUTTING MACHINE

1. Work width: 90cm to 240
2. 6 pairs of knives (Upper one is to crash the thread, Lower one is to cut-off the thread, as a result there will be no outside threads on the cutting area. In other words, the edge is clean)
3. Minimum Cutting Tolerance: 5cm.
4. Capacity: 70 to 120 meters per Minute (Speed Adjustable by Frequency converter)
5. Pneumatic Air Shaft with Measuring Ruler for Winding.

IX.7 LINEN FOLD TABLE

1. It should have approximate size 2000 x 800 x 900 mm LxWxH
2. The top will be of S.S. 304 grade, 16 SWG sheet

3. Legs frame will be of 40 x 40 mm square pipe, 16SWG
4. It will also have adjustable bullets for legs
5. The corners will be smooth rounded so that there are no sharp edges
6. The welding will be with TIG argon arc, smooth finished and polished with mat finish

IX.8 PREPARATION AND PACKING TABLE WITH 2 OVERHEAD SHELVES AND 1 DRAWER

1. It should have approximate size 1800 x 800 x 900 mm LxWxH
2. The top will be of S.S. 304 grade sheet, 16 SWG
3. The legs will be of S.S. 304 square pipe, 40 x 40 mm; 16 SWG and will also have nylon bullets for adjustment
4. The two overhead shelves as per industry standard with vertical frame will be mounted on top of the table
5. There will be one drawer on the right hand side 360x400x200 mm
6. Telescopic channels will be provided for drawer
7. The welding will be with TIG Argon arc, fine polished and finally with mat finish

IX.9 CLOSED TRANSPORT TROLLEY WITH 2 DOOR SHUTTERS AND 3 COMPARTMENTS

1. It should have approximate size 850 x 750 x 1150 mm LxWxH
2. The complete trolley will be made of S.S. 304 grade, 18 SWG sheet
3. It will have 2 door shutters
4. The handle will be of S.S. 304; 1" pipe
5. Railing will be provided on top at three sides
6. The welding will be of argon arc with mat finish
7. It will also have 4" size castor wheels (4 Nos.); swiveling type - 2 Nos. with brakes and 2 Nos. without brakes

IX.10 INSTRUMENT TRAYS - PERFORATED TYPE WITH HANDLE

1. It should have approximate size 375 x 275 x 75 mm LxWxH
2. The trays will be made of S.S. 316 L grade perforated sheet, 18 SWG
3. It will be with 2 Nos. handle
4. All the joints will be TIG welded, seamless finish, fine polished and finally finished with electro polish

Schedule X

X.1 PATIENT TRANSFER TROLLEY

1. Should have a Single sectional mattress base made of X-Ray translucent high pressure laminate
2. Should have the facility to take X Rays from positions along the entire length of the trolley and from almost all the entire width of the trolley.
3. Mattress should be made of durable lectrolite material, should be antistatic, and should be secured with self-adhesive straps.
4. Should have central braking system with steering facility.
5. It should have mannaul step less foot section adjustment.
6. Frame should be made up of epoxy coated.
7. Should have bumpers at all the four corners of the trolley.
8. Should have facility to fix IV rods at all the four corners and middle of mattress base frame.
9. Should have place for fixing accessories.
10. Should have place for fixing 'B' Type Oxygen Cylinder.
11. Should be supplied with standard accessories such as

    i. Anti static Hygienic Mattress (80mm) with pull straps, 01 pc
    ii. Collapsible Side Rails, 01 pair
    iii. I.V. Rod 02 pc
    iv. Cylinder Holder for 'B' Type Oxygen Cylinder. 01 pc

12. Dimensions

i.	Max. Length	:	2000-2100 mm
ii.	Max. Width	:	730-750 mm
iii.	Height	:	535 – 905 mm

X.2 SEMI FOWLER BED DELUXE WITH CASTORS AND SALINE ROD

1. Overall Size: - 2195 mm L X 910 mm W X 590 mm H (Approx.).
2. Suitable for Mattress Size: - 1980 mm L X 910 mm W (Approx.).

   Construction: -
3. The Bed frame should be made up of 60mm X 30mm Rectangular CRCA 18G tube, with four sleeves of diameter 40 mm & 3 mm thick, 75 mm long welded at four corners.
4. CRCA rectangular tubes 25 mm X 25 mm X 18 G should be welded to the main frame to support backrest frame.
5. Backrest should be made up of 25.4 mm diameter X 16G CRCA tube and 18G sheet & should be adjusted by screw mechanism with stainless steel folding handle.
6. Stainless steel bows of 31.75 mm diameter pipe and equal height of 280 mm fixed with colored metal panel on both sides with embossing.
7. Fix panel should be made up of 18G CRCA sheet double press bend on four sides and uniformly embossed holes from 25mm to 15mm dia and embossing depth of 4mm in four rows distance between holes should be 125mm.
8. Panel is supported by a box stiffener of 100 mm width along the length duly spot-welded.
9. Panel should be supported on three no's 25 mm X 25mm X 3 mm thick angle and 30mm x 60mm x 50mm L, five no's pipe welded to main frame.
10. Off set Leg's should be made up of 31.75 mm diameter and 535 mm long pipe welded to 37 mm X 37 mm X 3 mm thick X 150 mm long angle, outer side of angle should have 25 mm X 45deg chamfer.
11. 125 mm Dia heavy-duty castors should be provided two with brakes.

12. Four-flush I.V. Rod locations with S.S. Saline Rod of 12 mm & arrangement to hold mosquito curtain poles.

Finish:

13. All components should be pretreated in separate eight-tank process for better finish, good adhesion and corrosion protection.
14. Process includes Hot Degreasing, Derusting, Activation, Phosphating & No's of Water rinses as per IS 3618 - 1966 class 'C' type and then pretreated materials is coated with epoxym powder with film thickness of 60 microns (approx.) and then oven baked at 180 degree centigrade

X.3 BED SIDE LOCKER

1. Length- 444 - 405 mm, width 400 - 405mm. Height- 810 - 820 mm. the outside diameter of the legs of the locker should be 25.4 mm and thickness of 1.22 mm. Thickness of top should be 1 mm S.S sheet of 20 G is bent: edge beaded and superimposed of M.S. top.
2. Top should be double pressed bent and neatly welded in grid at four corners. It should be superimposed with press bent stainless steel top. This top should have back and both sides bent upward for acting as guardrail and the front side should be bent downward. Top edge of the lockers should be bent and pressed to 180 degree to prevent sharp edge. Legs of the lockers are welded to then top and the locker cabinet after holding legs right angle to top and cabinet.
3. Cabinet-Top and sides- the top and sides of the cabinet should be made from 1 piece of steel sheet. It should be welded with the back and the bottom, which are also made from press bent sheets.
4. Doors- Door of the cabinets should be made from CRCA Sheet of 1 mm thickness press bent to required size. Door should be pivoted to the cabinet at top and bottom, flushed with the front of the cabinet when it is closed. Top and bottom of the pivots should be acting as the hinges to allow door to swing to maximum to 120 degree.
5. Knob- the door should be riveted with chrome plated brass knob which should have the latch carn, by turning knob the door can be locked.
6. The material used should be as follows- Frame work of 25.4 mm Dia x 1.22 mm thickness ERW steel tubes. Top should be made from 1 mm thickness CRCA sheet conforming to IS- 513 –D superimposed stainless steel top is of stainless steel conforming IS-6911-1972. Shoes made from hard rubber of uniform texture and chemically inactive to the action of mild acids. The normal height of the shoe should be 40 mm . shoes should be reinforced with M.S washers from inside at the time of moulding.

All components should be epoxy coated 50 micron

X.4 I.V. STAND

1. Overall approx. size : height :-136 to 244 cm (with adjustable height)
2. Main Frame : Strong & Sturdy five legged neatly made base mounted on five 2.5cm dia swiveling ball castors of good quality S.S. double hocked I.V. rod & S.S. tube spring loaded.

X.5 OVER BED TABLE (HEIGHT ADJUSTABLE)

1. Size: Stainless Steel Top 760 mm L x 360 mm W50mm x 25mm
2. MS tubular telescopic stem with geared Stainless Steel handle for height adjustment from 75 mm to 1050 mm.
3. MS rectangular tubular base is mounted on four castors of 50 mm diameter.
4. Finish: All components should be pretreated in separate eight-tank process for better finish, good adhesion and corrosion protection.
5. Process includes
    i. Hot Degreasing,
    ii. De rusting,
    iii. Activation,
    iv. Phosphating & No's of Water rinses as per IS 3618 - 1966 class 'C' type and then pretreated materials is coated with epoxypowder with film thickness of 60 microns (approx.) and then oven baked at 180 degree centigrade.

X.6 WHEEL CHAIR

1. Overall Width: 24” or 61cms
2. Foldable width: 11 ½” or 29.5cms
3. Width of Seat: 17 1/24” or 44cms
4. Depth of seat: 16” or 41cms
5. Height of seat from floor: 18” or 47cms
6. Overall length: 42” or 107cms
7. Dimensions +- ½” or 12mm
8. Double ball bearings ensure smooth rolling swinging detachable adjustable footrests positive lock toggle brakes.
9. Strong construction for convenient handling
10. Electro statically applied powder coating

X.7 REVOLVING STOOL (STAINLESS STEEL) WITH BACKREST

Overall Approx size:

1. Top 300 mm Dia with height adjustable 510mm to 710 mm

Construction:

2. Top should be made up of Stainless Steel & edges duly fold.
3. Base should be made up of five Horizontal supports of 25mm x 50 mm x 1mm thick rectangular tubes and the vertical members should be made up of 50 mm Dia x 1.2 mm thick stainless steel Tubes.
4. In the base square treated screw of 25 mm dia and nut should be fitted.
5. The nut should have grease pocket to hold the grease.
6. The round Stainless Steel Top should be riveted on rin made up of 20mm x 3mm MS flat & the cross made up of 25 mm x 25mm square tubes.
7. It should be fitted with stainless steel back support.
8. The ring made up of 12.5 mm dia Stainless Steel tube should be fitted on the base to support the legs.

9. The stool should be fitted with heavy duty Rubber at the base.

X.8 MEDICINE TROLLEY

1. Overall approx. size: 960 mm (L) x 500 mm (W) x 1545
2. SS tubular frame.
3. Six coloured removable bins and two polystrene lockable storage units with three drawers have each.
4. The top drawers have containers of different size.
5. Four swivel castors, 125 mm dia., two with brake
6. Complete with corner buffers, powder coated oxygen cylinder holder, SS IV rod and SS shelves.

X.9 INSTRUMENT TROLLEY

1. Constructed all from 18/10 stainless steel .
2. Frame from stainless steel tubes
3. Shelves are two (2) from 18/10 stainless steel
4. Mobile on four (4) castors , 10 cm diameter , electrically conductive
5. Dimensions :
6. Table top 60 x 70 cm
7. Height 85 cm.

X .10 SINGLE STEP STOOL

280mm step height and size approx 460 mm L x 300 mm W MS tubular construction with 18 g CRCA sheet.

Step super imposed by aluminum chucked plate & legs fitted with rubber feet.

Finish:

All components should be pretreated in separate eight tank process for better finish, good adhesion and corrosion protection.

Process includes Hot Degreasing, Derusting, Activation, Phosphating & No's of Water rinses as per IS 3618 - 1966 class 'C' type and then pretreated materials is coated with epoxy powder with film thickness of 60 microns (approx.) and then oven baked at 180 degree centigrade.