No. CTVS/RIMS-02/E-14   **Imphal, the 4th August 2015**

All the equipments should be USFDA Approved/CE Certified.

Item No.1;- Diathermy (Electrocautery) machine

<u>Technical Specification for Electro surgery unit cum Vessel sealing</u>

i.   The unit Should be a Microprocessor controlled 350 KHz output, up to 400 Watts class Electro surgery unit with TFT single display having Touch Screen(Key Touch)

ii.   Visual indicator for the actual power being delivered through Bar Graph.

iii.   The unit should have universal socket for Bipolar, Monopolar & neutral output socket along with multifunctional socket for Vessel sealing based on plug & play mechanism, also having the facility to upgrade to additional socket if required.

iv.   The Unit should have heat dissipation without external air passing inside the unit i.e. Internal Cooling system (no conventional external air cooling system).

v.   The Unit should have precise Monopolar and bipolar modes for fine &micro-surgery applications.

vi.   The unit should have facility to use very less voltage from 40 Volts for precise applications.

vii.   The unit should have the facility to upgrade with twin coagulation for simultaneous activation of 2 electrodes.

viii. The unit should have Bipolar Auto start functions.

ix.   Automatic control of output power according to all currently available electrosurgical regulative technologies.

x.   Should have the facility for preview function to shows the expected target tissue effect on display even prior to activation.

xi.   Should have the facility to be up to date with the upgradable feature on site.

xii.   Should have facility to program more than 190 with procedure or surgeon's name.

xiii. Should have facility of self check of the unit after every On & Off of the unit.

xiv.   Should have facility to upgrade with optional Bipolar cut & coagulation up gradation.

xv.   Possibility for Upgrading to APC, irrigation system, smoke evacuation system.

xvi.   Unit should have Type: Protection Class CF, Class 1, llb.

xvii. Should have continuous patient monitoring with return electrode (neutral electrode).

xviii. Neo-Natal safety system and neutral electrode safety system for the pediatric applications.

xix.   Reusable Vessel Sealing instruments for Open Surgery- FDA approved instruments. for 7mm Vessel Sealing with 23 degree bent and 150 mm length.

xx.   The unit should have special solution for changing the power settings without touching the equipment.

xxi. The unit should be supplied with nonstick bayonet bipolar forceps of 1mm blunt & 0.4 mm fine top having length of 170mm – 200mm with guide pin maintains parallel.

xxii. The unit should be supplied with all standard accessories to make the system to work full functional includes (All accessories should be from same manufacturer):

a).Two pedal and Single pedal foot switch-1 No's

b).Non Stick Bipolar forceps & cable – 1 No's

c).Reusable Monopolar Pencil with cable- 1No

c). Disposable Monopolar Pencil – 10 No's

d).Reusable Patient plate with cable - 2 No

e).Disposable Patient Plate with cable – 50 pics

e). Reusable vessel sealing for open – 1 No

Item No.2:- Adult fibreoptic bronchoscope

Sl No.	Description
i.	It should have Field of view - 110^0 Or More
ii.	It should have Depth of Field - $2 \sim 50$ mm
iii.	It should have Tip Deflection - Up/Down : 180^0/ 130^0
iv.	It should have Rigid distal Diameter - 5.9mm Or Less
v.	It should have Insertion Tube Diameter - ø6.0mm Or Less
vi.	It should have Diameter of Instrument Channel - ø2.8mm Or More
vii.	It should have Working Length - 540mm or More
viii.	It should have Total Length - 800mm Or More
ix.	It Should have closed suction mechanism
x.	It should have Suction valve should be autoclavable
xi.	It should be compatible with high frequency equipment
	Additional Accessories :
xii.	It should have Channel Cleaning Brush - 01 no.
xiii.	Instrument case
xiv.	Pressure compensation cap
xv.	It should have Biopsy Forceps - 01 no.
xvi.	It should have Grasping forceps – 01 no.

xvii.	Foreign body forceps – 01 no.
xviii.	It should have Bite Block - 01 no.
xix.	It should have Eye Piece Cap - 01 no.
xx.	Mouth piece – 01 no.
xxi.	Leakage tester – 01 no.
xxii.	It should have Suction Cylinder Cleaning Brush - 01 no.

Item No.3;- **Paediatric fibreoptic bronchoscope**

Sl No.	Description
i.	Outer diameter – 2.8 mm
ii.	It should have Field of view - 120^0
iii.	It should have Depth of Field - $2 \sim 50$ mm
iv.	It should have Tip Deflection - Up : 180^0 Down : 130^0
v.	Rigid distal tip – 2.8 mm
vi.	It should have Rigid distal Diameter - 3.4mm Or Less
vii.	It should have Insertion Tube Diameter - 3.5mm Or Less
viii.	It should have Diameter of Instrument Channel - 1.2mm Or More
ix.	It should have Working Length - 540 mm or more
x.	It should have Total Length - 800mm or more
xi.	It Should have closed suction mechanism
Xii	It should have Suction valve, should be autoclavable
Xiii	It should be compatible with high frequency equipment
	Additional Accessories :
Xiv	Instrument case
Xv	Leakage tester
Xvi	It should have Channel Cleaning Brush - 01 no.
Xvii	It should have Biopsy Forcep - 01 no.
xviii	It should have Bite Block - 01 no.
Xix	It should have Eye Piece Cap - 01 no.
Xx	Grasping forceps – 01 no.
Xxi	Mouth piece – 01 no.
Xxii	Pressure compensation cap
xxiii	It should have Suction Cylinder Cleaning Brush - 01 no.

Item No.4:- **Rigid Bronchoscope_Adult**

Sl No.	Description	Qty
i	Straight ForwardTelescope 0°, diameter 4.5 mm, length 50 cm, autoclavable. Fiber optic light transmission incorporated,	1
ii	Bronchoscope Tube Universal, without distal fiber optic light carrier, for use with proximally insertable prismatic light deflector and plugs length 43 cm, size 8.5	
iii	Bronchoscope Tube Universal, without distal fiber optic light carrier, for use with proximally insertable prismatic light deflector and plugs length 43 cm, size 7.5	
lv	Bronchoscope Tube Universal, without distal fiber light carrier, for use with proximally insertable prismatic light deflector and plugs length 43 cm, size 6.5	
v	Prismatic Light Deflector with connection for fiber optic light cable	
Vi	Glass Window Plug	
Vii	Rubber Telescope Guide	
Viii	Adaptor with sliding glass	
Ix	window plug, sealing cap, notched lens and keyhole opening, movable, for use with Full Lumen Tracheoscopes and Bronchoscopes	
X	Injection Cannula for possitive pressure assisted ventilation system, O.D. 3.5 mm for use with bronchoscopes and tracheoscopes with LUER-lock fermale fitting	
Xi	Tube Guide, for Bronchoscope	
Xii	Adaptor from bronchoscope to any type of pediatric respiration equipment	
xiii	Plug for Ventilation Attachment of Bronchoscopes	
Xiv	Bronchoscopic Forceps, circular cup, biopsy, malleable, double action jaws, diameter: 2.5 mm, working length 50 cm	
Xv	Bronchoscopic Forceps, universal biopsy and grasping, double action	

	jaws, diameter: 2.5 mm, working length 50 cm	
xvi	Bronchoscopic and Esophagoscopic Forceps, universal biopsy and grasping, double action jaws, diameter: 2.0 mm, working length 35 cm	
xvii	Bronchoscopic and Esophagoscopic Forceps, alligator, grasping, double action jaws, diameter 2.0 mm, working length 35 cm	
xviii	Bronchoscopic Forceps, alligator, grasping, double action jaws, diameter: 2.0 mm, working length 45 cm	
xix	Bronchoscopic Forceps, universal, biopsy and grasping, double action jaws, diameter: 2.0 mm, working length 45 cm	
xx	Rigid Suction Tube, working length 35 cm	
xxi	Suction Tube for Bronchoscopy, O.D. 2,5 mm working length 50 cm	

Item No5:- **Rigid Bronchoscope_Paediatrics**

Sl No.	Description	Qty
i	Straight Forward Telescope 0°, diameter 2.9 mm, working length 36 cm, auto- clavable. Fiber optic light transmission incorporated.	1
Ii	Bronchoscope, length 30 cm, size 6	1
Iii	Bronchoscope, length 30 cm, size 4.5	1
Iv	Bronchoscope, length 30 cm, size 3.5	1
V	Bronchoscope, length 26 cm, size 3	1
Vi	Optical Alligator Forceps for Pediatric	1
Vii	Broncho-Esophagoscopes, for use with telescope forced controlled handle for removal of hard foreign bodies	1
Viii	Optical Forceps for Pediatric Broncho-Esophagoscoes, with bean jaes, for use with telescope forced controlled handle for removal of peanuts and soft foreign bodies	1
Ix	Optical Forceps, for use with telescope for biopsy.	1

x	Optical Pediatric Scissors, for use with Telescope and Broncho-Esophagoscopes, length 30, 26 and 20 cm, sizes 6 - 3.5	1
Xi	Optical Forceps for use with telescope Universal, biopsy and grasping.	1
Xii	Rubber Telescope Guide for use with telescopes or optical for- ceps	1
Xiii	Adaptor with sliding glass window plug, sealing cap, notched lens and keyhole opening, moveable.	1
Xiv	Guiding Piece, short, for suction catheter for children and suckling bronchoscope	1
Xv	Adaptor from bronchoscope to any type of pediatric respiration equipment.	1
Xvi	Plug for Ventilation Attachment of Bronchoscopes	1
Xvii	Injection Cannula for positive pressure assisted ventilation system, O.D. 2.7 mm, for use with bronchoscopes and tracheoscopes with LUR-lock female fitting	1

Item No.6:- Syringe pump

i. Should support wide variety of syringe sizes and brands
ii. The pumps should also provide automatic sensing of 20ml, 30ml and 50ml syringes.
iii. In the event of an occlusion alarm the pump should minimize the potential post occlusion bolus by reducing the pressure in the patient tubing.
iv. Should have programmable infusion rates between 0.1 and 1200 ml/hr.
v. Battery life should be minimum 4 hours in 5 ml/hr.

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xi.   MRI Setting: may be used in static magnetic fields outside the 150 Gauss line when secured to non-movable object. Should be safely used in 1.5 Tesla 64 MHz shielded MRI system.

Item No.7:- ENDOVISION IMAGING SYSTEM

i.   Three Chip Camera Specifications

Digital Three-Chip Medical-Video-Camera – color system PAL, with integrated Image Processing Module.

Special Features:

ii.   Should be fully compatible to the color systems PAL & NTSC.

All the necessary setting required to be done during surgery in the camera should be under sterile area.

iii.   Should have the facility of Digital Image Processing by means of an integrated Image Processing Module.Multiple settings allow   the user to select the preferred level of image enhancement.

a.   Digital contrast enhancement

b.   Digital anti-moiré/anti-grid filter for use with fiberscopes.

iv.   Should have Integrated Optical Zoom lens system .

v.   Should have the additional facility of Electronic 2x zoom, selectable in 4 steps.

vi.   Integrated Still Image function.

vii.   Digital Video output DV to facilitate the recording directly with devices having Firewire port.

viii.   Should have the Auto Exposure System for consistent illumination level.

ix.   High horizontal image resolution of more than 750 lines, therefore even the finest variations in tissue structures are perceivable on a high-resolution monitor

x.   Automatic white balance with memory function for two settings.

xi.   Multilingual menu system.

xii.   Character generator

xiii.   Composite, S-VHS and RGB compatibility

xiv. World power supply

xv. 2 programmable function keys on the camera head for control of camera functions or video printer/recorder functions & other peripheral units.

xv. Adaptable to an operating microscope by means of a special quick adapter.

xvi. Camera head fully soakable for disinfection.

a.	Image sensor:	3*1/2" CCD-Chip.
b.	Resolution:	> 750 lines (horizontal).
c.	Pixels	752(H) x 582(V)
d.	Signal-to-noise ratio:	>= 60 dB.
e.	AGC:	Microprocessor controlled
f.	LENSE	Integrated optical zoom lens ,f=25-50mm
g.	Weight	240g
h.	Min. sensitivity:	3 Lux (f 1.4).
i.	Dimensions	Diameter 37*47mm, length 124mm.

xvii. 2 programmable function keys on the camera head for control of camera functions or video printer/recorder functions & other peripheral units.
-Adaptable to an operating microscope by means of a special quick adapter.
xviii. Camera head fully soakable for disinfection.

xix. The company should have its own service centre & repair facility in India.

xx. Camera system compatible with Communication Computer system for remote controlled operation of the various features of the camera along with other equipment. So as to function as an integral part of the digitally controlled Operating Room under the command of the operating Surgeon.

xxi. MEDICAL GRADE 19 INCH MONITOR:-

a) 19" HD Monitor,

b) Resolution: 1280 x 1024

c) Video Inputs: DVI, VGA, S-Video, Composite Video

d) Outputs: DVI, S-Video, Composite

e) Should be wall mounted / desktop mounted

f) Stand/ Trolley for 19" monitor

xxiii. XENON LIGHT SOURCE AND LIGHT CABLE

Specifications:

High intensity Xenon light source with spare Xenon lamp

Special features:

a. High light intensity with 300watt Xenon Lamp.
b. High colour temperature – more than 6000 K corresponds to brightness of sunlight resulting in high visual and photographic clarity for colour redention.
c. Monitoring of lamp function.

Unit should be compatible with Communication Computer system for remote controlled operation of the various features along with other equipment. So as to function as an integral part of the digitally controlled Operating Room under the command of the operating Surgeon.

Technical specifications :

a.	Lamp type	Xenon lamp, 300 watt
b.	Colour temperature	approx. 6000 K
c.	Light outlets	1
d.	Light intensity adjustment	continuously adjustable from 0 to 100% either manually or Automatically by the camera video-output signal.
e.	Certified to	IEC 601– 1, CE label according to MDD, protection class 1/BF

Item no.8;- Invasive multichannel cardiac monitor

Specifications:-

i. General

a) Weight: Approx. 4 kg

b) Module rack slot: minimum 3

ii. Display

a) Type: High resolution colour TFT with LED backlit display

b) Resolution: 1024 x 768 pixels or more

c) Size: 15" or more, excellent viewing from distance & angle

d) Waveforms: 10 waveform channel

e) Trace speed: 12.5, 25, 50 mm/sec for ECG, SpO2, IBP: 6.25, 12.5, 25 mm/sec for repiration, AGM & CO2.

iii) Input device

a) Optical encoder (standard)

b) Touchscreen (Optional)

iv) System output & extensible tenrfaces

a) Ethernet network: 1 standard RJ45 socket

b) USB port

c) 12 V DC input

d) HDMI port

e) AGM 55 interface

f) ECG analog output port

v) Power supply

a) Universal power

b) Battery type: Lithium ion

c) Operating time: Inbuilt rechargeable batteries for minimum of 3 hours of continuous operation under full charge condition.

Vi) Alarms

a) Alarm settings (Audio &Visual) for all parameters

b) Re-alarm and autoset option.

vi) Trends

a) 240 hours of graphical and tabular trend

b) NIBP: last 240 readings (graphical and tubular)

c) Alarm recall: last 24 alarm events with date, time & message with recording option.

d) ST trend: 4 hours trend 1 min resolution (ST storage)

e) Online trend: 3 hours online trend with 1 min resolution on real time screen for all parameters

f) OxyCRG trend : 8 minute online monitoring with 2 sec resolution.

vii) ECG monitoring

a) Standard: 3 lead and 5 lead

b) Optional: 12 lead

c) HR range: 20 – 350 bpm

d) ST analysis

viii) Respiration

a) Principle: impedance pneumography

b) Display of waveform with respiration rate

c) RR range: 0-150 pm

ix) Temperature (Dual Channel)

a) Simultaneous monitoring of two temperatures

b) Display of T1 and T2 or user selectable

c) Temp. range : $0^0 – 50^0C$

d) Accuracy: $\pm 0.2^0C$

x) Pulse Oximetry

a) Pitch variation with change in oxygen saturation

b) Spo2 range: 1 -100%

c) PR range: 20 – 250 bpm

d) Sigal strength bar & sat. seconds should be displayed

xi) NIBP

a) Principle: Oscillometric

b) Display: systolic, diastolic & mean

c) Modes: manual, stat, auto

d) Range: 20 – 250 mmHg

xii) IBP

a) Standard configuration: IBP1 & IBP2

b) Optional: IBP3 & IBP4 (externally pluggable)

c) Signals: Systolic, diastolic & mean pressure

d) Accuracy: 2 mmHg or 2% whichever is greater

e) Manual Zero: Zero message should appear in the pressure field when zeroing is required

f) Measurement range: -30 to 300 mmHg

g) Pressure range: 5 to 300 and -30 to 20 & auto

xiii) Patient reports, data transfer and disclosures

a) Downloadable to USB thumb drive

xiv) Mounting options

a) Table mount (standard)

b) Wall mount with GCX

xv) Ingress protection

a) IPX 1

xvi) Standard accessories

a) Power cord – 1

b) ECG cable (3 lead) – 1

c) ECG cable (5 lead) – 1

d) Spo2 Probe - 1

e) Spo2 cable – 1

f) NIBP cuff (adult) with hose – 1

g) NIBP cuff (pediatric) with hose – 1

h) IBP interface cable – 2

i) IR remote - 1

Item no.9:- Noninvasive Cardiac Monitor

Specifications :-

j) DISPLAY

a) Size: Appx. 10.5 " TFT /LED display (800 x 600)

b) Trace speed: 6.25/12.5/25/50 mm/sec for ECG, spo2, Respiration

c) Waveform: Maximum 6 waveform display. 4 standard & 3 User Defined formats

d) Patient Modes: Adult, Pediatric & Neonate

ii) ECG (3 lead and 5 lead)

a) Input: Isolated and floating 3/5 leads. Protected against surges produced by Electro-Surgical and Defibrillator Potentials.

b) Basic Arrhythmia detection & ST Analysis.

c) Heart Rate Range: 20-350 bpm

d) PR Source: Auto/Spo2/NIBP

iii) RESPIRATION

a) Range: 0-150 breaths/min.

iv) TEMPERATURE

Measurement

    a) Range: 1° C – 50° C

    b) Unit : C or F, User selectable

v) Spo2

    a) Measurement range: 0-100%

    b) Accuracy Adults: 70-100% +/- 2 digits

            c) 0 – 69% unspecified

            d) Accuracy Neonates: 70 – 100% +/- 3 digits

            e) 0 – 69% Unspecified

            f) Pulse Rate Range: 20 to 250 PM

vi) NIBP

    a) Method: Oscillometric

    b) Display: Systolic, Diastollic and Mean

    c) Modes: Manual, Auto and stat

    d) Auto mode intervals: 2,4,5,10,15,30,60,90,120,240 & 360 mins

    e) Unit: mmHg or KPa

    f) Range: 20 – 250 mmHg

    g) Accuracy: +/- 5 mmHg

vi) ALARMS

    a) Equipment alarms: Audio (Alarm Beep) visual (Flashing Blue LED)

    b) Patient alarms: Audio (Alarm Beep)
        Re-Alarm: 3 min after an alarm is acknowledged

    c) Alarms suspend: Continuous RED LED with display of alarm crossed bell.

vii) CONTROLS

a) Front Panel: Touch Pad for unit ON/OFF

b) 6 specific functionality touch sense pads

c) Optical encoder with switch.

viii) TRENDS

a) Data storage: HR/PR, Spo2, IBP Temperature, RR (168 hrs)

b) NIBP: Last 500 readings in Tabular format.

c) Graphical Trend: 2, 4, 12, 18, 24, 48, 72, 96 & 168 hrs.

d) Tabular Trend: 30 sec, 1 min, 2 min, 4 min, 8 min, 15 min, 30 min & 60 min

e) Alarm Trend (Recall): Tabular trend for display of last 50 patient alarms

ix) GENERAL

a) Dimensions (H * W * D): 245 mm * 278 mm * 151 mm appx.

b) Weight: 3.5 Kg (approx) with Battery

c) Mounting option: GCX option and Rail option

d) USB: Optional WiFi communication with CNS

e) Software uploads/Upgrade, Trend download

x) UNIVERSAL POWER SUPPLY

a) Voltage: 110 – 230 AC at +/- 10%

b) 50Hz/ 60Hz at +/- 5% tolerance.

c) Indicators: should be present

d) Battery Type: 14.8 V (2.2 Ah) Lithium Ion

) Charging time (min): 6 hrs

Discharge time: 2 hr

XI) MOUNTING OPTIONS

a) Table mount (standard)

b) Wall mount with GCX

xii) INGRESS PROTECTION

a) IPX 1

xiii) STANDARD ACCESSORIES

a) Power cord – 1

b) ECG cable (3 leas) – 1

c) ECG cable (5 lead) – 1

d) Spo2 probe – 1

e) Spo2 cable – 1

f) NIBP cuff (adult) with hose – 1

g) NIBP cuff (pediatric) with hose - 1

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Regional Institute of Medical Sciences
Imphal

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All the items should be US/FDA approved/CE Certified.

Sl. No.	Name of the items	Qty
1	Single chamber external cardiac pacemaker	2
2	Operating loupe 2.5 magnification	1
3	Chest wall retractor (rib spreader) (double blade) large	1
4	Chest wall retractor (rib spreader) (single blade) large	1
5	Chest wall retractor (rib spreader) (single blade) medium	1
6	Chest wall retractor (rib spreader) (single blade) small	1
7	Periostium elevator curved (small & medium) straight (small & medium)	1 each 1 each
8	Rib raspatories (Doyen) 17 cm i. Left ii. Right	1 1
9	Rib approximator	2
10	Tubb's dilator (paediatric & adult)	1 each
11	Left auricle clamp	2
12	Sternal retractor i. Single blade (paediatric & adult) ii. Double blade (paediatric & adult)	1 each 1 each
13	Sternal wire twister	2
14	Sternal wire cutter	2
15	Kocher artery forcep straight (small size)	12
16	Scapula retractor 50x75 mm (Davidson)	1
17	Bronchus clamp with longitudinal serrated jaws 22 cm (Price Thomas)	2
18	Bronchus clamp with longitudinal serrated jaws 23 cm Right angled (Price Thomas)	2
19	Dissecting scissor curved rounded tips 18 cm long	2
20	Dissecting scissor curved with flattened, blunt tips 19.5 cm long	2
21	Rib cutter (straight & angled)	1 each
22	Bone nibbler (small & medium)	1 each
23	Cooley paediatric (small) vascular clamps I. 4 cm straight 8 mm, 5$\frac{1}{4}$"/ 13.5 cm II. 45^0 angled 12 mm 5$\frac{1}{4}$"/ 13.5 cm III. 60^0 angled 16 mm 5$\frac{1}{4}$"/ 13.5 cm IV. 90^0 angled 20 mm 5$\frac{1}{4}$"/ 13.5 cm	1 1 1 1
24	DeBakey vascular clamps (medium) i. 6.5 cm straight jaws, straight shanks, 8 ½"/ 21.4 cm ii. 30 mm jaws, straight shanks, 8" / 20 cm iii. 1.5 cm carotid clamp, 7"/18 cm (Dennis clamp, DeBakey jaws)	1 1 1

25	Dennis anastomosis clamps (medium), Cooley jaws
	    I. 1 cm jaws, $6^1/2''$/16.5 cm
	    II. 6 cm angled jaws, $6^3/4''$/16 cm
		
		1
		1

26	Dennis anastomosis clamps (medium), DeBakey jaws
	    i. 1 cm jaws, 7''/18 cm
	    ii. 1.5 cm jaws, 7''/18 cm
	    iii. 2 cm jaws, 7''/18 cm
		
		1
		1
		1

27	DeBakey vascular clamps (angled) (medium)
	    i. 4 cm jaws, 45^0 angled, $5^1/2''$/14 cm
	    ii. 6 cm jaws, 45^0 angled, $7^1/4''$/18.5 cm
	    iii. 8 cm jaws, 45^0 angled, 8''/20 cm
	    iv. 6 cm jaws, 60^0 angled, 9''/23 cm
		
		1
		1
		1
		1

28	Dennis Aortic anastomosis clamps (Large) i. 3 cm Debakey jaws, 7''/18 cm	 2

29	Tangential occlusion clamps, DeBakey jaws (large)
	    i. 2.5 cm jaws, 9''/23 cm
	    ii. 3.4 cm jaws, $9^1/4''$/23.5 cm
		
		1
		1

30	Satinsky occlusion clamps, DeBakey jaws (large)
	    i. 2.3 cm jaws, $8^1/2''$/21.5 cm
	    ii. 2.7 cm jaws, $8^1/2''$/21.5 cm
	    iii. 3.5 cm jaws, $8^3/4''$/22 cm
		
		1
		1
		1

31	Hunter-Satinsky aortic clamps, DeBakey jaws (large) 3.5 cm jaws, $8^3/4''$/22 cm	 1

32	Ryder Needle holder
	    i. serrated jaw 12.5 cm
	    ii. smooth jaw 12.5 cm
		
		1
		1

33	Castroviejo needle holder with lock i. Straight smooth 17.5 cm ii. Straight smooth 21.5 cm iii. Curved smooth 17.5 cm iv. Curved smooth 21.5 cm	 1 1 1 1

34	Vascular forceps (straight tip)
	    i. Small (fine tip and blunt tip)
	    ii. Medium (fine tip and blunt tip)
	    iii. Large (fine tip and blunt tip)
		
		1 each
		1 each
		1 each

35	Vascular forceps ring tip	3
36	Forward Cutting Spring Scissor 7'' curve	2
37	Potts Scissor 6 1/2 ''	1

38	i. Bull dog clamp Straight 15 mm
	    ii. Straight 25 mm
	    iii. Curved 17 mm
	    iv. Curved 25 mm
		3
		3
		3
		3

39	Forgarthy catheter
	    i. 4Fr,
	    ii. 5Fr
	    iii. 6Fr
		10
		10
		10

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