TENDER DOCUMENT

FOR SUPPLY & INSTALLATION OF INSTRUMENT & EQUIPMENT FOR THE DEPARTMENT OF ANESTHESIOLOGY

TENDER NOTICE NO: 5133 / VIMSAR/Dt. 5 / 9 /2017

VEER SURENDRA SAI INSTITUTE OF MEDICAL SCIENCES & RESEARCH (VIMSAR)

An Autonomous Institute Under Govt. Of Odisha

Burla, Sambalpur
Odisha-768017.
Tel : +91-663-2430768
Fax: +91-663-2430767
Website- vimsar.ac.in
Email Id:- vssmcburlaorissa@gmail.com

TENDER DOCUMENT OF INSTRUMENTS AND EQUIPMENT DEPARTMENT OF ANESTHESIOLOGY, VIMSAR, BURLA

CONTENTS & PAGING

IMPORTANT INSTRUCTIONS

1	Period of Availability of Tender Document	**Dt. 08.09.2017 /11.00 am to dt. 18.10.2017 / 5.00 pm** [Downloadable from www.sambalpur.nic.in & www.vimsar.ac.in ; Corrigendum if any to this notice will be published in the website only]
2.	Pri-Bid Meeting	**Dt. 15.09.2017 / at 11.30** am in the conference hall of the Dean & Principal, VIMSAR, Burla
3	Last date & time for Submission of Tender	**Dt. 18.10.2017 till 5.00 PM** [Through Speed Post/Registered post/Courier]
4	Address of Submission of Bid	Dean & Principal, VSS Institute of Medical Sciences & Research, Burla,Sambalpur,Odisha-768017
5	Cost of Tender Paper	**Rs. 3500/-** (Rupees Three Thousand Five Hundred only.) [as DD payable to Dean & Principal ,VIMSAR]
4	Earnest Money Deposit	@ 2% of the Quoted Value, only in shape of Bank Draft in favour of the Dean & Principal, VIMSAR, Burla, Sambalpur payable at SBI, Burla
5	Date, Time and Place of Opening of Tender	a) **Technical Bid (Cover-A)** **Dt. 21.10.2017 at 1.00 pm** in the office of the Dean & Principal, VIMSAR. b) **Financial Bid (Cover -B)** Will be intimated in advance to successful technical bidders.

9/9/17

Dean & Principal
VIMSAR, Burla

TENDER PAPER
TERMS AND CONDITIONS.

1. The sealed tenders should be super scribed as Tender for "Equipment/Instrument for dept. of Anesthesia at Veer Surendra Sai Institute of Medical Sciences and Research, Burla, Sambalpur, are to be submitted by Regd. Post/Speed Post/Courier service only so as to reach in the Office of the Dean & Principal, Veer Surendra Sai Institute of Medical Sciences and Research, Burla, Sambalpur on or before 18.10.2017 days by 5.00 P.M from the date of publication of the Tender Call Notice. The tenders received beyond the scheduled time and date will not be considered under any circumstances & will be returned in original sealed cover. The Tender should be of double bid system i) Technical Bid & ii) Price Bid in two sealed covers duly super scribed as Technical Bid & Price Bid and be submitted with one sealed cover. Those who download the tender document from website www.vimsar.ac.inshould enclose a DD of Rs.3500/- cash (non-refundable) in favour of the Dean & Principal, VIMSAR, Burla payable at SBI, Burla.
2. The sealed tenders submitted by the tenderers shall be opened by the Purchase Committee of office of the Dean & Principal, Veer Surendra Sai Institute of Medical Sciences and Research, Burla, Sambalpur in his Office Chamber in the presence of either the tenderers or his /their authorized representatives who should remain present at the scheduled date and time. If any tenderer or his / their authorized representative fails to turn up at the time of opening of the tenders, that will not bar the authority from opening the tenders or carrying on subsequent tendering procedures.
3. The tender should be clearly typed / computerized without any correction, interpolation and over-writing etc. and each page of the tender should bear the dated signature of the tenderer. Correction/over writing or interpolation of any entry should be attested by the tenderers failing which the tender for the relevant item or items shall not be taken in to consideration.
4. Contains of the envelop & no of pages it contains should be written on the envelop face & sealed.
5. The rates quoted against each item should be F.O.R/CIF Veer Surendra Sai Institute of Medical Sciences and Research, Burla, Sambalpur, Odisha.
6. The rates should be inclusive of all taxes,
7. The tender should be valid for 1 year from the date of finalization of the tender procedure.

8. The prices quoted should be final and shall not be subject to any escalation during the validity period of the tender/till the purchase is over.
9. The tenderer should submit/furnish a certificate in the tender to the effect that price quoted by him/them is not more than the open Market Price.
10. The tenderer will arrange the documents like authenticated paper regarding Industrial License, N.M.I.C., C.D.E.C. and Letter of Authorization of the Principal Firm at his/their risk, responsibility and cost if any. The authorization certificate should be furnished with the quotation.
10. The tenderer should furnish Photostat copies of the up to date sales tax and Income tax return clearance certificates of last three years along with money receipt in original relating to his/their firm along with the tender.
11. The tenderer should furnish the Earnest Money Deposit (EMD) **@ 2% of the Quoted Value, only in shape of Bank Draft in favour of the Dean & Principal, VIMSAR, Burla, Sambalpur payable at SBI, Burla** along with the tender. The EMD will be forfeited in case, the successful tenderer fails to execute the order within the stipulated period in supply of the same.
12. Purchase order shall be issued in favour of the successful tenderers by Regd.Post with A.D **after approval in the Purchase Committee**. It is obligatory on the part of the selected firm to acknowledge receipt of the purchase order within fifteen days.
13. The successful tenderer shall replace any part or whole system as may be necessary, if found damaged on arrival at site or during installation of the system or if found not confirming to the specification at his/their cost.
14. The Dean & Principal, Veer Surendra Sai Institute of Medical Sciences and Research, Burla as the Authority reserves the rights to reject any tender or all tenders in part or full without assigning any reason thereof.
15. Documents misleading of facts are liable for rejection/cancellation of tender/purchase order and also action under Penal Provisions.
16. The tenders of the defaulting suppliers will not be taken into consideration.
17. Supply of sub-standard items or non-performance of tender terms & conditions will disqualify a firm to participate in the tender process in future.
18. All legal disputes, if any relating to purchase, Installation and functioning of the system shall subject to jurisdiction of the Court situated in Sambalpur, Odisha.
19. The payment to the firm shall be made after proper supply of the items on receipt of clearance certificate from the concerned Members of the Committee, that the installation of the items has been made properly and working satisfactory.
20. Those who will download the Tender document through the website, they are requested to deposit the value of the Tender document in shape of B.D favouring Dean & Principal, VIMSAR, Burla, Sambalpur while submitting the Tender document.

21. The Tenderer should submit their tender only after publication in the newspaper.
22. The photocopy of the first page of the Savings Bank Account should be furnished.
23. The photocopy of the PAN card should be furnished.
24. 2% of TDS towards Income Tax shall be deducted at the time of payment.
25. The Warranty of the Equipment should be 3 years from the date of installation.
26. The cost of AMC & CMC should be shown separately for 4 years after guarantee/warranty period.
27. In case the machine needs shifting to factory a substitute should be provided.
28. The installation and demonstration should be done on free of cost.
29. The service center should be available in the nearly town/in the state.
30. The firm should have adequate after sales service. The Service Engineer shall visit at least one times per month & inspect the Equipment to ascertain defects if any.
31. The firm will arrange training of the personnel-2nos, Doctors-2 nos in the local area athis own cost regarding functioning of the items.(For Medical equipment)
32. All documents submitted shall be consecutively numbered having signature with officialseal of the authorized signatory on each page and total number of pages shall be mentioned on the top sheet duly authenticated by the authorized signatory. The prescribed check list should be submitted completing in all respect. (putting the page numbers in the check list)
33. The tendering agencies are required to enclose photocopies of the following documents (duly attested by Group "A" Gazetted Officers of the State Governments/Central Government), along with the Technical Bid, failing which their bids shall be summarily/ out rightly rejected and will not be considered any further:
    - i) EMD @ 2% of the quoted value of Tender in shape of BD infavour of the Dean & Principal, VIMSAR, Burla.
    - ii) Registration certificate of the organization.
    - iii) Copies of authorization letter of manufacturers/ Principal firms
    - iv) Original Catalogue of the product indicating the specification & photo of the Equipment.
    - v) Copy of VAT/GST Clearance Certificate
    - vi) Copy of proper valid CE or USFDA approved certificate in case of high end equipment.
    - vii) An affidavit in original to the effect that the firm has not been blacklisted anywhere.
    - viii) Copy of PAN Card.
    - ix) Copy of the 1st Page of the Savings Bank Account/Current Account Pass Book
    - x) Other document as per the technical specification of the equipment.
    - xi) Copy of Income tax return certificate of last three years.
34. The successful tenderer will have to deposit a Performance Security Deposit of **5% of the ordered value**in the form of Bank Guarantee from only Nationalized Bank drawn in favour of the Dean & Principal, Veer Surendra Sai Institute of Medical Sciences and Research, Burla, Sambalpur within two days from the date of receipt of provisional purchase order. Then only final Purchase order will be issued. The Bank Guarantee shall be returned to the firm after the Warranty/Guarantee period is over.

N.B.:- (i) The tenderers are requested to go through the terms and conditions thoroughly and carefully and furnish their tenders fulfilling all the requirements to avoid rejection of their tender(s).

(ii) The documentation as required in the Technical specification should be submitted along with the technical bid failing which the bids shall be summarily/out rightly rejected.

35. **PENALTY**

In case of delay in supplying the equipment i.e not supplied within the stipulated date & time, the authority will have the right to impose penalty as per decision of the Committee which shall be deducted from the security deposit of the delayed agency.

36. **TURN KEY:**

i. The power supply will be provided by the dept. But the internal wiring and electrical fittings inside the room for installation & commissioning of the equipment and accessories will be provided by the supplier.

ii. Product should be provided with compatible online UPS or stabilizer which ever necessary with two years onsite warranty or warranty as provided by the Original Equipment manufacturer (OEM) whichever is more.

iii. It should be provided with split AC machines as required with two years onsite warranty or warranty as provided by the Original Equipment manufacturer (OEM) whichever is more with compatible voltage stabilizer and including installation by the company to maintain the room temperature.

iv. All the items for turnkey will be installed by the approved supplier. The make and warranty of all the items are to be mentioned in the quotations.

9/9/19

Dean & Principal,
VIMSAR, Burla

Annexure - I

TENDER PROFORMA FOR TECHNICAL BID

S1.No	Name of the Equipment	Details specification as per tender catalogue, Brochures, etc	Mfg name Brand name	Authorization
1	2	3	4	5

TENDER PROFORMA FOR PRICE BID

Sl, No Item Wise	Specification of the item with make i.e Mfg's Name and Brand name.	Unit pack with Basic Price	Rate inclusive of all taxes i.e F.O.R VIMSAR Burla years Excepting V.A.T/GST	VAT/GST Rate %	Cost of Total (4+5)	Cost of A.M.C /CMC for four Year-wise (4 years)	Cost of Turnkey Including VAT/GST in Rs. (Doordelivery & installation)	Total. (6+7+8)
	2	3	4	5	6	7	8	9

4/9/17

Dean & Principal
VIMSAR, Burla

The tender will be rejected in case the firm have not filled the technical & price bid in prescribed format given above.

Annexure - II

TENDER FOR SUPPLY OF "EQUIPMENT/INSTRUMENT FOR ANESTHESIA DEPARTMENT OF VEER SURENDRA SAI INSTITUTE OF MEDICAL SCIENCES AND RESEARCH, BURLA, SAMBALPUR

TENDER NOTICE NO._____ DT._____.

BID PERIOD:_____ TO _____.

LAST DATE FOR SUBMISSION OF BID:- _____BY 5 P.M

DATE OF OPENING OF TECHNICAL BID:- _____ AT_____A.M/ P.M

NAME OF THE BIDDER M/S._____.

Please put ☐ in the respective box

(TECHNICAL BID)	**DOCUMENTS : SUBMITTED OR NOT**		
1. EMD @2% of the quoted value	Page ☐	Yes ☐	No ☐
2. Registration Certificate of the Organization.	Page ☐	Yes ☐	No ☐
3. Copies of authorization letter of manufacturers/ Principal firms	Page ☐	Yes ☐	No ☐
4. Original Catalouge of the product	Page ☐	Yes ☐	No ☐
5. Copy of VAT clearance certificate	Page ☐	Yes ☐	No ☐
6. Copy of proper valid CE & FDA approved certificate.	Page ☐	Yes ☐	No ☐
7. An affidavit in original to the effect that the firm has not been blacklisted anywhere.	Page ☐	Yes ☐	No ☐
8. Copy of PAN Card	Page ☐	Yes ☐	No ☐
9. Copy of the 1ST Page of the Savings	Page ☐	Yes ☐	No ☐
10. Copy of clearance certificate of last three years	Page ☐	Yes ☐	No ☐
11. Other documents as per the technical specification of the equipment	Page ☐	Yes ☐	No ☐

Note: All documents submitted shall be consecutively numbered. The above checklist should be submitted completing in all respect. (putting page numbers in the check list

SIGNATURE OF THE BIDDER

Annexure-III

MODEL BANK GUARANTEE FORMAT FOR PERFORMANCE SECURITY
[Ref. Para 22(i)]

To

The _____

WHEREAS_____(name and address of the supplier)(hereinafter called "the supplier") has undertaken, in pursuance of contract no_____ dated _____to supply_____(description of goods and services) (herein after called "thecontract").

AND WHEREAS it has been stipulated by you in the said contract that the supplier shall furnish you with a bank guarantee by a scheduled commercial bank recognized by you for the sum specified therein as security for compliance with its obligations in accordance with the contract;

AND WHEREAS we have agreed to give the supplier such a bank guarantee;

NOW THEREFORE we hereby affirm that we are guarantors and responsible to you, on behalf of the supplier, up to a total of _____(amount of the guarantee in words and figures), and we undertake to pay you, upon your first written demand declaring the supplier to be in default under the contract and without cavil or argument, any sum or sums within the limits of (amount of guarantee) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the supplier before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the contract to be performed the render or of any of the contract documents which may be made between you and the supplier shall in any way release us from any liability under this guarantee and we hereby waive notice of any such change, addition or modification.
This guarantee shall be valid until the _____ day of _____, 20
Our _____ branch at _____ * (Name & Addressof the _____* branch) is liable to pay the guaranteed amount depending on the filing of claim and any part thereof under this Bank Guarantee only and only if you serve upon us at our _____* branch a written claim or demand and received by us at our _____* branch on or before Dt. _____otherwise bank shall be discharged of all liabilities under this guarantee thereafter.

_____
(Signature of the authorized officer of the Bank)

_____
Name and designation of the officer

_____

_____
Seal, name & address of the Bank and address of the Branch

* Preferably at the headquarters of the authority competent to sanction the expenditure for purchase of goods or at the concerned district headquarters or the State headquarters.

Model Agreement for Supply of Goods
[Ref. Para 23(1)]

THIS AGREEMENT made this_____ day of _____

20_____BETWEEN M/s_____& Co Ltd having registered office at in the State of _____(hereinafter called the 'Supplier' which expression shall, unless excluded in the subject or context, include the heirs, successors, legal representatives, and permitted assigns) of the one Part.

AND

the_____ of Odisha (hereinafter called the 'the _____' which expression shall,unless excluded in the subject or context, include the heirs, successors, legal representatives, and permitted assigns) of the other Part. WHEREAS the _____wants to purchase the goods mentioned in the schedule.

NOW THESE PRESENT WITNESS AND IT IS HEREBY AGREED AS FOLLOWS:

1. That the time shall be the essence of the contract and the supplier shall supply the goods in the schedule completely so as to make delivery _____(place) on orbefore the date _____failure to do which will entitle _____to rescind the contract immediately.
2. That the goods shall be of the specifications and price mentioned against each. Any variation on inspection will entitle the _____to refuse the consignments either in whole or in part, as the case may be, the whole, if the part renders it useless.
3. That the goods shall be inspected at_____(place) in the presence of the officers of both parties duly authorized in that behalf on a day fixed in a notice by either of the parties, provided such day is not postponed for more than a period of two months after the date given in the notice. Default by the Supplier shall disentitle him to raise any objection subsequently to the result of inspection made by the _____ in his absence and claim any compensation on that account.
4. That the Supplier shall guarantee durability of the goods for a period of _____ from the date of completion of supplies and installation in the case of machineries and any damage, done to the goods in the usual course of use or any deficiency, detected in them subsequent to such completion and installation and during the period aforesaid shall be made good to render due service at the cost of the Supplier within a period of two months from the date of receipt of the notice in that behalf and no decision shall be taken by the Supplier or any person on his behalf as to the defects or deficiency without notice to the failureto do so shall be deemed that the Supplier has no intention to discharge the obligation and thereupon the amount of security, deposited separately or withhold from his bill, shall stand forfeited to the_____ .The Supply of goods other than machineries shall be deemed to becomplete only after final approval by the officer duly authorised on inspection whose decision shall be final and in case of machineries exactly in the same manner and installation which would include test working for 7 (seven) days.
5. The Goods shall be duly packed and insured by the Supplier for transit and be dispatched at the risk of the carriers and the_____ shall not be responsible for any loss or damage during the transit or at any time prior to inspection and approval.

6. That the price of goods shall be paid in advance or on the completion of supplies and installation as the case may be in agreed installments on bills submitted(as indicated in the Payment Schedule) provided the_____ may withhold payment of_____ per cent of the total amount payable as security for the period of guarantee if no amount equal thereto has already been deposited as such.

7. That any damage or deficiency if not removed during the stipulated period by theSupplier may be removed by the _____at his cost to be reimbursed by the Supplier. Any amount payable to the_____hereunder shall be recovered as public demand under theOrissa Public Demand Recovery Act, 1963 and shall bear 6% interest per annum till certificate for recovery is filed.

8. That the supplier shall deposit Rs. _____ towards earnest money at the time of acceptance of tender for due performance of the covenants hereof and such money shall be forfeited to the _____ in case of breach of all or any of the covenants.

9. That any dispute arising hereunder shall be resolved in the following manner:
.....
.....
.....

10. That Sri.....is duly authorised in the orderNo._____, dated _____ by the _____ and Sri_____ on behalf of the company to execute the deed.

11. The cause of action hereunder shall always be deemed to arise at

12. That the stamp duty shall be borne by.....

SCHEDULE OF GOODS Name of the Goods Specification with number and make etc Price agreed

IN WITNESS WHEREOF the parties hereto have signed this deed this day _____of_____mentioned against the signature of each in the presence of_____

Witness

LIST OF ITEM

SL.NO.	NAME OF THE ITEM	APPROX. COST OF THE ITEM
01	PORTABLE ULTRA SONOGRAPHY MACHINE	Rs. 12,00,000/-
02	TECHNICAL SPECIFICATION OF MONITOR FOR DEPTH OF ANESTHESIA WITH NON-INVASIVE CO-OXIMETRY, AND OXYGEN RESERVE INDEX.	Rs. 9,00,000/-
03	VIDEO LARYNGOSCOPE	Rs. 3,50,000/-
04	PORTABLE 12 CHANNEL ECG RECORDER SPECIFICATION	Rs. 3,00,000/-
05	FLEXIBLE BRONCHOSCOPE WITH MONITOR	Rs. 30,000/-
06	EMERGENCY AND RECOVERY TROLLEY	Rs. 8,00,000/-
07	TRANSPORT VENTILATOR	Rs. 80,000/-

4.9.2017
& H.O.D.
...esthesiology
...S. Medical College
Burla – 768017, ODISHA

ITEM SPECIFICATION

Sl.No.	Name of the Item	Specification
1	PORTABLE ULTRA SONOGRAPHY MACHINE	Dimension and Weight : Height-61 mm (2.49 in) console only , 76.5 mm (3.12 in) with handle. Width – 340 mm (13.88 in) / Depth – 287 mm (11.71 in) console only , 327 mm (13.35 in) with handle / Weight – approx.. 4.6 kg Electrical Power :- Voltage – 240 Volt., Frequency- 50/60HZ, Power – Max. 130 VA with peripherals Console Design– Laptop style , Intergratde HDD(40GB), Wireless LAN support, USB ECG (AHA / IEC) (optional) support, CWD (optional) support, 1 probe port with micro- connector , rear handle. USER INTERFACE Operator Keyboard – Alphanumeric Keyboard , Ergonomic hard key operations , Intergrated recording key for remote control of peripheral devices and DECOM devices, 6 TGC pods , with-remapping functionality at any depth, Backlight keys. Display Screen – 15 inch high resolution color LCD – display size 1042 x 768, Interactive dynamic software menu , Open angle adjustable 0 to 160°, Integrated speakers , Brightness adjustment, Audio volume Adjustment. SYSTEM OVERVIEW Applications – Abdominal , Cardiology , Obstetrical , Gynaecological , Musculoskeletal , Vascular , Urological , Small parts and Superficial , Pediatrics and Neonatal , Intraoperative. Scanning Method - Electronic convex , Electronic linear with slant scanning. Transducer Types – Convex array , Microconvex array , Linear array , Phase array . Operating Modes- B- Mode , M- Mode , Automatical A – Mode , Color flow mode (CFM) , Power Doppler imaging (PDI), Continuous wave Doppler (optional) , Pulse wave Doppler(PWD) . Standers Features - High resolution 15 inch color LCD, 325 frames (15 sec) standerd sine memory (64 MB) , 40 GB Hard Drive, Eternal DVD R/ W storage , Loops storage from on the fly scanning and from memory , Automatic Optimization – A4 –to tissue optimization : ATO, Auto CFM Optimization :ACO , Auto Spectrum Optimization : ASO,ACE™ (Adoptive color Enhancement) , True Access, Row data Processing , Patient information database , Image archive on hard drive *, Full M & A calculation package with , Vascular calcs, Cardiac calcs, OB calcs and tables, Fetal trending , Multi Gestational colcs , Urological clacs, Renal clacs. Software Option – Easy 3D , DICOM 3.0 connectivity , LOGIQ view . Hard Ware Option –Battery pack, 3 pedal foot switch (IPX8) , Docking cart , Simple cart, CWD (optional) , USB ECG (AHA / IEC) (optional). Media & Peripheral - External USB DVD – RW (standard) , USB thermal B& W printer , sony UPD 897 option , USB thermal color printer sony upd 23 MD (option) , Bluetooth wireless printers using HP 450 printers where available, Wireless LAN using Linksys WUSB54G supporting he 802.11a/b/g formats where available, Memory stick. Display Modes - Simultaneous capability B/PW/CW,B/CFM or PDI, B/M , Dual B (B/B) , Dual B + CFM or PDI , real time triplex mode. Selectable Alternating Modes- B/M , B/PW, B/CW, B+CFM(PDI) / M (option) , B + CFM (PDI) . PW, B + CFM (PDI) / CW, 3D- mode (option) . Multi Image split Screen – Live and / or frozen , B + B/ CFM or PDI, Independent cine playback ZOOM – Read / Pen and form archive Colorized Image – Colorized B, Colorized M, Colorized PW , Colorized CW. Time line Display – Independent dual B / PW/ CW display , Display formats : Top/ Bottom or side / Side selectable . Format size : ¼ :1/2:1/3:2/3: full format switchable after freeze . Update mode : Time based on sweep, Quad screen display access from split screen. Display Annotation – Institution / Hospital name , Date 3 type selectable YY/MM/DD, MM/DD/YY, DD/MM/YY . Time: Two types selectable 24 hours and 12 hours , Operator identification Patient Name : First , Last & Middle , Patients Identification : 31 characters, Gestational Age from LMP/EDC / GA / BBT Power output readout: MI: Mechanical Index, TIS: Thermal Index Soft Tissue, TIC: Thermal Index cranial (bone) , TIB: Thermal Index Bone , System status (real time and frozen) , Probe orientation marker : Coincidence with a probe orientation marking on the probe, Image preview , Gray / colour bar, Cine gauge , Measurement summary window , Measurement

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Dept. of Anesthesiology
Medical College

result window : Pre-settable display location , Probe type , Application Name, Imaging parameters by mode (current mode) :B/M – Mode frequency gain Edge Enhance / Frame averaging gray map image depth dynamic range frame rate % of power output, Colour flow mode ,colour flow frequency , colour gain ,Spatial filter / packet size , line density / frame average PRF wall filter % of power output

PW- Mode : Doppler frequency , Doppler gain , PRF wall filter , sample volume width , dynamic range , angel correction % of power out put., Focal zone markers, Body pattern : 84 types , B scale markers : 3 types Depth / width /, depth / combination, M scale markers : 2 types Time / Depth , Time , Image management Menu : Menu Deleted and image manager , Image palette , Caps luck : on / off , System manager display , Trackball functionality status : Scroll M & A (Measurement and Analysis)position .size, scan area width and tilt, Battery status , Biopsy guide line and zone , Heart rate , Primary parameter menu (updated on current mode): B Mode – Frequency gray map , dynamic range , image rotate , focus position ,colorize , Edge Enhance , updown invert , focus number .

Colour flow mode : Frequency frame average , angel steer , packet size , PRF colour map , Threshold colour invert , wall filter .

M Mode : Gray amp , Dynamic range , sweep seed , display format , colorized , edge enhance , full timeline.

PW Mode : Frequency baseline , quick Angel, sweep speed, PFR SV length , colorized , Angel correct , spectral invert , wall filter.

Cine mode: Loop Speed , Cycle select , start frame , end frame, frame by frame , run / stop , no cycles, first , last, secondary parameters menu (depend on mode) .

B Mode : Rejection frame average biopsy line density focus width B softner suppression power out put .

M Mode : Rejection power out put.

CF Mode : Baseline dynamic range line density transparency maps focus position ACE capture spatial filter power output.

PW Mode : Rejection dynamic range display format full time line trace direction auto calculation modify class trace method trace sensitivity time resolution spectral average power output.

CW Mode: Doppler frequency Doppler gain velocity wall filter dynamic range angle correction % of power output.

<u>SYSTEM PARAMETERS</u>

<u>System Setup</u> - Diagnostic categories : 8 types , pre settable Red/ Abd , OB , Gyn , Cardiac , Vasc, Urol, Small parts, Pediatric, User Programmable preset capability, Factory preset data. Language setup: English , Chinese, Japanese, French , German , Spanish , Italian, Portuguese, Russian, Greek , Finish , Swedish , Dutch .

Languages for manuals: English , French, German , Spanish , Italian, Portuguese, Japanese, Chinese.

Operation Error Beep, Body surface area : 2 types oriental , occidental , OB report format : 4 types Tokyo Univ. , Osaka Univ. , USA, Europe , EFBW: 8 types Tokyo Univ. , Osaka Univ. , USA, Europe (Separate marz./ Hadlock / Separate , Williams , Brenner), CUA/ AUA for hadlock, Body pattern copy to active side : on/off, Colorizes B/M/ PWD/CWD: 4 types for each , Programmable Annotation library : 24 annotations, Customize common home posion, Menu selection at new patient : 2 types, Patient entry , schedule , Sort criteria for schedule list : 2 types Date & Time , name, Patient name format : 2 types Full name , last & first, Auto deletion of transferred queue: yes/no, Pre- settable Doppler auto volume , Measurement clear operation: 2 types Meas- only , with comments, Display unit age : 5 types Year, Month , week , day , no display , System boot up : 147 sec, Probe change : 8-10 sec.

<u>Pre- Processing</u>– Acoustic power output , Read zoom up to 18x

<u>B.M Mode</u>: Gain, TGC, Image reverse, Depth, Scan area, Auto optimize (AO), Dynamic range, Focus Number, Focus position , Line density, Frequency, Frame average, Edge Enhance , focus width, M/D corsor, Sweep speed for M- Mode.

<u>PW- Mode</u>:Gain, sample volume gate position, length , PRF, Doppler frequency, dynamic range, Auto optimize(ASO), auto volume.

<u>CW Mode</u> – Gain , Velocity, Doppler frequency , dynamic range, auto optimize (ASO), Audio volume.

<u>Colour flow mode</u>:Gain,ROI position , size, PRF, colour line density, colour frequency, packet size, threshold, frame average, focus position.

<u>3D Acquisition (option)</u> : Scan distance, ROI style, Display Format, Scan Plane, Acquisition Mode

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Dept. of Anesthesiology
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		Post Processing:- True Acesses: the new, GE – execlusive, raw data digital processing, Read zoom up to 8X, *B/M Mode:- Gain, Image Reverse, Auto Optimize, Compounding, PIH, Image Rotation, Gray Map, Colorize, Rejection, B Softener, Sweep speed for M Mode* *PW Mode :- Gain, Basline, Angele Correct, Quick Angle, Doppler Invert, Display Format, Sweep Format, Full Timeline, Rejection, Colorize, Compression (Dynamicrange), Auto Calcs, Trace Direction, Modify Cals, Number and average cycles, Trace Method, Trace Sencitivity, Auto Optimize(ASO)* *CW Mode:- Gain, Baseline, Angle Correct , Quick Angle, Doppler Invert, Display Format, Sweep Speed, Full Timeline, Rejection, Colorize, Compression (Dynamic Range), Auto Calcs, Trace Direction, Modify Cals, Number of average cycle, Trace Method, Trace sensitivity, Auto Optimize (ASO)* *Color Flow Mode:- Gain, Baseline, Color Invert, Color Map, Threshold, Frame Average(in loop image)* *Easy 3D (Option):- Threshold (Opacification), Max Type 1, Render, Texture, Gray Surface, scalpel, Auto Movie, Reset* ***IMAGING PROCESSING AND PRESENTATION:-*** *True Scan :- Software Intensive Ultrasound Imaging Platform:- Digital Beamformer, 64 Digital processing channel technology, display image depth: minimum depth of field: 2 cm (zoom and probepedent) maximum depth of field: 30 cm (prob dependent),* *Transmission Focus:- 1-8 focus points selectable (probe and application dependent), focal zon position, continuous dynamic reverse focus / aperture, multi frequency / wideband technology, 256 shades of gray (VGA), Adjustable field of view (FOV), Image reverse (right/left), image rotation 4 steps, rotation 0^0,90^0,180^0,270^0* *CINE Memory / Image Memory:- typical 325 frames (15 sec with standard CINE memory 64 MB depend on FOV, scanning lines etc., CINE gauge and CINE image number display, CINE review : frame-by-frame , loop CINE review speed 1/1,1/2,1/3,1/4,1/5,1/6,1/7,1/8,1/9), selectable CINE sequence for CINE review, start and end frame slections for loop playback, separation maker to indicate time discontinuity, measurement, calculation, and annotation on CINE playback, scrolling time line memory.* *Image Archive /Connectivity:- Clipboard: display thumbline image of the acquires data for the currenteaxm, preview clipboard images: an enlarged preview of the image, recalling images from the clipboard, image browser : archive image from the past patients exam appears as well as image stored for the current exam : - preview of an image, grouping a set of images, analyzing images, image management :- Select all / unselect all, permanent store, discard all the temporary image, deleted selected image, analyze, Ethernet network connection, configurable 3 printer (recording keys p1 – p3) to multiple output device / workflow, archiving format :- DICOM with ultrasound raw data, DICOM, Capture area : pre-settable for each print key :- video area, application window, whole screen, archiving image frames / pre settable for each print key:- single store single frame only, multiple stores cineloop, secondary capture :- screen shot, image compression / picture quality :- pre settable for each print key, quality 1% to 100%, Dataflow :- a set of pre – configured services:- when u select a data flow, the ultrasound system automatically works according to the services associate with the data flow, configurable examination list window, patient information window:- extended search dialog, auto search for patient in search / create patients window, free text address, birth date, extended patients dialog in patients info window, pre defiend text directly in exam list window, examination list on archive button, automatic generation of patients ID, request end examination action, go directly screen from search, dtect unfinished examination, Tools :- verify DICOM directly on removable media, format removable media. (DVD), views :- show you an overview of the ultrasound systems connectivity architure :- the currently selected dataflow, all configured data flow, the network structure tree, the configured button data flows, AVI and JPEG Export :- DICOM support option, verify, print, store, modality worklist, multiframe, storage commitment, modality performed procedure step (MPPS), media exchange, off network/ mobile storage queue* ***Scanning Parameters :-** B Mode :- B/M acoustic output: 0 – 100 %, 10 % step, Image reverse on / off, B colorize 8 types, Thermal Index TIC/TIS/TIB, softener 4 steps, focus number 8 steps, line density 6 steps (prob dependent), frame average 6 steps, edge enhance 6 steps, angle prob dependent 10 – 120^0 , 10 step, Gray scale map 40 types, dynamic range 30 – 120 db, 3db step, harmonic start on / off, virtual convex on / off, depth 2 – 30 cm 1 cm step, focus depth 21 steps default pre settable, rejection 6 steps, frequiency 3 – 4 steps prob dependent*

		Color flow mode :- base line, invert on/off, capture 4 steps pre settable , CF/PDI focus depth 21 steps default pre settable, CF/PDI ACE : on/off, CF/DPI acoustic output : 0 – 100 % 10 % step, pocket size 6,8,10,12,14, (convex) & 8,10,12,14,16 (linear), line density 4 steps , frame average 8 steps, PRF 0.3 k – 9.3 K Hz (prob dependent), spatial filter 6 steps, gain 0 – 40 dB 0.5 steps, wall filter 7 steps, angle / width (deg. mm) probe dependant, CF/PDI vertical size (mm) prob dependent, CF/PDI vertical depth mm default pre-settable, CF/PDI frequiency 2 steps (convex) & 3 steps (linear), CF/PDI focal number 1, color map 13 types, color threshold 10 – 100%, 5 % STEPS *PDI Mode :- PDI map 11 types, CF/ACE on/off, CF/PDI focus depth 21 steps default pre settable, CF/PDI acoustic output 0 – 100 % 10 % step, pocket size 6,8,10,12,14 (convex) & 6,8,10,12,14,16 (linear), spatial filter 6 steps, frame average 8 steps, PRF 0.3 k – 9.3 k Hz (depth dependent), power threshold 10 – 100 % 5 % step, CF/PDI vertical size default pre-settable, CF/PDI central depth default pre – settable, CF/PDI focal number 1, gain 0 – 40 dB 0.5 dB step, wall filter 7 steps, CF/PDI frequiency 2 steps (convex) & 3 steps (linear)* *M Mode :- Sweep speed 8 steps , M color 4 types / M/PW display format V-3B, V-1/2B, V-2/3B,H-1/4B, H-1/4B TL only, B/M acoustic output 0 – 100 %, 2 % step, Rejection 6 steps, dynamic range 30 – 120 dB, 3 dB step, Edge enhance 6 steps, gray scale map 40 types, M gain 0 – 98 dB 2 dB step.* *PW/CW mode :- maximum and minimum velocity scales :- max – 10 m /sec & Min 5 cm /sec, gray scale map 7 types, base line 0 – 100 % , 10 % step, dynamic range 24 – 48, 4 dB step, SV gate 1,2,3,4,5,6,7,8,9,10,11,12,13,14,16 mm , angle correct +/- 90^0,1^0 step, spectral color 6 types, PW sweep speed 8 steps, invert on/off, M/PW display format V-1/3B, V-1/2B,V-2/3B, H-1/2B, H-1/4B, TL only, PW acoustic output 0 – 100 % , 10 % step, spectral average 3 steps pre settable, time resolution 4 steps, PW/CF ration 1,2,4 , rejection 15 steps, gain 0 – 3 dB, 1, dB steps depend on probe / application, PW angle steer 0, +/- 10, 15, 20^0,PRF 640 – 30000 Hz with PW 50000 hZ with CW, sample volume depth 28 steps default pre settable, audio volume, PW frequiency 3 steps (convex), 3 steps (linear), 3 steps (sector)* *LOGIQ view :- available on the following probes -12 L & -8 L* *Vertual convex :- available on the following probes -12 L & -8 L* ***Mesurments / Calculations :-*** *Mode of measurement:- B mode :- distance, circumference / area (Ellipse/ Trace), M Mode:- tissue depth (distance), time interval, depth difference with time interval and slope, doppler mode:- velocity, TAMX, and TAMEAN (manual / auto trace), two velocity with slope and time interval, time interval* *Generic measurement:- B Mode :- % stenosis, Volume, Angle, A/B ration, M Mode :- % stenosis, A/B mode, Heart rate, Doppler Mode :- PI (pulsatility index), RI (resistive index), S/D ratio, D/S ratio, A/B ratio, Max PG (pressure gradient), Mean PG (pressure gradient), SV (stroke volume), FV (flow volume), CO (cardiac output), Heart rate* ***Abdomen and small parts measurements / calculations :-*** *splenic length, width and height , aorta diameter, renal length, Doppler abdomen and renal artery exam calcs : Acceleration, Acceleration time (AT), peak systole (PS), End diastole (ED) or mid diastole (MD), S/D or D/S ratio, resistive index (RI), TAMAX, thyroid length, width and height.* ***Obstetrics Measurements / Calculations :-*** *abdominal circumference (AC), amniotic fluid index (AFI) (moore), antero-postero trunk diameter by transverse trunk diameter ()AxT, biparietal diameter (BPD), crown rump length (CRL), cardio – thoracic area ratio (CTAR), estimated fetal weight (EFW), femur length (FL), Foot Length (Ft),gestational sec (GS), Head circumference (HC), humerus length(HL), length of vertebra (LV), occipitofrontal diameter (OFD), transverse abdominal diameter (TAD), transverse cerebral diameter (TCD), thorax transverse diameter (ThD), tibia length (Tibia), ulna length (Ulna), Multi gestational calculations up to 4 fetuses & compression of multiple fetus data on a graph and a work sheet.* ***OB Work sheet*** *:- Patient information fetus number CUA/ AUA selection fetus position placenta.* *Measurement information:- AFI ,AC ,HC ,BPD,FL.* *Calculation Information:- EFW, EFW GP (growth placenta) , FL/BPD, FL/AC, HC/AC, FL/HC, CL (Cephalic Index).* ***OB Graphs*** *:- Fetal growth curve Graphs: Normal growth curve , positive and negative standard deviations or applicable percentiles, and ultrasound age of the fetus, One measurement per graph , Single or Quad views.* *Fetal Growth Bar Graph :- Ultrasound age and gestational age, Plots all measurementon one graph.* ***Gynecology*** *:- Measurements / Calculations : Ovary Length , Width and Height, Uterus Length*

Professor & H.O.D
Dept. of Anesthesiology
V.S.S. Medical College
Burla – 768017, ODISHA

		, Width and Height , Ovarian follicle measurement : 1 distance, 2 distance , 3 distance., Endometrium thickness (Endo) ***Cardiac Measurements / Calculations B- Mode Measurement*** *:- Aorta: Aortic root diameter (Ao Root Diam), Aortic Arch Diameter (Ao Arch Diam), AscendingAortic Dimeter (Ao Asc pain), Descending Aortic Diameter (Ao Desc Diam), Aorta Isthmus (Ao Isthmus), Aorta *** (Ao st junct).* *Arotic Valve:- Aortic Valve Cups Separation (AV Cusp) , Aortic Valve area planimetry (AVA Plani metry), *** (Trans AVA).* *Left Atrium:- Left Atrium Diameter (LA Diam) , LA length (LA Major) , LA Width (LA Minor), left atrium diameter to AO root diameter ratio(LA/AO Ratio) , Left Atrium area (LAA(d)LAA(s)) , Left Atrium volume , single plane method of disk (LAEDV A2C, LAESV A2C)(LAEDV A4C, LAESV A4C)* *Left Ventricle:- Left Ventricle mass (LVPWd, LVPWs), Left Ventricle volume , Teichholz / Cubic (LVIDd, LVIDs) , Left Ventricle internal diameter* *(LVIDd, LVI Ds), Left Ventricle length (LVLd , LVLs) , Left Ventricle outflow tract diameter (LVOT Diam) , Left Ventricle posterior wall thickness (LVPWd, LVPWs) Left Ventricle length (LV major) , Left Ventricle Width (LV minor) , Left Ventricle outflow tract area (LVOT), Left Ventricle area, two chamber / four chamber / short axis (LVA(d) , LVA(s)), Left Ventricle Endocardia area , Width (LVA(d) LVA(s)), Left ventricle Epicardial area length (LVAepi(d), LVAepi (s)), Left ventricle mass index (LVPWd, LVPWs), Ejection Fraction Techholz / Cube (LVIDd, LVIDs) , Left ventricle posterior wall fractional shortening (LPVWd, LVPWs), Left Ventricle stroke index , Teichholz / Cube (LVIDd, LVIDs and body surface area), Left Ventricle fractional shortening (LVIDd, LVIDs), Left Ventricle stroke volume , Teichholz / Cubic (LVIDd, LVIDs) , Left Ventricle stroke index , single plane , two chamber , method of disk , (LVIDd, LVIDs, LVSd, LVSs) , Left Ventricle stroke index , Left Ventricle stroke index , single plane , four chamber , method of disk , (LVIDd, LVIDs, LVSd, LVSs) , Left Ventricle stroke index ,Left Ventricle stroke index , Bi-plane , Bullet, Method of disk (LVAd, LVAs), Interventricular Septum(IVS) , Left Ventricle Internal Diameter (LVID), Left Ventricle Postrior wall Thickness (LVPW),* *Mitral Valve: Mitral Valve annular diameter (MV Ann Diam) , E- point – to - septum separation (EPSS), Mitral Valve area by pressure half time (MVA by PHT), Mitral Valve planimetry (MVA planimetry) .* *Pulmonic Valve: Pulmonic Valve area (PV Planimetry), Pulmonic Valve annular diameter (PV annular Diam), Pulmonic Diameter (Pulmonic Diam).* *Right Atrium: Right Atrium diameter , Length (RADMa), Right Atrium Diameter , Width (RADMa), Right Atrium area(RAA), Right Atrium Vilume , Single Plane , Method of Disk (RAAd) , Right Atrium Volume , Systolic , Single plane , Method of disk (RAAd), Right Atrium Volume , Systolic. Single plan , method of disk (RAAs).* *Right Ventricle: Right Ventricle outflow tract area (RVOT Planimetry) , Left Pulmonary Artery area (LPA Area) , Right Pulmonary Artery area (RPA Area) , Right Ventricle Internal Diameter (RVIDd, RVIDs),Right Ventricle Diameter , Length (RVD Ma) , Right Ventricle Width (RVD Mi) , Right Ventricle wall Thickness (RVAWd, RVAWs) , Right Ventricle outflow tract diameter (RVOT Diam) , Left Pulmonary Artery (LPA) , Main Pulmonary Artery (MPA), Right Pulmonary Artery (RPA).* *System: Inter-ventricular Septum Thickness (IVSd, IVSs) , Inferior Vena Cava , Pulmonary Artery Diameter (MPA) , Systemic Vein Diameter (Systemic Diam) , Patent Ductus Arterosis Diameter (PDA Diam) , Pericarp Effusion (PEs), PatentForamen Ovale Diameter (PFO Diam), Ventricular Septal Defect Diameter (VSD Diam), Interventricular Septum (IVS) Fractional Shortening (IVSd , IVSs).* *Tricuspid Valve: Tricuspid Valve area (TV panimetry) , Tricuspid Valve annulus dimeter (TV annular Diam)* *M-Mode Measurement: Aorta : Root diameter (Ao root diam)Aortic Valve:Aortic Valve diameter (AV Diam) , Aortic Valve Ejection time (LVET).* *Left Atrium: Left Atrium diameter to Ao root diameter (LA diam).* *Left Ventricle: Left Ventricle volume, Techholz/ Cubic (LVIDd,LVIDs), left ventricle internal diameter (LVIDd,LVIDs),left ventricle posterior wall thickness (LVPWd,LVPWs),left ventricle ejection time (LVET),left ventricle pre ejection period (LVPEP),Interventricular septum (IVS); left ventricle internal diameter (LVID),left ventricle posterior wall thickness(LVPW).* *Mitral Valve: E-point-to-septum separation (EPSS),mitral valve leaflet separation (D-E excursion),Mitral valve D-E slope (D-E slope),Mitral valve E-F slope (E-F slope).* *Pulmonic Valve: QRS complex to end of envelop (Q-to-PV close)*

		Right Ventricle: Right ventricle internal dimeter (RVIDd,RVIDs),right ventricle wall thickness (RVAWd,RVAWs),right ventricle outflow tract diameter (RVOT diam),right ventricle ejection time (RVET),right ventricle pre-ejection period (RVPEP),velocity circumferential fiber shortening(Vcf). *System: Interventricular septum thickness (IVSd,IVSs),pericardeffusion (PE(d)), Interventricular septum (IVS) fractional shortening (IVSd,IVSs).* *Tricuspid Valve; QRS complex to end of envelope (Q-to-TV close).* *<u>Doppler Mode Measurement:</u> Aortic Valve : Aortic insufficiently mean pressure gradient (AR trace), Aortic insufficiency peak pressure gradient (AR Vmax),Aortic insufficiency end diastole pressure gradient (AR trace), Aortic insufficiency end diastole pressure gradient (AR trace), Aortic insufficiency mean velocity (AR Trace), Aortic insufficiency mean square root velocity (AR trace), Aortic insufficiency velocity time integral (AR trace),Aortic Valve mean velocity (AV trace), Aortic Valve mean square root velocity (AV trace),Aortic Valve mean square root velicity (AV trace), Aortic Valve velocity time integral (AV trace) , Aortic Valve mean pressure gradient (AV trace), Aortic Valve peak pressure Gradient (AR Vmax) , Aortic Insufficiency peak velocity (AR Max), Aortic insufficiency End-Diastolic velocity (AR Trace) , Aortic Valve peak velocity (AV Vmax) , Aortic Valve peak velocity at point E(AV Vmax),Aorta Distal coarctation (Coarc pre-Duct),Aortic Valve insufficiency pressure half time (AR PHT) , Aortic valve pressure half time (AV trace) , Aortic Valve acceleration time (AV Acc time) , Aortic Valve deceleration time (AV trace) , Aortic Valve ejection time (AVET), Aortic Valve acceleration to ejection time ratio (AV Acc time AVET), Aortic Valve area according to PHT.* *Left ventricle: Left ventricle outflow tract peak pressure Gradient (VLOT Vmax), left ventricle outflow trace peak velocity (LVOT Vmax), left ventricle outflow trace mean pressure gradient (LVOT trace), left ventricle outflow trace mean velocity (LVOT trace), left ventricle ejection time (LVET) cardiac output by Aortic flow (AVAPI ani metry , AV trace), stroke volume index by Aortic flow (AVA planimetry, AV trace).* *Mitral Valve: Mitral valve regurgitant flow Acceleration (MR trace), mitral valve regurgitant mean velocity (MR trace) mitral regurgitant mean square root velocity (MR trace), mitral regurgitant mean pressure gradient (MR trace),mitral regurgitant velocity time integral (MR trace), mitral valve mean velocity (MR trace), mitral valve mean squareroot velocity (MR trace), mitral valve velocity time integral (MR.trace), mitral valve mean velocity (MR trace), mitral valve mean square root velocity (MR trace),mitral valve velocity time integral (MR trace), mitral valve mean pressure gradient (MR trace), mitral regurgitant peak pressure gradient (MR Vmax), Mitral valve peak pressure gradient (MR Vmax), mitral regurgitant peak velocity (MR Vmax), Mitral valve peak velocity (MR Vmax), mitral valve velocity peak A (MV a velocity), Mitral velve velocity peak E (MV E velocity), mitral valve area according to PHT (MV PHT), Mitral valve flow deceleration (MV trace), mitral valve pressure half time (PV PHT), mitral valve flow acceleration (MV trace), mitral valve E-peak to A-peak ratio (A-C and D-E)(MV E/A ratio), mitral valve acceleration time (MV acc time), mitral valve deceleration time (MV Dec time)mitral valve ejection time (MV trace), mitral valve A-wave duration (MV A Dur), Mitral valve time to peak (MV trace), mitral valve acceleration time/deceleration time ratio (MVAcc/Dec time), stroke volume index by mitral flow (MVA planimetry , MVtrace), mitral valve area from continuity Equation (MVAplanimetry,LVOT Vmax,MV Vmax).* *Pulmonic Valve : pulmonic insufficiency peak pressure gradient (PR Vmax), Pulmonic insufficiency End-Diastolic pressure gradient (PR Trace), Pulmonic valve peak pressure gradient (PV Vmax), Pulmonic End-Diastolic pressure gradient (PR trace), Pulmonic insufficiency peak velocity (PR Vmax), Pulmonic insufficiency End-Diastolic velocity (Prend Vmax), Pulmonic valve peak velocity (PV Vmax), Pulmonic End-Diastolic velocity (PV trace), Pulmonic artery diastolic pressure (PV trace), pulmonic insufficiency mean pressure gradient (PR trace), pulmonic valve mean pressure gradient (PV trace), pulmonic insufficiency mean velocity (PR trace), pulmonic insufficiency mean square root velocity (PR trace), Pulmonic insufficiency velocity time integral (PR trace), Pulmonic valve mean velocity (PV trace), Pulmonic valve mean square root velocity (PV trace),Pulmonic valve velocity time integral (PV trace), Pulmonic insufficiency pressure half time (PR PHT), Pulmonic valve flow Acceleration (PV Acc time),Pulmonic valve Acceleration time (PV Acc time), Pulmonic valve ejection time (PVET), Pulmonic valve Pre-ejection period (PVPEP), QRS complex to end of envelope (Q-to-PVclose), Pulmonic valve Acceleration to ejection time ratio (PV Acc time , PVET), Pulmonic valve Pre-ejection to ejection time ratio (PVPEP, PVET).* *Right Ventricle: Right ventricle outflow tract peak pressure Gradient (RVOT Vmax), Right ventricle systolic pressure (RVOT Vmax), Right ventricle outflow trace peak velocity (RVOT Vmax),Right ventricle diastolic pressure (RVOT trace), Right ventricle outflow trace velocity*

Professor & H.O.D.
Dept. of Anesthesiology
V.S.S. Medical College
Burla-768017, ODISHA

		time integral (RVOT trace), Right ventricle ejection time (RV trace) , Stroke volume by pulmonic flow (RVOT planimetry, RVOT trace),Right ventricle stroke volume index by pulmonic flow (RVOT planimetry , RVOT trace). *SYSTEM: Pulmonary artery peak velocity (PV Vmax), Pulmonary vein velocity peak A(reverse)(P vine A), Pulmonary vein peak velocity (P vein D, P vein S),Systemic vein peak velocity (PDA diastolic , PDA systolic), Ventricular septal defect peak velocity (VSD Vmax), Atrial septal defect (ASD diastolic,ASD systolic), Pulmonary Artery velocity time integral (PV trace), Systemic vein velocity time integral (PDA trace), Pulmonary vein A-wave duration (P vein A dur), Iso volumetric relaxation time (IVRT), IsoVolumetric contraction time (IVCT), Pulmonary Vein S/D ratio (P vein D, P vein S), Ventricular septal defect peak pressure gradient(VSD Vmax), Pulmonic-to-systemic flow ratio (Qp/Qs).* *Tricuspid Valve: Tricuspid regurgitant peakpressure gradient (TR Vmax), Tricuspid valve peak pressure gradient (TV Vmax), Tricuspid valve peak velocity (TV Vmax), Tricuspid valve velocity peak A (TV A velocity), Tricuspid valve velocity peak E (TV E velocity), Tricuspid regurgitant mean pressure gradient (TR trace), Tricuspid valve mean pressure gradient (TV trace), Tricuspid regurgitant mean velocity (TR trace), Tricuspid regurgitant mean square root velocity (TR trace), Tricuspid regurgitant velocity time integral (TR trace), Tricuspid valve mean velocity (TV trace), Tricuspid valve mean square root velocity (TV trace), Tricuspid valve velocity time integral (TV trace), Tricuspid valve time to peak (TV Acc/Dec time), Tricuspid valve ejection time (TV Acc/Dec time), Tricuspid valve A-wave duration (TV A Dur), QRS complex to end of envelope (Q-to-TV close), Tricuspid valve pressure half time (TV PHT), Stroke volume by tricuspid flow (TV planimetry, TV Trace), Tricuspid valve E-peak ratio (TV E/A velocity)* ***<u>Color Flow Mode Measurement</u>*** *Aortic Valve: Proximal is velocity surface area: regurgitant orifice area (AR Radius), Proximal isovelocity surface area : radius of aliased point (AR radius),Proximal isovelocity surface area: Regurgitant flow (AR trace)-Proximal isovelocity surface area: Regurgitant volue flow (AR trace), proximal isovelocity surface area:Aliased velocity (AR vmax).Mitral valve – proximal is velocity surface area : regurgitant orifice area (MR Radius)- Proximal Isovelocity surface area: Radius of aliased point (MR radius)- proximal isovelocity surface area: regurgitant flow (MR trace)- proximal isovelocity surface area : regurgitant volume flow (MR trace)- proximal isovelocity surface area: aliased velocity (MR Vmax)combination mode measurement. Aortic valve – Aortic valve area (Ao root diam, LVOT Vmax, AV Vmax)- Aortic valve area by continuity education by peak velocity (Ao root Diam, LVOTVmax , AV Vmax)-stroke volume by aortic flow (AVAPI animetry, AV trace)-cardiac output by aortic flow (AVA planimetry , AV trace , HR)-Aortic valve area by continuity education VTI (Ao root Diam, LVOT Vmax, AV trace).Left ventricle – cardiac output, Teichholz/Cubic (LVIDd, LVIDs, HR)-cardiac outputtwo chamber , single plane, area – length / method of disk (simpson)(LVAd,LVAs,HR)- cardiac output four chamber,single plan , area length / method of disk (simposon) (LVAd,LVAs,HR)- ejection fraction two chamber , single plane, area – length / method of disk n(simpson)(LVAd, LVAs) – ejection fraction four chamber , single plane, area-length/method of disk (simoson)(LVAd, LVAs) – left ventricle srtroke volume, single plane, twochamber/four chamber, area – length (LVAd,LVAs) – left ventricle stroke volume, single plan , two chamber / foue chamber, method of disk (sompson)(LVIDd,LVIDs,LVAd,LVAs)- left ventricle volume,two chamber/four chamber,area length(LVAd,LVAs)- ejection fraction, Bi-plane, method of disk (LVAd, LVAs,2CH,4CH) – ventricle stroke volume, Biplane, method of disk (LVAd,LVAs,2CH,4CH)- left ventricle volume , Bi-plane,method of disk (LVAd,LVAs2CH,4CH)- left ventricle stroke index,single plane,two chamber/four chamber,area-length (LVSd,LVSs and BSA)- left ventricle volume , single plane , two chamber / four chamber, method of disk (LVAd,LVAs)- left ventricle volume, Apical view, long Axis, method of disk (LVAd, LVAs)- stroke volume by Aortic flow (AVA Planimetry, AV trace). Mitral valve – stroke volume by mitral flow (MVA Planimetry, MV trace) – cardiac output by mitral flow (MVA Planimetry , MV trace , HR). Pulmonic valve – stroke volume by Pulmonic flow (PV Planimetry, PV trace) – cardiac output by Pulmonic flow (PV Planimetry, PV trace, HR). Tricuspid valve – cardiac output by Tricuspid flow (TV Planimetry, TV trace, HR) cardiac worksheet vascular measurement / calculation exam categolies. Generic. Carotid Artery. Lower Extremity Artery. Lower Extremity Vein. Abdomen. Renal Artery. Upper Extremity Artery. Upper Extremity Vein B- Mode measurement. % Stenosis – Diameter – Area. Volume – One distance – Two distances – Three distance – One ellipse – One distance and ellipse. A/B ratio – Diameter – area M- Mode measurement. % stenosis – Diameter. A/B ratio – Diameter – Time – velocity Doppler mode measurement auto Vascular calculation. Acceleration. Accleration time (AT). End diastole*

Professor & H.O.D.
Dept. of Anesthesiology
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		(ED), Mid diastole (MD), or peak systole (PS). ED/PS/ or PS/ED ratio. Heart rate. Pulsatility index (PI). Resistive index (RI). TAMAX. Edit trace vascular worksheet. Vessel Summary. Examiner's comments. Generic worksheet. Intravessel ratio Pediatrics measurements / Calculations. Hip dysplasia. Alpha HIP. d: D ratio probes. *Wide band linear probe-application: Vascular, small parts, Neonatal, pediatrics – probe band width: 4-12 MHz- number of element: 128-FOV (max): 40mm- B- mode imaging frequency: 6.0,8.0,10.0 MHz – Doppler frequency : 4.0,4.4,5.0 MHz – steered angel : +/-20° - Biopsy guide available : Multi angel.* *Wide band phase probe – application : Cardiac, abdomen, OB Gyn, Urology (need to check)- probe band width: 1.5-4 MHz – number of element : 64-FOV:90°- Physical foot print : 18.5 x 11.5 mm – B – mode imaging frequency : 2.5, 3.0 MHz – Harmonic imaging frequency: 3.2, 3.6 MHz..*
02	MONITOR FOR DEPTH OF ANESTHESIA WITH NON-INVASIVE CO-OXIMETRY, AND OXYGEN RESERVE INDEX.	*Description of function: Should provide real-time insight into patient's depth of Anesthesia with Non-Invasive real time Hemoglobin,Carboxyhemoglobin,Methemoglobin,Fluid responsiveness,Perfusion index, Saturated Oxygen(S_pO_2)and Oxygen reserve index (ORI). This can also be upgraded with Parameters like continuous non-invasive Carboxy Hemoglobin, MetHemoglobin, Regional Oxymetry and side stream ETCO2.* 1. *Display / Indicator Requirements* • *Color display with adjustable brightness – backlit active matrix TFT LCD.* • *Touchscreen – multi – touch P-Cap.* • *To measure Depth of sedation.* • *Should have 4 simultaneous EEG channels enable continuous assessment of both sides of the brain.* • *Should have Density spectral array (DSA)which represents EEG power and provide easy – to – interpret, high resolution of bi-hemispheric activity including asymmetry.* • *Parameters – Numerical display of PSI, Perfusion index, Suppression ratio, Artifacts, EMG, Spectral edge frequency (Right & left).* • *Access to menu and user setting for configuring and managing alarms.* • *Screen size – 10.1 in (25.65 cm) diagonal.* • *Resolution – 1280 x 800 pixels* • *Total Hemoglobin(SpHb)- 0-25 g/Dl.* • *Oxygen reserve index (ORI) – 0.00 – 1.00* • *Oxygen saturation (SpO2) – 0 – 100%* • *Pulse rate (PR) – 25 – 240 bpm* • *Perfusion index (PI) – 0.02 – 20 %* • *Pleth variabilityindex – 0 – 100%*
		2. *Technical Requirements* • *Total Hemoglobin (SpHb) 0.1g / Dl* • *Oxygen saturation (SpO2) – 1%* • *Pulse rate (PR) – 1 bpm* • *Perfusion index (PI) – 0.01%*
		3. *Accuracy* • *Total Hemoglobin: 8-17g / dl* *< Accuracy : ± 1g / Dl* • *Saturation Range : 70% to 100%* *< Accuracy : ± 2%* • *Pulse Rate : 25-240 bpm* *< Accuracy : ± 3%* • *Oxygen Reserve Index : 0.00 – 1.00* *< Accuracy : ≥ 85% sensitivity and ≥ 80% specificity to a PaO2 value < 150 mm Hg.*
		4. *Input Impedance* • *22MQ*
		5. *Resolution* • *24 bits at 250 samples per second*
		6. *Sensor Specifications* • *4 active Leads* • *Active electrodes – L1,L2,R1 and R2*

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		• *Ground electrodes – CB* • *Reference electrodes – CT* • *Biocompatibility – Noncytotoxic , nonsensitizing*
		7. Battery Requirements • *Rechargeable batteries* • *Capacity – 7 hours*
		8. Environmental Requirements • *Operating temperature : 0-40° C* • *Storage temperature :-40-60° C* • *Operating Humidity : 10-95%*
		9. Regulatory Requirement • *FDA / CE approved product*
		10. Connectors • *Ethernet – 10/100 MBps (1)* • *Nurse cell – ¼ - in round female (1)* • *USB – USB 2.0 (2)*
		11. Communication Requirements • *WLAN radio – Tri mode IEEE 802.11 a/b/g* • *Encryption – 64/128-bit WEP, Dynamic WEP, WPA-TKIP, WPA2-AES* • *Authentication – open system, shared system , shared key, Pre-shared key (PSK)*
03	VIDEO LARYNGOSCOPE	• *It should have reusable Anti-Reflective full colour OLED DISPLAY to be attached at the top of blade with screen size 6.1 cm / 2.4" diagonal* • *Monitor should have video output capability to be compatible with external monitor and recording devices.* • *It should work on AAA batteries and be used continuously for more then 1 hour.* • *The blade should be ergonomically designed to provide minimal lifting of soft tissue and impact on teeth.* • *It should be supplied with disposable blades of size 3 , with 3 channeled (for easy ETT placement and removal) and 1 non channeled blades.* • *It should have anti fog lens and white led light source.*
04	PORTABLE 12 CHANNEL ECG RECORDER SPECIFICATION	*Electrocardiograph should have capability of recording 12 lead ECG in A4 format and should have to following features:* • *Simultaneous acquisition of up to 12 leads.* • *Facility for recording in manual or auto mode or rhythm or RR mode.* • *Arrhythmia triggered printing mode.* • *Sensitivity : 2.5,5,10,20 mm / mV & AGC.* • *Recording speeds of 12.5, 25 and 50mm / sec.* • *Frequency response : 0.05 Hz to 150Hz.* • *Sampling frequency : 1000Hz.* • *User selectable filter: AC filter, EMG filter – 25 or 35 or 45 Hz or OFF, Anti- Drift filter.* • *Print formats : Manual 3/6/12 & AUTO : 3x 4 with rhythm ; 3x4 with 3 rhythm; 6x2 with rhythm; 12x1.* • *At least 210 mm width for the thermal printer.* • *Alphanumeric key pad for data input.* • *Printer must compatible with roll or fold ECG paper.* • *Save ECG in PDF formats directly to USB drive.* • *Light weight – less then < 5.5 kg with battery.* • *Battery operation – Lithium Ion battery – minimum 200 Min continuous back up with fully charge battery.* • *Easy to carry handle.* • *>5.5" foldable display to preview signal quality prior to printing thereby shaveing time and paper.* • *Capability to generate any number of ECG copies possible for distribution.* • *Automatic measurement and interpretation of ECG date.* • *Facility to store at least 100 ECG data.* • *DF protection.* • *Pace maker detection.*

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		• *PC interface facility and optional PC interface software (Optional ECG data transfer feature)* • *External storing and retrieving facility through USB storage drive.* • *RS 232 / Ethernet port.* • *Direct external PC printer interface facility.* • *Standard accessories must be provided along with the machine power cable – 1 no; 10 lead patient cable – 1no ; suction electrodes – 6 nos; clip – on electrodes – 4 nos; ECG gel – 1 bottle ; Thermal recording paper – 1 no ; User manual – 1 no.* • *Product should be FDA or CE certified.*
05	FLEXIBLE BRONCHOSCOPE WITH MONITOR	***Portable TFT monitor for Bronchoscope & intubation with recording facility*** • *It should be compact & light weight.* • *Monitor should be TFT LCD touch screen with minimum resolution of 800* 480.* • *It should be easy to set up: patient table / IV pole.* • *It should have plug and play system when connected to compatible adult and pediatrics scopes.* • *It should color screen touch display.* • *It should have storage facility up-to 8 GB.* • *Should have brightness control.* • *It should have USB interface to transfer data / files.* • *It should have capability capture high solution image and video.* • *It should have the capability of easy and fast identification of anatomical bookmarks.* • *It should have a inbuilt battery backup of minimum – 2.5 hours.* • *It should have weight less then 500gms.* • *Should comply Indian electric standards 220V/50Hz.* • *It should be CE certified.* ***Accessories:*** *Flexible video scope suitable for adult, Pediatrics & Neonetal Patients.* • *Should have control LEVER on handle for the movement of distal tip up & down in a single plane.* • *Should have a working channel port for instillation of fluids & for insertion of endoscopic accessories.* • *Should have input port for Air & Water supply for battery transmission.* • *Should have suction button to control suction of pressing.* • *Should have camera and light source on distal end along with working channel.* ***Adult Scope*** • *Inner diameter : 2.2mm* • *Insertion channel width: 2.00 mm* • *Outer diameter: 5.00 mm* • *Working length : 600 mm* • *Bending range (deg): 150° up & 130° down* • *Field of view : 85 degree or more* • *Direction of view: 0° (forward view)* • *Depth of field: 8-19 mm or better* ***Pediatrics Scope*** • *Inner diameter : 1.2 mm* • *Outer diameter: 3.8 mm* • *Working length : 600 mm* • *Bending range (deg): 130° up & down* • *Field of view : 85° and more* • *Direction of view : 0° (forward view)* • *Depth of filed : 8-19 mm or better*
06	EMERGENCY AND RECOVERY TROLLEY	*Emergency and Recovery Trolley* *Overall approx.. dimension : L 2050 mm x W 710 mm x 700 to 970 mm adjustable height. Stretcher top approx. dimension : L 1835 mm x W 595 mm.* *Construction: Top frame should be made up of 60 mm x 30 mm x 1.6 mm MSERW rectangular tube and base frame should made up of 60 mm x 30 mm x 1.6 mm MSERW rectangular tube brakes, bolted to an outer of 31.75 mm diameter.*

		Height should be adjustable by foot operated Hydraulic Pump. Trendelenburg and reverse Trendeleburg by gas spring mechanism. It should have provision to hold I.V Rod and both side swing away type stainless steel railing and rubber on top four corners. Detachable X-ray permeable stretcher top with manual backrest which is adjusted on ratchet and sliding arrangement for cassette holder. The handle of top should be made up of stainless steel and covered with pvc soft corner. The trolley should have oxygen cylinder attachment and utility tray. *It should be provided with two section 40 mm thick PU foam mattress covered with rexine.* *Finish: All components should be pretreated in separated in separate eight-tank process for better finish, good adhesion, Phosphating & No's of water rinses and then pretreated materials is coated with epoxy power with film thickness of minimum 60 microns and then oven backed at 1800 C.*
07	TRANSPORT VENTILATOR	Should be a microprocessor controlled ventilator with minimum inbuilt in 8.0" color TFT screen or more, integrated graphics and easy to use rotatory knob operation providing support to Adult / Pediatrics patient range. Ventilator should have easy to use during intra / inter hospital use. Ventilator should have internal Air source / Turbine technology. Ventilator should be based on reliable flow measuring technology, preferably proximal flow sensor which ensures the most precise flow and pressure measurement for better patient assessment. Ventilator mode: Assist / Control Mandatory Ventilation (A / C) : SIMV; CPAP; Pressure support ventilation (PSV); PCMV, PSIMV, APRV, Duo PAP / BiPAP/ BiPhasic. The Machine should be supplied with advance Lung protective modes with Lung strategy display. Machine should also have Combination / Dual modes like:- PRVC or APV or autoflow or similar. Apnea Back-up and any other mode for safe ventilations offering both volume guarantee & lung protective strategies like volume limit etc. It should have enhanced invasive as well as non-Invasive Ventilation modes with facility of effective leak compensation. Ventilator Control: Tidal volume : 2ml to 2000 ml. Respiratory rates: 4 to 80 BPM. Peak flow: 0 to 240 lpm. Flow trigger: 0.1 LPM –20 LPM. PEEP : 0 to 35 cm H20. FiO2: 21 to 100%. L:E ratio 1:9 to 4:1. Inspiratory time: 0.1 to 12 sec. Pressure control: 5 to 60 cm H20. Pressure support: 0 to 60 cm H20. Pressure ramp 25 to 200ms. Expiratory trigger sensitivity (ETS) 5 to 70% of inspiratory peak flow Should have facility of manual breath, standby , apnea backup ventilation, inspiratory hold, expiratory hold, suctioning tool, start-up over body height and IBW. Ventilator should have integrated inspiratory synchronized nebulizer for broncho dilator therapy. Alarms: Low/high minute volume , low / high pressure, low / high tidal volume, low/ high rate , Apnea time, low/high oxygen, oxygen concentration, disconnection, loss of PEEP, exhalation obstruction, flow sensor, power supply, batteries, gas supply. Should have Graphic display of target and parameters for tidal volume, frequency, pressure, and minute ventilation. Should have real time wave forms- Paw, Flow, Volume. Should have both graphical & tabular trends for 72 hrs for all monitored parameters. Should have display of 26 monitoring parameters including VLeak, I:E time, fTotal,FSpont, TI Times, TE Time, Oxygen%, Cstal Lung, P01, Auto PEEp, PTP, RCexp, RCinsp, Rexp Lung, Rinsp Lung, RSB Lung mechanics. WOBimp, etc.. Source input pressure for Oxygen: 280 to 600 kPa(41 to 87 psi). Ventilator should work on low pressure oxygen supply as well as oxygen concentrator. Unit should operate on mains 220 ~ 250VAC supply and it should have internal rechargeable

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V.S.S. Medical College
Burla – 768017, ODISHA

		battery with minimum back up at least 3 hours for whole system includ air supply source. Ventilator should have US FDA / and CE standerd approvals. Scope of Supply: Supply should including with each ventilator: Ventilator Mobile trolley. Operating manual. Ventilator with all function as per specification. Tubing holder set. Flow sensor 10 nos. reusable. Servo control auto heated humidifier with all accessories. Test lung. Oxygen house. Power cable. Expiratory cassette-3 nos. reusable.

4/9/19

Dean & Principal,
VIMSAR, Burla

Professor & H.O.D.
Dept. of Anesthesiology
V.S.S. Medical College
768017, ODISHA