

ENT  
312  
23/9/16

DEPARTMENT OF ENT  
RAJENDRA INSTITUTE OF MEDICAL SCIENCES, RANCHI

List & Specification of Equipments are Enclosed herewith.

Sl. No	Description
1	Cadaver Dissection Sets
2	Image Guided Navigation System
3	Cochlear Implant Instrument Set
4	Transport Stretcher
5	CO2 Laser
6	Endoscopic Ear Surgery Set
7	Video Exoscope
8	Laser Laryngoscopy Set
9	Virtual Reality Simulator System
10	Operating Microscope
11	Coblator
12	ABR with ASSR
13	Impedance Audiometry
14	OAE
15	Pure Tone Audiometry
16	Temporal Bone Dissection Lab

17. Intra Operative Nerve Monitoring Systems.  
18. Micro Debrider system.

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### CADAVER DISSECTION SET SPECIFICATION

Wide Angle Straight Forward Telescope 0°, enlarged view, diameter 4 mm, length 18 cm, autoclavable, fiber optic light transmission incorporated, color code: green	1
Wide Angle Forward-Oblique Telescope 30°, enlarged view, diameter 4 mm, length 18 cm, autoclavable, fiber optic light transmission incorporated, color code: red	1
Telescope Handle, round, standard model, length 11 cm, for use with Telescope 30°-120° with diameter 4 mm and length 18 cm	1
Nasal Forceps, straight, size 1, with cleaning connector, working length 13 cm	1
Nasal Forceps, 45° upturned, size 1, with cleaning connector, working length 13 cm	1
Nasal Forceps, straight, through-cutting, tissue-sparing, BLAKESLEY shape, size 1, width 3.5 mm, with cleaning connector, working length 13 cm	1
Antrum Punch, backward cutting, sheath 360° rotatable, with fixing screw, working length 10 cm, take apart sheath, for use with cleaning adaptor	1
FREER Elevator, double-ended, semisharp and blunt, length 20 cm	1
Sickle Knife, pointed, length 19 cm	1
Frontal Sinus Curette, 55° curved, oval, forward cutting, length 19 cm	1
Probe, double-ended, maxillary sinus ostium seeker, ball-shaped ends diameter 1.2 and 2 mm, length 19 cm	1

### Combined/ Compact video endoscopy system with LED light Source & Monitor Module

The system should be **Comprehensive, multifunctional and compact video processor with Camera Head, integrated LED light source & 15" monitor.**

The powerful all-in-one unit should consist of everything needed for endoscopic imaging, Video recording, and viewing of saved Videos, the monitor, camera, and light source.

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It should have USB ports and a SD card slot for documentation purpose.

## DISPLAY:

Crystal clear display

- 15" LCD display
- LED backlight display technology for extended service life, enhanced image brightness and reduced power consumption
- Image rotation
- 24 bit color depth for lifelike color display
- DVI video output for brilliant transmission quality

## LED Light Source:

- High-performance LED light source: Light output similar to Power LED
- Color temperature of 6000 K - similar to daylight - guarantees color fidelity
- Long lamp life - with an average lamp life of 30,000 hours - Cost Effective
- **Should be compatible with chip-on-tip video endoscopes also.**

## Flexible storage options:

- SD slot for high storage capacity
- USB ports for external hard drives and USB sticks

## Easy, extremely reliable control:

- Membrane keyboard included, suitable for wipe-down disinfection
- Hot keys for rapid and direct manipulation
- Arrow buttons for intuitive control
- Connection socket for pedal control without lag time

## FIBER OPTIC LIGHT CABLE

Fiber Optic Light Cable, with straight connector, diameter 3.5 mm, length 230 cm

ALL THE ITEMS SHOULD BE FDA APPROVED AND FROM A SINGLE MANUFACTURING COMPANY.

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## Tender Technical Specifications for Image Guided Navigation System

### 1. Navigation System for ENT :

- \* The system should be computer based on standard Optical / Electromagnetic software based operating system.
- \* It should be ergonomic, portable, light weight, space saving and with high performance.
- \* It should have mobile cart with camera stand for flexible positioning / Emitter.
- \* The system should be plug n play with user friendly system software to control set up, registration and navigation.
- \* It should be capable of performing registration in less than three minutes.
- \* The system must have dynamic referencing so that registration is not lost even if camera or patient moves.
- \* It should have total surgical control in sterile field on a fingertip with a touch screen monitor / or optical mouse.
- \* It should have provision of Rapid data transfer directly to the navigation station with the option of CD-RW / DVD-ROM combo-drive and USB 2.0 port for direct data import as well.
- \* Should be connectable with OT monitor with appropriate cable.
- \* The navigation system should be operable with or without keyboard and mouse
- \* The ENT Software should be versatile and should support Functional Endoscopic Sinus Surgery (FESS) procedure, complex cases such as Coronal flaps and Lateral Skull base procedures.
- \* The system should be supplied with patient tracker and Custom sterilization tray, which should be autoclavable / reusable.

### 2. General Software / Application Specifications :

- a. The system should have complete ENT and skull base surgery, navigation and its application package.
- b. Display of a predefined trajectory pathway in inline and probe views. The software fuses axial, coronal and sagittal image sets of different modalities (CT & MRI). The fusion of CT and MRI should be inbuilt with the system. Any upgradation of software to be done on FOC for a period of 5 years onsite at the Hospital. The treatment planning software should have functions to outline structures. It should have universal instrument adapters with markers to allow tracking of any existing hospital instruments like drills, bipolar, knife, probe, microdebrider and endoscope. Calibration of existing instruments should be done automatically.
- c. All the instruments, tracker / marker should preferably be Autoclavable.
  1. Registration probe.
  2. Straight probe.
  3. Straight suction.
  4. 70 degree curved suction.
  5. 90 degree curved suction.
  6. Osteum Seeker
  7. Sterilisation tray.

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8. Head frame-kit tracker, pad, adhesive, FESS tractor, head frame / equivalent technology.
9. The virtual tip should be differentiated from real tip by color.
10. The system should have registration with accuracy prediction system.
11. The system should warn the surgeon by colour change / audible signal when approaching the critical areas.
12. The system should have dynamic visualization of distance to target point and intra-operative landmarks.
13. The system should have still photograph storage function as well as continuous video recording for documentation purpose. With appropriate cables / adopter and connections for laptop and existing medical monitor.

**3. Endoscopes 0 Degree, 45 Degree and 70 Degree :**

Rigid Endoscopes.

Diameter 4.00 mm.

Length 18 cm.

Fiberoptic Light Transmission.

Autoclavable.

**4. Microdebrider :**

**a. Control Unit ~**

Should be a versatile powered ENT System, that can choose the power required for various ENT related surgeries. The system should be suitable for variety of ENT procedures ranging from Rhinology, other transnasal procedures, Otolology, Neurotology, Nasopharyngeal / Laryngeal, tracheal and bronchial.

Should have built in user friendly interactive menu and illustrative help guide.

The various parameters should be able to adjust either from touch screen panel or from the multifunction foot switch.

Should be able to connect multiple hand pieces at a time like debrider hand pieces (upto 5000 RPM in Oscillating Mode and 12000 RPM in Forward Mode), Low Speed Otologic Drills (upto 16000 RPM) and High Speed Otologic Drills (upto 80,000 RPM).

Console should recognize the various hand pieces and automatically adjust the setting accordingly.

**b. Irrigation ~**

Should have inbuilt pumps each for irrigation (5Cc/Min to 10 Cc/Min) and Cooling.

Should have option for remote control irrigation to operate from sterile area.

Should have in built lens cleaning system.

Should have provision to connect facial nerve monitor with the otologic drill.

Should have the provision to mount the console on various sizes of IV Pole.

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**c. Foot Control ~**

Should have multifunction ergonomically designed foot control with light emission for easy identification.

Should be able to control Speed / Mode – Forward / Reverse Toggle Active Hand Piece change from the foot control itself.

Light Weight.

Smooth Operaton, switch over to high and low speed.

Water Proof.

**d. Shaver Hand Piece ~**

Light weight and sleek

Well balanced to give good feel and reducing hand fatigue.

Easy and rapid blade engagement.

Variable speed (approx. range 1500-12000 rpm) with forward / reverse and oscillating mode.

Integrated suction channel, easy cleanable, flash autoclavable.

Should not get heated.

**e. High Speed Drill with > 70,000 RPM for Endoscopic Skull Base Surgery ~**

Hand piece (angled) minimum 14 cm.

Cutting and Diamond burrs of size 3 mm & 2.5.

Curved endoscopic attachment with Cutting and Diamond burrs of size 3 mm & 2.

**5. Cart / Movable Trolley for housing the whole equipment.**

**6. Xenon Light Source, Power Supply 220 Volt, 50 Hzs, 185 – 250 Watt.**

**7. Fiber optic cable detachable 3 – 4 mm diameter, length minimum 3 mtr.**

**8. UPS 2 KVA with 30 minutes back up for whole equipment.**

**9. The company must have at least two successful installations in India and list of the same should be supplied.**

**10. There should be facilities to upgrade the system to be compatible with PACS System.**

**11. Demonstration of navigation system is must to the satisfaction of user.**

**12. Proper training OT technical staff by the company person.**

**13. Warranty : 60 months from the date of installation.**

**14. CMC : Five years after the expiry of warranty period to be quoted separately.**

**15. CE Certification:** All the tenders to be supported by original brochure containing the details of the technical specification of the product.

*Final* **16. Standard and Safety :** Should be <sup>European</sup> CE and FDA approved produce.

**17. Consumables required for proper functioning of equipment to be provided alongwith their price during CMC and warranty period.** The prices of these spares / accessories / consumables should be freezed for a period of 10 years and will taken into consideration for evaluation.

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18. List of Consumables / Accessories required for trial period :

- (i) Patient tracker
- (ii) Instrument Tracker
- (iii) Skull mounted patient tracker for skull base surgery
- (iv) Adhesive Pad Head Tracker
- (v) Silicon Pad Head Tracker
- (vi) 4 mm EM Navigated Blade
- (vii) Blades (straight & angled) for Microdebrider
- (viii) Battery and mask
- (ix) Curved drill for skull base.

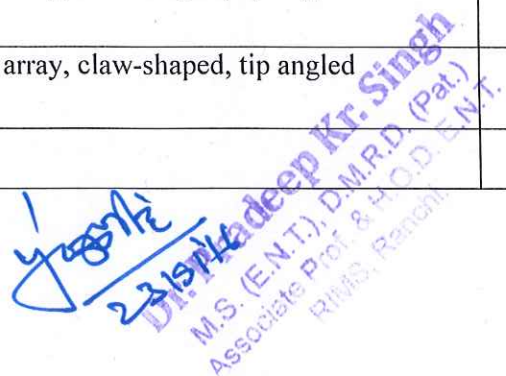
Cost of consumables should be quoted seperately @ 150 cases in a year fixed for a period of 10 years which will be taken for the purpose of price evaluation.

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TECHNICAL SPECIFICATIONS OF COCHLEAR IMPLANT INSTRUMENT SET		
SL. NO.	DESCRIPTION OF ITEM	QTY. REQD.
1	Surgical Handle, Fig. 3, length 12.5 cm, for Blades	1
2	PLESTER Retractor, 2 x 2 prongs, length 11 cm	1
3	WULLSTEIN Retractor, 3 x 3 prongs, length 11 cm	1
4	ANDERSON-ADSON Retractor, 4 x 4 prongs, sharp, curved, length 20 cm	1
5	Brain Spatula, angled on both sides, concave, elastic, width 11 and 13 mm, length 18 cm	2
6	Brain Spatula, angled on both sides, concave, elastic, width 7 and 9 mm, length 18 cm	2
7	PLESTER Suction Tube, with grip plate, cut-off hole and stylet, LUER, 5 Fr., length 20 cm	2
8	PLESTER Suction Tube, with grip plate, cut-off hole and stylet, LUER, 7 Fr., length 20 cm	2
9	PLESTER Suction Tube, with grip plate, cut-off hole and stylet, LUER, 9 Fr., length 20 cm	2
10	Suction Tube, angular, LUER-Lock, outer diameter 0.5 mm, working length 6 cm	2
11	Suction Tube, angular, LUER-Lock, outer diameter 0.7 mm, working length 6 cm	2
12	WULLSTEIN Suction Handle, with cut-off hole, LUER cone, length 10 cm, for use with Suction Tubes 204005 - 204025, 204305 - 204330	2
13	Octogonal handle with LUER-cone, straight, length 17 cm	2
14	Diamond Burr, barrel-shaped, diameter 5 mm, length 10 mm, for creating a flat bone edge during cochlea implantation surgery, blunt tip for protection of the dura, with smooth shaft diameter 2.35 mm, length 44 mm	2
15	Diamond Burr, shaft diameter 2.35 mm, diameter 0.6 mm, length 70 mm	2
16	Diamond Burr, shaft diameter 2.35 mm, diameter 1 mm, length 70 mm	2
17	Diamond Burr, shaft diameter 2.35 mm, diameter 1.4 mm, length 70 mm	2
18	Seeker, extra delicate, angled 25°, with ball end diameter 1 mm, length 16 cm	2
19	Seeker, extra delicate, angled 25°, with ball end diameter 1.5 mm, length 16 cm	2
20	Forceps, for insertion of cochlear electrodes, nucleus 24 contour, curved to left, working length 6 cm	2
21	Forceps, for insertion of cochlear electrodes, nucleus 24 contour, curved to right, working length 6 cm	2
22	Micro Guiding Instrument, for electrodes array, claw-shaped, tip angled downwards, length 16 cm	2
23	Micro Guiding Instrument, for electrodes array, claw-shaped, tip angled upwards, length 16 cm	2
24	Footplate Hook, 0.2 mm, length 16 cm	2


  
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25	PLESTER Footplate Hook, 0.6 mm, length 16 cm	2
26	LENARZ Retractor, 43 x 11 mm, slim and flat blade with integrated suction tube, length 21.5 cm	2
27	Thymus Retractor, width 5 mm, length 20.5 cm	2
28	Applying and Removing Forceps for scalp haemostasis clips, length 16 cm	2
29	Needle Holder tungsten carbide inserts, length 15 cm	1
30	Dissecting and Ligature Forceps, straight, smooth jaws, length 9.5 cm	1
31	FREER Elevator, double-ended, semisharp and blunt, length 20 cm	1
32	PLESTER Raspatory, width 8 mm, length 18 cm	1
33	ALLIS Forceps, with fine teeth, length 20 cm	1
34	WULLSTEIN Forceps, serrated, length 15 cm	1
35	Dressing Forceps, narrow, length 14.5 cm	1
36	ADSON-BROWN Tissue Forceps, atraumatic, fine side grasping teeth, length 12 cm	1
37	Bipolar Coagulating Forceps, insulated, bayonet-shaped, slim shaft, tip 0.5 mm, length 19 cm, for use with bipolar high frequency cord	2
38	Preparation Plate, glass, 10 x 8 cm	2
39	Bipolar High Frequency Cord, length 300 cm	1
40	Retractor, for cochlea implant operations consisting of: 233250 A Retractor, with ergonomic handle, cold light illumination, suction channel with cut-off hole, LUER, concave blade, 20 x 30 mm, length 19.5 cm 233250 B Fiber Optic Light Carrier, with suction tube, length 18.5 cm	1
41	ISSING Retractor, 43 x 11 mm, slim and flat blade with integrated suction tube, length 21.5 cm	1

ALL INSTRUMENTS SHOULD BE FDA CERTIFIED

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## TRANSPORT STRETCHER

### **General Device Requirements**

#### **Overall Dimensions and Load Capacity**

Overall dimension for stretchers--excluding those intended for patients over 200--kg shall be less than 32 inches x 84 inches to fit through doorways and onto elevators.

The stretcher for general patients shall have a mattress surface of at least 26 x 73 inches. Bariatric stretchers shall have a mattress surface of at least 28 x 73 inches.

Stretchers for general patient shall be able to withstand patient weighing at least 150 kglbs. The stretcher for bariatric patients shall be able to withstand a patient weighting at least 200 kgs.

A 135 kg static load on any corner of the stretcher shall not permanently deform any part of the stretcher

#### **Stretcher Height**

*It should have an adjustable height*

*Minimum height possible should be atleast 25 inches from the floor*

#### **Stretcher positions**

Platform shall permit the following 5 positions: Trendelenburg (minimum 10 degrees), Reverse Trendelenburg, Fowler, leg lift, and knee flex.

*Trendelenburg position tilt from the horizontal should be atleast 18 degrees*

*Fowler position elevation for the head should be atleast 90 degrees*

The positioning and brake controls shall be operable from the foot end or from both sides of the stretcher.

The patient positioning mechanism shall have locking ability; that is, the mechanism shall automatically lock stretcher position in place even when operator accidentally releases his/her hold to prevent the patient from falling back to a lower position.

#### **Mattress**

Mattress cover and core material shall resist combustion and shall not ignite when exposed to an open flame or a burning cigarette, even in the presence of other combustibles such as a bed sheet.

The mattress shall be non-absorbent.

The mattress cover shall be securely attached to the stretcher to prevent sliding, but shall be removable for cleaning.

The stretcher surface shall be easy to clean. The mattress cover shall not be degraded by common cleaning agents or fluids normally encountered at the scene of an accident or in a hospital.

#### **Side Rails and Patient Restraints**

The stretchers shall have restraint straps to secure the patient during transport. Restraint straps shall be easy to adjust and shall not interfere with other functions of the stretcher when they are either in use or being stored. Strap material and closures shall be strong enough to withstand stresses such as the efforts of disoriented or violent patients to free themselves.

Side rails shall be provided on the stretcher to prevent patient falls. Side rails shall fold down or tuck-away and be positively latched in the up position. The side rail locks shall not be readily accessible to the patient. The rails shall be designed to permit raising and lowering without pinching or cutting the patient or operator.

#### **Other features and options**

#### **Battery Operation and Power-assisted transportation**

#### **Accessories**

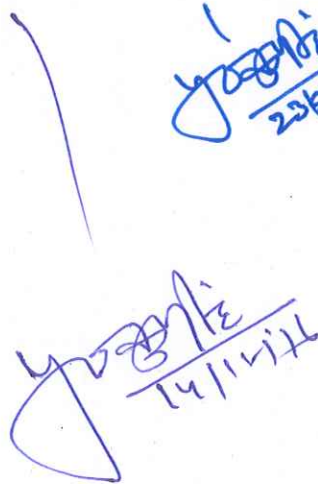
The stretcher shall have an oxygen tank holder.

The stretcher shall have a utility shelf for transporting the patient's belongings, pertinent patient information, and medical equipment.

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<b>Imaging ability</b>
ICU and trauma stretchers shall have a radiolucent window in head and/torso section for in stretcher x-ray and fluoroscopic procedures.
<b>IV Pole Receptacles and Drainage Bag Hooks</b>
All stretchers shall be equipped with at least one mountable IV pole at each corner. The mounting IV pole receptacles shall not be covered by the mattress.
<b>Construction Quality and Ease of Use</b>
The stretcher shall have no sharp edges. The unit shall be well constructed with durable materials to withstand typical abuse and cleaning. Switches, knobs, and other controls shall be designed for conditions of heavy use.
Wiring and tubing shall be neatly arranged and bundled, if appropriate.
The casters for mobile stretchers shall be at least 8 inches in diameter so that they can cross elevator and door thresholds smoothly.
<i>Should have dual locking four wheel brakes</i>
If the casters are equipped with locks, they shall be able to maintain the device loaded to capacity stationary on a 10 degree incline.
The casters shall be conductive and swivel.
Maneuvering the unit shall require minimal physical effort.
The unit shall have abbreviated operating instructions included on or with the stretcher (e.g., on a laminated card attached to the stretcher).
The stretcher shall be easy to clean, disinfect, and/or sterilize, as appropriate.
The unit shall be designed for easy access to serviceable parts.
Should have side rail facility


  
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**CO<sub>2</sub> LASER FREE BEAM AND FIBER WITH SCANNER AND ACCESSORIES (~~40~~ WATT & ABOVE)**

- It should be a carbon dioxide laser with a wave length 10.60 micro meters, infrared.
- It should have ~~10 watt~~ power *in the range of 40 watts and above.*
- It should have 5mw red diode aiming beam, 635 nm, adjustable intensity it should be microprocessor based.
- It should have a sealed CO<sub>2</sub> laser tube.
- It should have continuous, single pulse and repeat pulse tissue exposure modes.
- It should have an average continuous power of 01 – 40 watts.
- It should have a super pulse power of 0.5 – 15 watts.
- The reach of the arm should be at least 120 cm with 360 deg rotation.
- It should have spring balanced arm.
- It should have a timed exposure of following durations;  
On time (single pulse) – 0.05 – 1.0 sec. At 1.0 to 4.5 watts.  
- 0.01 – 1.0 sec at 5-40 watts.

On time (repeat pulse) – 0.05 – 1.0 sec at 1-4.5 watts.  
-0.01 – 1.0 sec at 5-40 watts.

It should have a repeat delay, off time, 0.01 to 1.0 sec.  
It should have at least 100 user defined memory settings.  
It should have a 0.2mm focused hand piece.  
It should have at least two bacterial filters.  
It should have five laser safety glasses.

**It should have an inbuilt scanner with preset recommendations.**

**For parameters and delivery devices for different applications.**

- It should have a multi – colour touch screen panel.
- It should have a user friendly graphic display to provide step by step operating instructions.
- It should have a self contained closed loop cooling system.
- It should be compatible with 230v, 3a, 50hz power supply.
- It should have an optical design to assure perfect co-incidence of the diode and Co<sub>2</sub> beams even at highest microsurgical magnifications.
- It should be easily adjustable and should have variable working distance from 200 mm to 400 mm.
- It should have continuously variable defocus with a user adjustable defocus limiter.
- Its joystick handle should be tension adjustable and autoclavable.
- It should be user selectable for left or right hand controls.
- It should be lightweight, to maintain balance of the surgical microscope it should have a minimum spot size of 160 microns.
- It should have a focus range of 0.16 mm – 0.27 mm.
- It should have maximum defocus range of 2.8 mm – 4.6 mm.
- It should have a power transmission of greater than 90%, with unlimited power input.
- It should have a robotic laser microsurgery system with following requirement :

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- It should have beam scan shape : linear & curved incision : 0.3mm to 5.0 mm in length (user defined), 0.7 mm to 3 mm for papillomatosis.
- It should have a penetration depth of 0.2 mm to 2 mm (user defined).

2) It should have oral, pharyngeal and nasal handpiece set for oral, pharyngeal and nasal applications which should include :

- 230mm handpiece unit (cvd optical unit, ports holder, conical main extender, Contamination collector)  
Extra conical main extender, backstop extender – 3 Nos,  
Tip extender – 3 Nos,  
Straight tip, Kamami Nasal tip – 3 Nos,  
Kamami tonsil tip – 3 Nos,  
90 degree angled mirror tip extender, cleaning brush, tygon tube (8mm id, 1.5m long) w/reducer  
**Smoke evacuator**  
Compatible with the laser machine, imported quality - includes
- **Smoke evacuation unit with pneumatic footswitch, vi 6**  
**Filter – 6 hour double port 7/8” and 1-1/4”, 7/8” tubing with wand**  
**And tip – 2 Nos, 5ml of 50-laser mask 0.1 mm filtration media (flat mask)**  
**Laser mask 0.1mm filtration media (flat mask)**

3) **Fiber Accessories :**

- 1) Rigid hand piece kit atleast 8 rigid hand pieces with hand piece cleaning kit  
60mm, straight , straight tip, 180mm, straight, straight tip, 60mm, straight, curved tip,  
140 mm, straight, curved tip 180 mm, straight, curved tip, 240 mm, bent, curved tip, 140  
mm, bent, straight tip, 240mm, bent, straight Tip,
- 2) Endoscope Protection Sheath – 2 Nos.  
Length : 640 mm, od : 1.7mm.
- 3) Handpiece bending tool  
Handpiece cleaning kit : includes 3 cleaning  
Brushes and 20 extra silicon tubes for hand pieces.
- 4) **CO2 fibre should be 2-2.2 metres long, Sterile / multiple use, 2.0 – 2.75m long preferably glass hallow fibre. Spot size : 290 – 300 micro metre at fibre output. Up to 40 watt.**
- 5) Bending and cutting tools to reuse fiber
- 6) Sterlization tray for fibers.

Terms :

- (1) Manufacturer should have their direct presence in India.
- (2) Training of two doctors by the principal company
- (3) Regional service support
- (4) FDA / CE Certificate
- (5) List of installation in India.

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- (6) Regional Service support by Principle Company.
- (7) The company to arrange for demonstration for technical evaluation.  
UPS Compatible to LASER to be supplied with the equipment.

Prices of consumable fibre to be fixed for 5 Yrs. The minimum requirement would be at least 10. This price will be part of price comparison.

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### EES Instruments Set Standard

straight forward telescope enlarged view, diameter 3mm, length 14cm, autoclavable, fiberoptic light transmission incorporated with green color code.

forward oblique telescope 30 degree enlarged view, diameter 3mm, length 14cm, autoclavable, fiberoptic light transmission incorporated with red color code.

forward telescope enlarged view, diameter 2.7 mm, length 18cm, autoclavable, fiberoptic light transmission incorporated with green color code.

forward oblique telescope 30 degree enlarged view, diameter 2.7mm, length 18 cm, autoclavable, fiberoptic light transmission incorporated with red color code.

Ear Hooked curved to right working length 5.5cm, total length 16cm.

Ear Hooked curved to left working length 5.5cm, total length 16cm.

Ear Hooked curved to backwards working length 5.5cm, total length 16cm.

Ear dissector, curved to right, working length 5.5cm, total length 16cm.

Ear dissector, curved to left, working length 5.5cm, total length 16cm.

Ear dissector, curved backwards, working length 5.5cm, total length 16cm

Curette spoon shaped, diameter 1mm, length 16cm

House Double Curette, medium, spoon size 1x 1.8mm, and 2 x 2.8mm length 15cm

Round knife diameter 3mm, with suction easy to handle, due to rotating tube olive length 19cm

Dissector double ended, distal tips with single curve to right or to left, length 18cm

Dissector double ended, double ended distal tips with double curve to right or to left, length 18cm

Dissector double ended, double ended distal tips with angled 90 degree to right or to left, length 18cm

Ear forceps 45 degree, curved right, extra delicate oval cupped jaws, 0.6mm working length 10cm

Ear forceps, 45 degree curved to left extra delicate oval cupped jaws 0.6mm, working length 10cm

Ear forceps, 45 degree curved upwards extra delicate oval cupped jaws 0.6mm, working length 10cm

Ear forceps, 45 degree curved downwards extra delicate oval cupped jaws 0.9mm, working length 10cm

Suction cannula curved 3mm Luer Lock outer diameter 0.6mm length 10cm

Suction cannula curved 3mm Luer Lock outer diameter 0.8mm length 10cm

Suction cannula curved 3mm Luer Lock outer diameter 1 mm length 10cm

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Suction cannula curved 6mm Luer Lock outer diameter 0.8mm length 10cm

Suction cannula curved 6mm Luer Lock outer diameter 1 mm length 10cm

Suction cannula curved 6mm Luer Lock outer diameter 1.2mm length 10cm

Suction cannula curved 8mm Luer Lock outer diameter 1.2mm length 10cm

Suction cannula curved 8mm Luer Lock outer diameter 1.6mm length 10cm

Luer cone connector male rotating for connection to suction tube

Suction handle with cut off hole luer cone, length 5.5cm, for use with suction tubes as mentioned above.

Scissors delicate curved to left working length 8cm

Scissors delicate curved to right working length 8cm

Ear forceps extra delicate serrated 1x 4.5mm working length 8cm

Needle slight curve length 16.5cm

Round knife 45 degree with 1mm , 1.5mm, 2mm, 2.3mm, 3.0mm, 3.5mm diameter working length 16cm.

ALL THE ITEMS SHOULD BE FDA CERTIFIED

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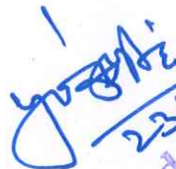
## Specifications of Video Exoscope system:


### Features:

- Great depth of field
- Large working distance

### Technical:

- Straight forward telescope  $0^\circ$ , working distance 25-75cm, suitable for incision upto 12cm, length of telescope should be 11cm.
- Should be autoclavable and fiber optic light transmission incorporated and condenser lenses.
- Distance rod (length 25cm) for measuring distance between the telescope and the surgical field should be provided with the set.
- Integrated Illuminator for additional illumination on the surgical site.
- Fiber optic light cable- diameter 4.8mm, length 250cm for use of telescope.
- Good mechanism for holding Exoscope in the shape of Mechanical holding arm which can be fitted easily with OT table.

  
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## Basic Laser laryngoscopy Set for Adults

- **Distending Operating Laryngoscope**, for adults, lightweight construction, with antireflex coating for LASER treatment, with right and left side wings to prevent the tongue/soft tissue from obstructing the lumen, channel removing vapor integrated in handle and blade, length 18 cm, for use with Clip, for proximal illumination and Laryngoscope Holder
- **Distending Operating Oropharyngoscope**, for adults, lightweight construction, with antireflex coating for LASER treatment, with right and left side wings to prevent the tongue/soft tissue from obstructing the lumen, channel removing vapor integrated in handle and blade, length 14 cm, for use with Clip, for proximal illumination and Laryngoscope Holder
- **Operating Laryngoscope**, medium-large, for adults, with antireflex coating for LASER treatment, with integrated channel to remove vapor, outer diameter proximal 26 x 18 mm, length 18 cm
- **Operating Laryngoscope**, small, for adults with difficult anatomical circumstances and for children, with antireflex coating for LASER treatment, with integrated channel to remove vapor, outer diameter proximal 23 x 15 mm, length 19 cm
- Distending operating laryngoscope, laser compatible with right and left side wings, length 15cm, for use with smoke evacuation tube.
- **Grasping Forceps**, curved to right, serrated, sheath insulated, with cleaning connector, working length 23 cm
- **Grasping Forceps**, curved to left, serrated, sheath insulated, with cleaning connector, working length 23 cm
- **Miniature Grasping Forceps**, extra delicate, serrated, with triangular jaws, curved upwards to right, with cleaning connector, working length 23 cm
- **Miniature Grasping Forceps**, extra delicate, serrated, with triangular jaws, curved upwards to left, with cleaning connector, working length 23 cm
- **Grasping Forceps**, delicate, serrated, special matt finish, with cleaning connector, working length 22 cm
- **Grasping Forceps**, with oval alligator jaws, small, special matt finish, with cleaning connector, working length 22 cm
- **Grasping Forceps**, with oval alligator jaws, medium, special matt finish, with suction channel to remove LASER vapors, with cleaning connector, working length 22 cm
- **Grasping Forceps**, with oval, fenestrated alligator jaws, large, special matt finish, with suction channel to remove LASER vapors, with cleaning connector, working length 22 cm
- **Clip**, titanium, medium, 5 mm, sterile, package of 36 cartridges with 6 clips each
- **Clip Forceps**, jaws curved to left, with cleaning connector, working length 22 cm, for use with Clip
- **Clip Forceps**, jaws curved to right, working length 22 cm, with cleaning connector, for use with Clip
- **Coagulation Suction Tube**, with ergonomic handle, insulated, with connection for unipolar coagulation, with Cleaning Stylet, outer diameter 2 mm, working length 23 cm
- **Coagulation Suction Tube**, with ergonomic handle, insulated, with connection for unipolar coagulation, with Cleaning Stylet, outer diameter 2.5 mm, working length 23 cm
- **Coagulation Suction Tube**, with ergonomic handle, insulated, with connection for unipolar coagulation, with Cleaning Stylet, outer diameter 3.5 mm, working length 23 cm
- **Unipolar High Frequency Cord**, with 5 mm plug, length 300 cm
- **Protector**, to protect tissue against unintentional LASER irradiation, curved upwards, oval, diameter 7 mm, special matt finish, with suction channel to remove LASER vapors, working length 23 cm
- **Clip**, for proximal illumination
- **Laryngoscope Holder and Chest Support**, consisting of:  
Laryngoscope Holder, with adjustment wheel Support Rod, movable, with metal ring, diameter 9 cm, length 34 cm

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## **Name of the Item: Purchase of Surgical Operating Microscope.**

### **Specification:-**

#### **MICROSCOPE BODY and OPTICS:**

Surgical Microscope floor model with mobile floor stand on four castor wheels for easy handling and absolute stability.

Should have large stereobase of at least 20 mm, rotation around vertical Axis more than 50°, left and right tilt - 40°, inward inclination - 50°, Upward inclination - 120° and all axis movement with single button control of all axes.

Should have Motorized zoom magnification system (0.4 x to 2.4 x) with apochromatic optics (1: 6 Zoom ratio)

Should have additional magnification amplification facility of 40% or more.

All activation should be by handgrip, stand mounted LCD control panel and foot control panel, with manual override.

Total magnification range 2x – 17x or higher with 10x eye piece

Field of view – 20mm to 180mm

Internal motorized fine focusing system.

Should have Laser focusing system for quick focusing

Should be continuously adjustable with working distance from about 200 mm to 500 mm without exchange of objective lens.

Beam Splitter should preferably be integrated in the microscope body, without any external attachment with lateral assistant port (70/30).

#### **BINOCULAR TUBE:**

0-180 degree range tiltable binocular tube with focal length of 170 mm or higher.

Should have a Graduated knob for continuous adjustment of inter pupillary distance from 50 mm to 75 mm

Should have Auto Balancing and easy microscope draping system

#### **EYE-PIECES:**

Pair of high eyepoint widefield push-in eyepieces 10x or 12.5x magnification with magnetic locks, with diopter setting range from -5D to +5D for spectacles wearers.

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The lenses should have rubberized cuffs for comfort and should preferably have antifogging coating.

Optics and eyepiece of stereo co-observer port should be similar to main surgeon unit.

#### **ILLUMINATION SYSTEM:**

Two coaxial xenon illumination of about 300W, with back up similar rating xenon with quick-action lamp changer in case of failure of main lamp should be integrated within the microscope stand.

In case of electronic system failure the light should continue to work with manual override for optics adjustments

Should have automated illumination brightness control linked to working distance and magnification.

Should have automatic zoom-synchronized illumination field diameter, with manual override and reset feature.

Should also have brightness adjustment in hand switch

#### **HANDGRIPS:**

Easily manoeuvrable handgrips with adjustable keys for zoom and focus, Illumination & Magnetic brakes.

Camera controls for video and still images should be programmable on handgrips

#### **FLOOR STAND:**

Sturdy solid, rollable floor stand on base with lockable castors, carrier and swivel arms with large reach of 1.30 m or higher.

Should have free float magnetic system with multiple magnetic brakes for Microscope body & Stand with release of magnetic brakes by handgrips.

Touch screen Liquid crystal display (LCD) with user prompts, quick set up of different parameters and their activation at press of a button such as automatic speed adjustment or automatic brightness setting depending on magnification.

#### **INTEGRATED DIGITAL VIDEO CAMERA SYSTEM:**

Should have Advanced digital full HD Video camera system.

Should be fully integrated camera without any external attachment or module. All wires to be cased inside the microscope arms

It should stabilize in less than 5 sec. & should reboot in less than 1 min.

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In addition there should be ports for connection to PC via USB/FireWire ports, 15 pin VGA port for color monitor, HDMI port, DVI port and preferably LAN connectivity.

Should be capable of doing video speed focus for independent focusing apart from microscopic focus.

All imaging to be DICOM compatible.

Camera should be independent of microscope.

**VIDEO/ IMAGE DATA MANAGEMENT SYSTEM:**

Should have attached video recording system & Still photo in the microscope stand with internal HDD of at least 500 GB or more, and high speed DVD writer.

Latest generation Macintosh based desktop computer system with video editing software for image processing and editing

**VIDEO MONITOR:**

Medical Grade 19" Color LED display should be mounted on Microscope stand

**ADDITIONAL FEATURES:**

Image guidance Microscope should be fully ready for image guidance system integration. Fluorescence and ICG System should be ready to use

**OTHERS:**

The system should be fully functional and complete when supplied.  
Should have safety certificate from a competent authority CE and FDA (US).

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## SPECIFICATIONS FOR BRONCHOSCOPY SIMULATOR

- The system should be fully computerised and interactive.
- Should have PC with Virtual Reality simulation processor.
- Should have a stainless steel support 130cm L x 57cm W x 175cm H
- Should have a 24" Flat LCD touch screen with a movable arm.
- Should have a double foot switch.
- Should have a mannequin with a nose and mouth for performing bronchoscopy procedures.
- The system should be equipped with a reliable high end technological Haptic (force feedback) to provide realistic sensation that mimic the look and feel of an actual procedure.
- Should have a Pentax EB-1830T3 bronchoscope for doing the procedures on the simulator.
- Should have one master tool device, one 10cc syringe and one Olympus EBUS TBNA needle.
- The system should have the following modules ::
  - Essential Bronchoscopy Module which is developed and endorsed by American Association for Bronchology and Interventional Pulmonology.
  - Diagnostic Bronchoscopy Module.
  - Emergency Bronchoscopy Module (WIP)
  - Essential EBUS Module.
- The system should have ::
  - Endobronchial bleeding cases
  - Adult foreign body aspiration scenario
  - Pediatric diagnostic scenario
  - Radial EBUS basic training
  - Sarcoidosis for Diagnostic and EBUS cases.
- The system should be ISO / CE certified.
- Should provide step by step procedural tasks for forcep biopsy, brush sampling, BAL conventional TBNA and EBUS TBNA, and these tasks should support structured self learning and real time assessment using the immediate sampling feedback.
- Should have designated cyberscopy and bronchial navigation tasks to improve eye hand coordination and navigational skills.
- The simulator should have a patient environment including sedation and anaesthesia, altering consciousness and vital signs, oxygen supplement and more. All should create a reactive virtual patient which should according to real time user's performance may be agitated and cough, adequate sedated or go under diverse hemodynamic complication or respiratory depression or even deteriorate to respiratory or cardiac arrest.
- The system should allow selections, sedation of moderate sedations or general anaesthesia for advanced modules.
- Should offer a choice of aids enhancing 3D and anatomical perception such as anatomy compass, external 3D Map and anatomy atlas.
- Should have a 3D map and labelling for the ease of users to learn and understand the anatomy better.
- System should support the trainees' performance with real time guidance including efficiency, comments and patient safety alerts.
- The performance assessment should be most advanced and include biopsy results per sampled location or lymph node.
- Should incorporate electric tools such as electrocautery probe and APC probe.
- Fluoroscopic view should also be available.
- Should facilitate web based simulator curricula management system, providing the optimal solution for administration of users, Curricula design, Pre-preparation with didactic learning, Simulation and Reporting and assessment remotely.
- Should have ready to use designed Curricula from famous institutes.
- Should have a facility to access, assign, evaluate and administer the data of users remotely.
- Should be upgradeable to Gastro Intestinal Simulator at a later stage.

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ITEM (ii)

Technical Specifications of Coblation System for ENT Surgery

- Controlled ablation of tissues based on low temperature BI-Polar Radio frequency technology in electrolytic solution like normal saline. The system should not have any need for the secondary patient grounding pad.
- System must be FDA Approved
- Operating Temperature should be in a range of 40 to 70 degrees
- The generator should have integrated saline pump for continuous irrigation of the surgical site.
- Output should Voltage driven and not Power driven
- The output voltage settings should be controlled by regulation on the generator from setting 1-9
- The generator should have facility of a Foot Switch for convenience and ease of use.
- There should be facility to adjust Coblation and Coagulation with different settings
- The generator should be able to take at least 8 different probes for open and minimally invasive ENT procedures.
- The RF generator should be able to take multiple range of probes for Tonsillectomy, turbinate reduction, adenoids, soft palate, Laryngeal and related applications.
- The generator should have One Year Warranty

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## Technical Specifications of Coblation Probes for ENT Surgery

- The Coblation probe should have Multiple Electrode Technology that will allow a uniform production of plasma.
- Probes should have integrated cable.
- Electrodes should be made of Tungsten for enhanced probe life.
- Probes should have a malleable shaft.
- Suction Probes should have integrated IV tubing.
- Probes with dual function of Coblation & Shrinkage should have depth identification marks on the shaft.
- Probe should have Gravity Defying Saline delivery system to ensure saline reaches tip irrespective of probe orientation.
- Probe for Laryngeal Application should have at least 6 inches of working length and dip diameter less than 4mm.

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2 cont.

## TECHNICAL SPECIFICATION OF ARTICULATING FORCEP

- 1) THE INSTRUMENT IS USE IN SURGICAL PROCEDURES TO EXAMINE OR TREAT THE NASAL.PARANASAL AND SIMILAR EAR, NOSE AND THROAT TISSUES.
- 2) IT HAS OVER 120 DEGREES OF ARTICULATION BOTH SIDE WITH SEVEN DISTINCT LOCKING POSITIONS.
- 3) IT HAS MULTIPLE TIP CONFIGURATIONS INCLUDE THRU-CUTTERS AND GRASPERS.
- 4) IT HAS ULTRA-SHARP CUTTING EDGES AND PRECISE GRASPING TIPS ENABLE METICULOUS DISSECTION.
- 5) WORKING LENGH OF THE FORCEP IS 14.0CM.
- 6) DIAMETER OF THE SHAFT IS 3.0MM.
- 7) THE FORCEPS IS MAKING OF SURGICAL GRADE STAINLESS STEEL.

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23/8/16

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## Brainstem Evoked Response Audiometer with ASSR

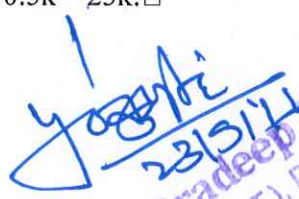
- 2 channels.
- Windows based.
- Bone Conduction.
- Integrated  database.
- Pre-programmed auto  tests.
- Waveform  reproducibility indication.
- Split left/right  recordings.
- Simultaneous recording  of condensation rarefaction stimuli.
- Normative data  indication.
- Soft attenuator.
- Wave editing during  testing
- Digital filter  application (during and after test).
- Add, subtract  curves
- Low noise amplifier

## Upgraded with OAE, ASSR and VNG, NCT

- Medical CE-mark
- Easy portability
- EcochG recordings  with markers
- Middle Latency
- Late Latency (P300,  MMN etc.)
- Cochlear Implant  Stimulator Control.

### ASSR:

- PreAmplifier
- 2 channels
- Gain 80 dB
- Frequency Response  upto 8000Hz
- Noise 6.0 nV Hz
- CMR Ratio  > 115 dB at any frequency between 0.1Hz & 10Hz.
- Input Impedance  > 10M
- Accepted electrode  offset > 300mV.
- Power from main  unit.
- Impedance Check
- Measuring Current  25uA.
- Ranges 0.5k – 25k.

  
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## Impedance Audiometer / Tympanometer

Audiometer impedance with contra ear testing facilities

- Multifrequency
- Probe Frequency- 226Hz, 678Hz, 800Hz, 1000Hz
- Pressure Range- +200 to - 400 dapa
- Volume Range - 0.1 ml to 6.0 ml
- Accuracy -  $\pm 5\%$  to  $\pm 10$  dapa
- Test Time- < 3 Seconds
- Reflex Mode
- Test Frequencies- 500, 1000, 2000, 4000 Hz  $\pm 2\%$
- Test Method- IPSI Lateral, Contralateral
- Noise (Band) - WN/HP/LP
- Intensities IPSI Lateral- 70 to 110 dbHz
- Intensities Contra Lateral- 70 to 120 dbHz (with TDH39)
- Intensity Setting- Automatic or Manual
- Eustachian Tube Function - Intact and Perforated mode
- ETF Pressure Range- + 300 to - 400 dapa
- Test - IPSI Lateral Reflex Test with AGC, Reflex Delay
- Test Programme- Reflex Test selectable
- Memory- Test Result of both ears
- Probe - Light weight, adjustable, Hand Held , With Built in control light & switch
- Printer- Silent Thermal Printer , (with paper printer facility)
- Display- Graphic LCD with adjustable contrast
- Power Supply- Mains 100-240 Volts, 50/60 Hz 25 VA
- PC Interface- USB Cable
- Automatic self calibration

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## Oto Acoustic Emission (Screening unit) OAE (DP and TE)

### TEOAE

1.5 to 4 kHz

Sample Rate - 16 kHz

Stimulus Level- ca. 80 dB SPL peak

Stimulus Type- Nonlinear click

Statistical stop criterion (TE Quick) or user defined stop criterion (SNR: 3, 6 or 9 dB) in 3, 4, or 5 out of 5 frequency bands (1, 1.5, 2, 3, 4 kHz) (TE Diag)

Window of analysis- 5-13 ms post stimulus

### DPOAE

DP 2 to 5 kHz

Sample Rate - 24kHz

Frequency Ratio  $f_2/f_1$ - 1.2

Level Ratio L12/L1- Scissor Paradigm

Measurement Interval- 512 samples

Frequencies  $f_2$ - 1.5, 2, 3, 4, 6, 8, kHz (single & multiple selections possible)

Stimulus Levels L2- 35 to 65 dB HL (in steps of 5dB)

Also battery operated

Multiple test methods

Database for at least 1000 tests

Data transfer to PC via USB or wireless

Printing via PC/ Printer

Stimulus intensity: 40 to 70 dB SPL (DPOAE). 83 dB

### SPL (TEOAE).

Maximum output (Protection): 90 dB SPL.

Microphone system noise: -20 dB SPL @ 2 kHz (1 Hz bandwidth).

-13 dB SPL @ 1 kHz (1 Hz bandwidth).

Power supply: (4) AA/UM-3/R6 - alkaline (6V total)

Battery life: Approximately 300 tests.

Display: LCD-display 4 line x 10 character.

  
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Pure Tone Audiometer

Advanced Two Channel Clinical Audiometer with High Frequency upto 20 KHz

1. Air , Bone and Speech
2. Free Field ,Speech and Pure Tone
3. 2 Channel Binaural Speech
4. Automatic Threshold (Hughson Westlake)
5. Bekesy test
6. Automatic Speech Scoring
7. 2 Channel Master Hearing Aid
8. Tones : Pure, Warble and Pulsed Tones
9. Masking : WN, NB and SN Masking

Special Test: ,

SISI Free Field (Option) Stenger and ABLB Test

Loudness Balancing: 250 Hz, 500 Hz, 2kHz, 4kHz,

6kHz NB noise with direct comparison to standard curves.

Ttdecay:

Masking Limen Difference (MLD):

Monaural Loudness Balanceing (MLB):


Number of Channels : Two Independent Oscillators

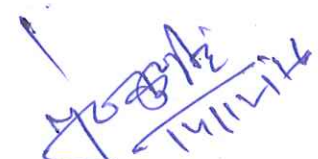
Frequency Range : 125 Hz – 20kHz Intensity Range : -

10dB – 120dB (Air Conduction) -10dB – 80dB (Bone

Conduction) 5dB and 1 dB Attenuators

Frequency Resolution: Multi frequency, Medical CEmark.

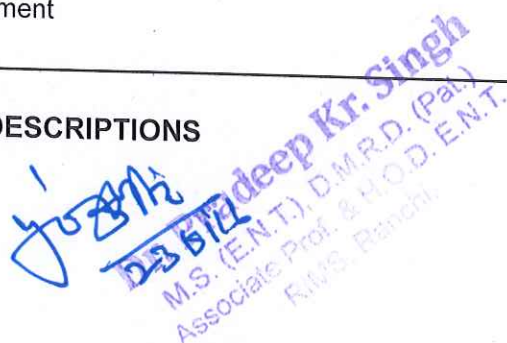
  
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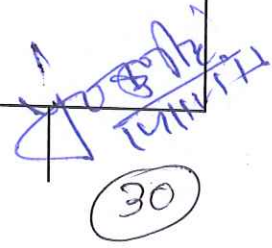




## Temporal Bone Dissection Lab set up

SL. NO:	DESCRIPTIONS
1	<p><b>Lab Microscope for Post Graduate Trainees</b></p> <p>Magnification : 5x, 10x &amp; 20x                      Objective lens : 200 mm                      Illumination : 15 v/ 150w or 24v/250w                      Twin bulb halogen light source                      Fiber Optic Light Guide</p> <p>Features</p> <ul style="list-style-type: none"> <li>* Stable floor stand on 4 castor wheels for easy mobility</li> <li>* Fast &amp; easily replaceable bulb mounting facility</li> </ul>
2	<p><b>Operating Microscope for Teaching Purpose</b></p> <p>5 step magnification, f-200 mm objective lens, 15v/150w twin halogen bulb light source , floor stand model.</p>
3	<p><b>Beam splitter assembly + Camera</b></p> <p>Specifications:</p> <p>Camera : 1/3" CCD with 'C' mount and switchable white balance &amp; AGC                      Beam Splitter: Transmission 80% / Reflection 20%</p>
4	<p><b>Micro Drill with Straight hand piece</b></p> <ul style="list-style-type: none"> <li>* RPM : 35,000</li> <li>* REVERSE &amp; FORWARD MOVEMENT</li> <li>* ON &amp; OFF THROUGH FOOT-SWITCH</li> <li>* Straight Handpiece</li> </ul>
5	<p><b>Cutting &amp; Polishing Burs ( set of six)</b></p> <p>018/023/035/045/060</p> <p>Cutting burs                      Polishing Burs</p>
6	<p><b>Suction machine</b></p> <p>standrad specification for O.T. use</p>
7	<p><b>Temporal Bone Holder</b></p> <p>With rotation &amp; tilt movement</p>
SL. NO:	DESCRIPTIONS


  
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8	<b>Instruments for temporal bone dissection</b> <b>For Ear</b> <ol style="list-style-type: none"> <li>1. Sickle Knife</li> <li>2. Circular Knife</li> <li>3. Side Knife</li> <li>4. House Currette</li> <li>5. Zolner Rasp Left &amp; Right</li> <li>6. Zolner needle</li> <li>7. Zolner pick</li> <li>8. Perforator</li> <li>9. Micro cup forcep</li> <li>10. Micro allegator forcep</li> <li>11. Micro scissors</li> <li>12. Ossicle holding forceps</li> <li>13. Zolner sucker with Microtip</li> <li>14. Mastoid Retractor 2 prong, 3 prongs</li> <li>15. Periosteum elevater with thumbrest</li> <li>16. Freers elevater</li> </ol>
9	<b>Instruments for sinoscope</b> <b>For FESS</b> <ol style="list-style-type: none"> <li>1) Straight Blacesley Forceps</li> <li>2) Up-Turn Blackesley Forceps</li> <li>3) Sickle Knife</li> <li>4) Sucton Cannula</li> <li>5) Crocodile Forceps</li> <li>6) Freers Elevator</li> <li>7) Antrum Curette (Forward &amp; Backward)</li> <li>8) Thru cut forcep straight &amp; 45 degree</li> <li>9) J currette</li> <li>10) Kuhn Currette</li> <li>11) Mushroom Forcep</li> <li>12) ziraffe forcep</li> <li>13) Karrison Punch</li> <li>14) Scissors</li> </ol>
10	<b>Sinoscope</b> 4mm - 0 degree/45 degree    Wide angled
11	<b>Endoscopy camera    single Chip</b>
12	<b>Light Source + F.O. Cable</b>
13	<b>Monitor</b>

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*23/10/16*  
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	<b>Nerve Stimulator for Monitoring Facial, Vestibular &amp; Peripheral Nerves.</b>
<b>STIMULATOR</b>	
Current	0.00mA to 30mA
Pulse width	S/W selectable 50,100,150,200,250 Micro sec
Pulse off time	Software Selectable
Pulse frequency	Software Selectable 1, 4, 7 or 10 Hz
Output Display	Graduated Touch Screen control with LCD. <b>Type:</b> High contrast, digital, graphic color, visible in complete darkness. <b>Dedicated Function Event Touch Screen Controls:</b> For Amplitude, Time display & capture.
Stimulating Forceps	Mono polar or Bipolar probes
<b>Monitor</b>	
Number of Channels	Eight
Preamplifier gain	107 +/- 4 dB
Frequency Response	100-2000Hz
Input sensitivity	5 – 10,000 micro volts
Output display	Wave form display
Audio Output	Transducers: Built in speaker. EMG & Event Tone Signals: Continuously processed EMG and/or activity-level dependant event tones for each channel. Volume Preset & Limiter: Volume power up Pre-set Default & a Low volume limiter. Current Delivered Tone signals: Selectable options include continuous & brief warble tone, voice & voice settings. Signal occurs when 80% of the set current is measured over range of 0.5 – 30mA. Connection: RCA phone Jack Headphones:
<b>System requirements</b>	Cable-free method of speaker muting
<b>Power Supply</b>	230 V / 50 Hz

**Features:**


- Channels: 1-8: Individually & simultaneously selectable.
- Input Sensitivities: 5-10,000 microVolt peak to peak AC coupled.
- Dedicated function touch pads for independent channel control
- Adjustable event threshold control
- Sensitivity Selection: Automatically zeroed.
- Artifact detection & rejection
- Artifact detection feature to distinguish between artifact and EMG signals
- Monitors simultaneously during bipolar cautery
- Has sub dermal electrode – checking features

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**Technoical Specification for Micro Debrider System -**

**SPECIFICATION OF MAIN CONSOLE:**

- *It should be a versatile powered ENT system, that lets to choose just the power required for various ENT and Aesthetic related surgeries.*
- *The system should suitable for wide variety of procedures ranging from Rhinology, Other transnasal procedures, Otology/ Neuro otology / Nasopharyngeal / laryngeal / tracheal / bronchial.*
- *The system should drive the hand piece for Adenoid specific application.*
- *It should have in built user friendly interactive menu and illustrative help guide.*
- *It should have large Touch screen monitor.*
- *The various parameters should able to adjust either from touch screen panel or from the multifunction foot switch.*
- *It should able to connect multiple hand pieces at a time like Micro-debrider hand pieces (Up to 5000 RPM in Oscillating mode & 12000 RPM in Forward mode), low speed Otology drills (Up to 16000 RPM) and High speed Otology drills (Up to 60000 RPM).*
- *Console should recognize the various hand pieces and automatically adjust the settings accordingly.*
- *It should have inbuilt pumps each for Irrigation (5Cc / Min to 100Cc / Min) and Cooling.*
- *It should have multifunction ergonomically designed foot control with light emission for easy identification.*
- *It should able to control Speed / Mode, Forward / Reverse toggle, Active hand piece change from the Foot control itself.*
- *It should have option for remote control Irrigation to operate from sterile area.*
- *It should have in built Lens cleaning system.*
- *It should have 0 Degree, 30 Degree, 45 Degree & 70 Degree endoscope sheath compatibility for Automatic Lens cleaning system.*
- *It should have provision to connect facial nerve monitor with the Otology drill.*
- *Main Console should have an option to operate manual foot paddle from console itself in case the foot paddle are not working.*
- *It should have the provision to mount the console on various sizes of IV pole.*


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**SPECIFICATION OF HIGH SPEED MICRO DEBRIDER  
HAND PIECE :**

- *It should be compatible with main console.*
- *It should able work up to the speed of 30000 RPM in forward rotation and 5000RPM in oscillation mode.*
- *It should have finger tip control to rotate only the tip of the blade up to 360 deg.*
- *It should have straight suction path to reduce clogging and allow efficient tissue removal.*
- *Hand Piece should have integrated blade locking system to lock the blade tip rotation.*
- *It should have integrated side grooves and cable clips to provide better tubing management.*
- *It should have Titanium body to avoid rusting.*
- *Micro-debrider Hand Piece should be light in weight and ergonomically designed.*
- *It should able to operate 120 Degree curved blade for Maxillary Sinus Application.*
- *It should able to operate Diamond & Cutting burs for DCR Surgeries.*
- *It should have provision to operate Turbinate blade for Turbinoplasty and Adenoid blade for Adenoidectomy.*
- *It should compatible with Frontal Trephination System.*
- *It should able to operate Laryngeal blades for laryngeal surgeries.*
- *The system should contain 10 types of different blades.*

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