TENDER DOCUMENT

e-TENDER No.: ERO/MMD/731/1131

Tender for the “Supply, Storage, Installation, Testing, Commission and Handing Over of Medical Equipment (Package IV) for Medical College and Hospital at Sundergarh Odisha”.

VOLUME – II

Additional Purchase Condition (APC), Approved Make and Technical Specification.

ENGINEERING PROJECTS (INDIA) LIMITED
(A GOVT. OF INDIA ENTERPRISE)
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Additional Purchase Condition (APC)

1.0 General

The Additional Conditions shall be read in conjunction with General Purchase Conditions where the provisions of these Additional Conditions are at variance with the provisions of the General Purchase Conditions of Contract. The provisions of these Additional Conditions shall take precedence.

2.0 Commencement and Completion of Project

The Contractual Completion Period shall be Two (2) months from the Seventh (7th) day of issue of Letter of Intent of Acceptance of Tender.

3.0 Suppliers Confirmation

The Supplier(s) / tenderer(s) whose tender(s)/bid(s) are accepted hereinafter are called the supplier(s).

4.0 Language

All correspondence, drawings and notations relating to this Contract must be in English.

5.0 References

In case of any conflict, the decision of EPI / NTPC shall be final & binding on the bidder.

6.0 Order of Precedence

In case of ambiguity in Bill of Quantities, Additional Conditions of Contract, Specifications, General Purchase Conditions, the following order of precedence will prevail.

1) Bill of Quantities
2) Additional Purchase Conditions / Corrigendum
3) Specifications
4) General Purchase Conditions

7.0 Conflict in Documents

If there are varying or conflicting provisions made in anyone document forming part of the contract, the Engineer-in-Charge of EPI shall be the deciding authority with regard to the intention of the document and his decision shall be final and binding on the Supplier.

8.0 Price: The following shall be also read with clause no 03 of GPC:

The rates / amount quoted in the Schedule/Bill of Quantities shall be inclusive of all taxes, duties, cess, levies, fees, royalty, etc, except Goods and Service Tax (GST).

The percentage of rate for freight charges for all BOQ items shall be quoted separately in the respective quoting sheet.
9.0 Security Deposit cum Performance Guarantee

Clause 9.0 & 18 of GPC stands deleted and shall be read as below.

"Within 10 (ten) days from the date of issue of letter of Intent or within such extended time as may be granted by EPI in writing, the supplier shall submit to EPI a Security Deposit cum Performance Bank Guarantee in the form appended, from any Nationalized bank / Scheduled Bank equivalent to five percent only (5%) of the Contract Value for the due and proper execution of the contract. This bank guarantee shall remain valid up to ninety (90) days after the end of defects liability period.

In case the supplier fails to submit the Security Deposit cum Performance Guarantee of the requisite amount within the stipulated period or extended period, letter of intent shall stand withdrawn and EMD of Supplier shall be forfeited.

10.0 Registration

The SUPPLIER confirms that it holds EPF Code number, GSTN registration at the state of Odisha, PAN (Permanent Account Number of Income Tax) etc. and shall be responsible for depositing EPF subscription and contribution for labour and staff employed by it on the works and GST, other taxes, duties and dues etc. as per statutory requirements and documentary evidence of same shall be provided to EPI. The SUPPLIER shall also be responsible for labour welfare and for arranging labour and other licenses/permits/clearance etc. for the project at their own. The SUPPLIER shall comply with all the requirements as per labour laws/acts. All the records in this regard shall be maintained by the SUPPLIER as per statutory requirements and rules and shall be produced by the SUPPLIER on demand if required. In case, the suppliers do not have PF Registration No. &GSTN (in the state of Odisha) registration, the same shall be obtained by successful suppliers within one month from the date of LOI or before release of First RA Bill.

11.0 Taxes and Duties

The award of the Contract shall be on 'Work Contract' as defined in section 2 (119) of the CGST Act, 2017. The rates/amount quoted in the Bill of Quantities shall be inclusive of all taxes, duties, cess, levies, fees, royalty, etc, except Goods and Service Tax (GST). The freight charges shall be quoted separately. The Goods and Services Tax (GST) applicable on all items of Works described in the Bill of Quantities, shall be quoted separately in attachment entitled “Annexure- I - Taxes & Duties” in Vol. III.

The GST quoted by the bidder shall be as applicable in India as on seven (7) days prior to the deadline for submission of Techno-Commercial Bids. Due Input Tax credits under GST as per the relevant Govt. Policy, wherever applicable, shall be taken into account by the Bidder while quoting his price. Income Tax and other Deductions of Taxes as applicable shall be deducted from Bills / due payment of the Supplier.

EPI shall bear and pay/reimburse to the bidder Goods and Services Tax (GST) applicable on the value of Works Contract described in the Bill of Quantities. However, the taxes, duties & levies as may be applicable on the materials used for Works Contract shall be to the bidder’s account and no separate claim in this regard will be entertained by EPI. Further, in case of any variation in the rates of the GST after the date seven (7) days prior to deadline set for submission of the Techno-
Commercial bids, the same shall be paid/ reimbursed to/ recovered from the bidder subject to submission of documentary evidence.

If a new tax, duty or levy is imposed under statute or law in India after the date seven (7) days prior to date of Techno-Commercial bid opening and the successful bidder becomes liable there under to pay and actually pays the said new tax, duty or levy for bonafide use on the Works contracted, the same shall be reimbursed to the successful bidder against documentary evidence of proof of payment.

The Supplier shall, within a period of 30 days of the imposition of any such new tax, duty or levy give a written notice thereof to the Engineer-in-Charge of EPI that the same is given pursuant to this condition, together with all necessary information relating thereto.

The payment/reimbursement of statutory variations in the rates of tax and/or of new tax, duty or levy imposed under statute or law in India as per above, would be restricted only to direct transactions between the EPI and the successful bidder.

a. It shall be incumbent upon the successful bidder to obtain a registration certificate under the GST Law, and other law(s) relating to levy of tax, duty, cess etc. and necessary evidence & GSTIN number to this effect shall be furnished by the successful bidder to the EPI.

b. The successful bidder must submit as a compliance of GST Act, the invoices in GST compliant format failing which the GST amount shall be recovered / adjusted by EPI without any prior notice from the next invoices or available dues with EPI.

c. The successful bidder should update /upload the GST/Taxes data periodically so as to avail ITC credit by EPI failing which it shall be recovered / adjusted by EPI without any prior notice from the next invoices or available dues with EPI.

d. The rates/amount quoted in the Schedule of Quantities shall be inclusive of all taxes, duties, cess, levies, fees, royalty, etc, except Goods and Service Tax (GST). The freight charges shall be quoted separately.

e. Bidder while quoting the rates in the tender must also consider the ITC Credit applicable for the works, if any.

12.0 Insurance

Clause 5 of GPC stands deleted and shall be read as below.

Supplier is required to take Contractor’s All Risk Policy or Erection All Risk Policy (as the case may be) including Marine Insurance from an Approved Insurance Company in the joint name with EPI and NTPC and bear all costs towards the same for the full period of execution of works including the defect liability period for the full amount of contract against all loss or damage from whatever cause arising for which he is responsible under the terms of the contract and in such manner that EPI and the Supplier are covered during the period of execution of works and/or also covered during the period of defect liability for the loss or damage as under:-

a) The work and the temporary works to the full value of such works.
b) The materials and other things brought to the Site for their full value.

Supplier shall submit to EPI, copies of all such insurance policies and receipts for payment of current premium and also whenever required by EPI the Supplier shall produce the original policy or the policies of insurance and the receipts for payment of the current premiums.

INSURANCE UNDER WORKMEN’S COMPENSATION ACT

Supplier is required to take insurance cover as per requirement of the Workmen’s Compensation Act, 1923 amended from time to time from an Approved Insurance Company and pay premium charges thereof. Supplier shall submit to EPI copies of all such insurance policies and receipts for payment of current premium and also whenever required by EPI the Supplier shall produce the original policy or the policies of Insurance and the receipt of payment of the current premiums.

THIRD PARTY CONTRACTOR INSURANCE

Supplier is required to take third party CONTRACTOR insurance cover for an amount of five percent (5%) of Contract Value from an Approved Insurance Company for insurance against any damage, injury or loss which may occur to any person or property including that of EPI, and NTPC arising out of the execution of the works or temporary works. Supplier shall submit to EPI copies of all such insurance policies and receipts for payment of current premium and also whenever required by EPI the Supplier shall produce the original policy or the policies of insurance and the receipt of payment of the current premiums.

In case of failure of the Supplier to obtain insurance for works, insurance under Workman Compensation Act and Third Party CONTRACTOR insurance as described above within one month from the date of commencement of work, running account payments of the Supplier shall be withheld till such time the aforesaid insurance covers are obtained by the Supplier.

13.0 Compliance to statutory Rules

The SUPPLIER shall ensure compliance with all Central, State and Local Laws, Rules, Regulations etc. as applicable or may be applicable during the course of execution, maintenance etc. of the works and shall indemnify against any claim or damages whatsoever on such accounts. The SUPPLIER shall also keep EPI/NTPC indemnified at all times against infringement of any Patent or Intellectual Property rights.

14.0 Measurement of Work Done

Engineer-in-charge shall, except as otherwise provided, ascertain and determine measurement and the value in accordance with the contract work done.

All measurement of all items having financial value shall be entered in Measurement Book so that a complete record is obtained of all works performed under the contract.

All measurements shall be taken jointly by EPI and by the Supplier or his authorized representative and such measurements shall be signed and dated by EPI and the Supplier in token of their acceptance. If the Supplier objects to any of the measurements recorded, a note shall be made to that effect with reason and signed by both the parties.
If the Supplier or his authorized representative does not remain present at the time of measurements after the Supplier has been given a notice three (3) days in advance or fails to countersign or to record objection within a week from the date of the measurement then such measurements recorded in his absence by EPI/NTPC shall be deemed be accepted by the Supplier.

The Supplier shall, without extra charge, provide all assistance with every appliance labour and other things necessary for measurements and recording.

EPI/NTPC may cause to check the measurement recorded jointly or otherwise as aforesaid and all provisions stipulated herein above shall be applicable to such checking of measurement.

It is also a term of this contract that recording of measurements of any item of work in the measurement book and/or its payment in the interim, on account or final bill shall not be considered as conclusive evidence as to the sufficiency of any work or material to which it relates nor shall it relieve the Supplier from liabilities from any over measurement or defects noticed till completion of the defects liability period.

**15.0 Documents to be submitted along Bill/Invoice**

Following documents shall be enclosed along with each bill for submission otherwise the same shall not be accepted by EPI for checking and certification of payment.

a) Monthly progress reports in the format as issued by EPI/NTPC— the Sample report is available with EPI/NTPC for Supplier’s reference.

b) Safety measurement certificate.

c) Manufacturer’s Test Certificates.

d) All the information/documents contained in relevant checklists.

Formats shall be provided to the Supplier by EPI.

**16.0 Payment Terms**

Clause 4.0 of GPC stands deleted and shall be read as below.

Unless otherwise agreed upon between the parties payment on receipt of materials at site / store and on submission of separate bills/invoice for each stage/part payment as below by a cheque or demand draft or RTGS in accordance with the following procedure.

16.1 Seventy-five percent (75%) of the BOQ rate of the item/ equipment/ material shall be paid on receipt of the same at site, and on production of Inspection Report issued by the Inspector (in case inspection is done at manufacturing unit), Manufacture’s Test Certificate, consignment note, and Interim Joint Inspection report after proper Storage at site and submission of Indemnity Bond in the prescribed pro-forma.

16.2 Twenty percent (20%) of the BOQ rate of the item/ equipment/ material shall be released after assembling, installation, testing & commissioning and final inspection.
16.3 Balance five percent (5%) of the BOQ rate of the item/ equipment/ material shall be released within 30 days after expiry of the defects liability period as per Clause No. 39 of APC

17.0 **Price Escalation**

No Price Escalation is admissible.

18.0 **Additional / Extra Items**

The following procedures shall be meticulously adopted in case of any additional / extra items.

a) EPI shall issue a Contemplated Change Notice (CCN) in the format enclosed as Annexure-VII.

b) Based upon the requirement stipulated in CCN Supplier shall submit analysis to reflect financial implications if any, within seven (7) days from issue of CCN. The price analysis shall be based upon rates given in bill of items for the similar works or can be derived on the basis of basic rate of material and labour appended with annexure.

c) After review and approval of analysis by Engineer In-charge of EPI / NTPC, Change Order shall be issued by EPI in the Change Order format enclosed as per the Annexure-VIII to enable Supplier to execute item.

d) For substitute items Supplier shall produce price analysis for the approval of EPI / NTPC and adjustment in the contract amount accordingly. No overheads and profits shall be applicable against substituted items.

19.0 **Variation**

The variation limit shall be ± 10% of the value of Contract for works and of similar nature and specification at the same accepted rate. The limit of variation for individual BOQ item is ± 25%.

20.0 **Alterations, Additions and Omissions**

EPI / NTPC can make any variation of the form, quality or quantity of the works or any part thereof that may, in their opinion be necessary and for that purpose, or if for any other reason it shall in his opinion be desirable, they shall have power to order in writing to the Supplier to do and the Supplier shall do any of the following:

a) Increase or decrease in the quantity of any work included in the contract in which case the value of contract may be increased or decreased.

b) Omit any such work.

c) Change the dimension of any part of the works and

d) Execute additional work of any kind necessary for the completion of the works and no such variation shall in any way vitiate or invalidate the contract, but the value, if any of all such variations shall be taken into account to ascertain the amount of the Contract Price.

e) The Supplier shall not affect any of the aforementioned changes without the written order of EPI / NTPC.
21.0 Deviation, Extra items pricing

In the case of extra items, the rate analysis submitted by the Supplier as per above Clause 18.0 of APC, the Engineer-In-Charge of EPI shall within one (1) month of the receipt of the claims supported by analysis, shall determine the rates on the basis of the market rates/other prevailing codes as approved NTPC in consideration to the analysis of the rates submitted by the Supplier, and the Supplier shall be paid in accordance with the rates so determined and approved.

22.0 Deviation, Substituted items, Pricing

In the case of substituted items, the rate for the agreement item (to be substituted) and substituted item shall also be determined in the manner as mentioned in the aforesaid para.

a) If the market rate for the substituted item so determined is more than the market rate of the agreement item (to be substituted) the rate payable to the Supplier for the substituted item shall be the rate for the agreement item (to be substituted) so increased to the extent of the difference between the market rates of substituted item and the agreement item (to be substituted).

b) If the market rate for the substituted item so determined is less than the market rate of the agreement item (to be substituted) the rate payable to the Supplier for the substituted item shall be the rate for the agreement item (to be substituted) so decreased to the extent of the difference between the market rates of substituted item and the agreement item (to be substituted).

23.0 Deviation, Deviated Quantities Pricing

a) In the case of contract items, substituted items, contract cum substituted items, which exceed the limits laid down in Clause -19.0, the Supplier may within fifteen days of receipt of order or occurrence of the excess, claim revision of the rates, supported by proper analysis, for the work in excess of the above mentioned limits; provided that if the rates so claimed are in excess of the rates specified in the schedule of quantities the Engineer-In-Charge of EPI shall within one month of receipt of the claims supported by analysis, after giving consideration to the analysis of the rates submitted by the Supplier, determine the rates on the basis of the market rates/other prevailing codes as approved by NTPC and the Supplier shall be paid in accordance with the rates so determined.

b) The provisions of the preceding paragraph shall also apply to the decrease in the rates of items for the work in excess of the limits laid down in Clause-19.0 and the Engineer-in-Charge of EPI shall after giving notice to the Supplier within one month of occurrence of the excess and after taking into consideration any reply received from him within fifteen days of receipt of the notice, revise the rates for the work in question within one month of expiry of the said period of fifteen days having regard to the market rates or current schedule of rate or other prevailing codes as approved by NTPC.

c) The Supplier shall send to the Engineer-In-Charge once every three months an up to date account giving complete details of all claims for additional payments to which the Supplier may consider himself entitled and of all additional work ordered by the Engineer-in-Charge of EPI which he has executed during the
preceding quarter failing which the Supplier shall be deemed to have waived his right.

24.0 Compensation for delay

Clause 13.0 of GPC stands deleted and shall be read as below.

If the Supplier fails to maintain the required progress as committed/ or to complete the work and clear the site on or before the date of completion or extended date of completion, he shall, without prejudice to any other right or remedy available under the law to EPI on account of such breach, pay compensation as agreed the amount calculated at the rates stipulated below as EPI may decide (whose decision in writing shall be final and binding) on the amount of tendered value of the work for every completed day/month (as applicable) for which progress remains below that specified in schedule or that the work remains incomplete.

Compensation for delay of work is at the rate of One percent (1%) per week of delay to be computed on per day basis.

Provided always that the total amount of compensation for delay to be paid under this condition shall not exceed ten percent (10%) of the contract amount.

25.0 Work subjected to audit

The work executed by the SUPPLIER shall be subject to audit and quality control checks from Quality Control Division & Technical audit of EPI/NTPC, inspecting Agency of the Client and Chief Technical Examiner of Central Vigilance Commission, Govt. of India. In the eventuality of any defect/sub standard works as brought out in the report or noticed otherwise at any time during execution, maintenance period etc., the same shall be made good by the SUPPLIER without any extra cost. In case the SUPPLIER fails to rectify the defect/sub-standard work within the time period stipulated by EPI/NTPC, necessary action as deemed fit shall be taken by EPI/NTPC and decision of EPI/NTPC shall be final and binding on the Supplier.

26.0 Action in case work not done as per Specifications

All works under or in course of execution or executed in pursuance of the contract shall at all times be open and accessible to the inspection and supervision of the Engineer-in-Charge, his authorized representative in charge of the work and all the superior officers, officer of the Quality Control Department of EPI / NTPC and of the Cabinet (Technical) Vigilance, the Supplier shall, at all times, during the usual working hours and at all other times at which reasonable notice of the visit of such officers has been given to the Supplier either himself be present to receive orders and instructions or have a responsible agent duly authorized in writing, present for that purpose. Orders given to the Supplier's agent shall be considered to have the same force as they had been given to the Supplier himself.

If it shall appear to the Engineer-In-charge of EPI or his higher authority or his authorized subordinates in charge of the work or to the Cabinet (Technical) Vigilance or his subordinate officers, that any work has been executed with unsound, imperfect or unskilful workmanship, or with materials or article provided by him for the execution of the work which are unsound or of a quality inferior to that contracted or otherwise not in accordance with the contract the Supplier shall, on demand in writing which shall be made within the period specified by the Engineer-in-charge of EPI/NTPC all such materials or articles under complained of notwithstanding whether
or not the same may have been passed, certified and paid for forthwith rectify, or remove and reconstruct the work so specified in whole or in part, as the case may require or as the case may be, remove the materials or articles so specified and provide other proper and suitable materials or articles at his own charge and cost.

In the event of the Supplier, failing do so within a period specified by the Engineer-in-Charge of EPI in his demand aforesaid, then the Supplier shall be liable to pay compensation at the same rate as under Clause -24.0 of APC of the contract (for non-completion of the work in time) for this default. In such case the Engineer-in-charge may not accept the item of work at the rates applicable under the contract but may accept such items at reduced rates as the competent authority may consider reasonable during the preparation of on account bills or final bill if the item is so acceptable without detriment to the safety and utility of the item and the structure and incidental items rectified, or removed and re-executed at the risk and cost or Supplier. Decision of the Engineer-in-Charge to be conveyed in writing in respect of the same will be final and binding on the Supplier.

27.0 Supplier Liable for Damages, defects during maintenance period

If the Supplier or his working people or servants shall break, deface, injure or destroy any part of building in which they may be working, or any building, road, road curb, fence, enclosure, water pipe, cables, drains, electric or telephone post or wired, trees, grass or grassland, or cultivated ground contiguous to the premises on which the work or any part is being executed, or if any damage shall happen to the work while in progress, from any cause whatever or if any defect, shrinkage or other faults appear in the work within defect liability period after a certificate final or otherwise of its completion shall have been given by the Engineer-in-charge of EPI as aforesaid arising out of defect or improper materials or workmanship the Supplier shall upon receipt of a notice in writing on that behalf make the same good at his own expense or in default the Engineer-in-charge of EPI cause the same to be made good by other workmen and deduct the expense from any sums that may be due or at any time thereafter may become due to the Supplier, or from his security deposit or the proceeds of sale thereof or of a sufficient option thereof.

28.0 Safety Measures and Public Convenience

The Supplier shall in the course of execution of the work take all necessary precautions for the protection of all persons and property at his cost.

29.0 Schedule of Completion

Successful suppliers shall submit supply, assembly and placement schedule for all BOQ items within fifteen (15) days. It shall indicate the forecast (mile-stones) of the dates of commencement and completion of supply of items, trades, sections of the work and may be amended as necessary by agreement between the Engineer-In-Charge and the Supplier within the scheduled completion period (i.e. 2 Months).

30.0 Time Essence of Contract & Extension for Delay

30.1 The time allowed for execution of the Works as specified in “Memorandum” to the “Form of Tender” or the extended time in accordance with these conditions shall be the essence of the contract. If the Supplier commits default in commencing the execution of the work as aforesaid, EPI/NTPC shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the security deposit money
If the work(s) be delayed by:

a) force-majeure or
b) serious loss or damage by fire, or
c) Civil commotion of workmen, strike or lockout, affecting any or the trades employed on the work, or
d) delay on the part of other Suppliers or tradesmen engaged by Engineer-In-Charge in executing work not forming part of the Contract, or
e) any other cause which, in the absolute discretion of EPI, is beyond the Supplier's control, then, upon the happening of any such event causing delay, the Supplier shall immediately give notice thereof in writing to the Engineer-In-Charge but shall nevertheless use constantly his best endeavours to prevent or make good the delay and shall do all that may be reasonably required to the satisfaction of the Engineer-In-Charge to proceed with the works.

Request for extension of time, to be eligible for consideration, shall be made by the Supplier in writing within fourteen (14) days of the happening of the event causing delay on the prescribed form and at least fifteen (15) days before the completion date. The Supplier may also, if practicable, indicate in such a request the period for which extension is desired. In any such case EPI may give a fair and reasonable extension of time for completion of work. Such extension shall be communicated to the Supplier by the Engineer-In-Charge in writing, within three (3) months of the date of receipt of such request. Non application by the Supplier for extension of time shall not be a bar for giving a fair and reasonable extension by the Engineer-In-Charge and the extension of time so given by the Engineer-In-Charge shall be binding on the Supplier.

31.0 Codes

In the absence of definite provision on particular issue in the specification / codes, reference may be made to relevant latest Codes recommended to be used and good engineering practices and / or as per instruction / suggestion of EPI / NTPC.

32.0 Supplier's Responsibilities during inspections

a) Furnish labour and facilities to:
   i) Provide access to work to be inspected and tested.
   ii) Facilitate inspections and tests.
   iii) Make good work disturbed by inspection and test.
   iv) Provide all test equipment required for carry out field tests.

33.0 Inspection and Testing

Clause 6.0 of GPC stands deleted and shall be read as below.

The stores/material covered as per this Work Order / Agreement shall be subject to preliminary inspection and testing at any time prior to shipment and /or dispatch and final inspection within a reasonable time after arrival at the place of delivery. The Inspector shall have the right to carry out the inspection and testing which include raw materials at manufacturing unit and the material at the time of actual dispatch before and after completion of packing.
The supplier shall inform the EPI at least twenty one (21) days in advance, place, date and time of offering the stores/material for required inspection, provide free access to Inspectors during normal working hours at manufacturing unit and places at their disposal, internal test reports, material/component test certificates, approved drawings and all useful means of performing, checking, marking, testing, inspection and final stamping to be made available at his own expenses. Stores/material offered without internal testing and quality documents shall be treated as not ready for inspection.

If, after receiving inspection call from the Supplier, the inspector on reaching the works finds that the equipment/materials offered for inspection is not ready or fails to meet quality parameters, the inspection call will be considered to be a cancelled and material offered under the inspection call are treated rejected / disqualified.

The material shall be offered in lots and the inspector has liberty to choose randomly Inspection Samples from each lot for inspection. In the event of rejection of Inspection Samples due to defective workmanship/material/design, the entire lot is treated as rejected and should be offered for re-inspection at the earliest. EPI shall have the right to deduct the cost of re-inspection from the supplier's invoices/bills.

Final inspection shall be carried out after unpacking, assembly (if any) and placing of the items/material.

Even if inspections and tests are fully carried out, supplier shall not be absolved to any degree from their responsibilities to ensure that stores/material supplied, comply strictly with requirements, of the purchase order at the time of delivery, inspection on arrival at site, after its erection or start-up and guarantee period.

In any case, the stores/material must be strictly in accordance with the Work Order / Agreement failing which EPI shall have the right to reject goods/material and hold the supplier liable for non-performance of contract.

EPI reserves the right to test any item or number of items to any government testing laboratory in India and the total cost for forwarding and testing of these materials will be borne by the bidder.

34.0 Testing Laboratory Services

All the inspection & testing charges to be carried at testing laboratory designated EPI/ NTPC shall be borne by the supplier.

35.0 Manufacturer's Test Certificate

Clause 7.0 of GPC stands deleted and shall be read as below.

Manufacturer's test certificate shall be submitted by the Supplier along with invoice / challan. Failure to comply may cause delay in release of payment.

36.0 Sub-standard Material

Any material/item/fitting/fixtures rejected by EPI / NTPC shall be removed from the site within forty eight (48) hours of issue of instructions to this effect by EPI. Failing this, the
EPI shall have the rights to get these removed and the Supplier shall have no claim whatsoever in this regard.

37.0 Defects Liability Period

The Supplier shall be responsible for the rectification of defects in the works for a period of **12 (Twelve) months** from the date of taking over of the works in totality by the Owner/ Client. Any defects discovered and brought to the notice of the Supplier forthwith shall be attended to and rectified by him at his own cost and expense. In case the Supplier fails to carry out these rectifications, the same may without prejudice to any other right or remedy available, be got rectified by EPI at the cost and expense of the Supplier.

38.0 Dispatch Instructions

Clause 10.0 of GPC stands deleted.

39.0 After sales service and training

Clause 11. of GPC stands deleted and shall be read as below.

The supplier shall provide necessary "After Sales Service" (for items supplied) free of cost to the satisfaction of the end user.

40.0 Approval of Engineer-in-charge

All works to be executed under the contract shall be executed under the direction and subject to the approval in all respects by the Engineer-In-Charge who shall be entitled to specify time and the manner they are to be commenced, and from time to time carried on.

41.0 Approval from Client

The Supplier shall be responsible for obtaining all approvals from EPI/ Client with regard to quality of materials & workmanship and measurements etc.

42.0 Suppliers Use of Sites

The Supplier is restricted to use the site without permission and shall obtain prior permission for entering the work premises or for use as per contractual works.

43.0 Storage of Material

The bidder shall make his own arrangement for storage of all materials at site including its safe custody, watch and ward, & damages etc. at his own cost till completion of the work and handing over of the same to EPI/NTPC.

44.0 Association with EPI

If desired by EPI, the Supplier shall be available / associate with EPI in meetings with Client for its portion of work at their own cost. The Supplier shall furnish all information and clarifications as and when required by EPI/NTPC.

45.0 Co-ordination with other agencies
This is a Percentage Rate base contract. Therefore, it shall be the Suppliers responsibility to ensure complete co-ordination between works of various agencies such as Civil, Electrical, Utilities, etc. It is deemed that the Supplier have considered this aspect carefully while quoting tender.

46.0 Site Meetings

Site meetings shall be held at regular intervals and in addition to other meeting required by EPI/NTPC. There shall be at least one site meeting per fortnight in the presence of EPI/NTPC to discuss and co-ordinate the work. The Supplier shall provide responsible member of his organization who is authorized to commit and bind the Supplier to any agreement reached during said meeting.

47.0 Non-interference with other works

The Supplier shall plan and execute the works in his scope of work in such a manner that the other works, connected with the works of the Supplier, but not included in the Supplier’s scope of work, do not get affected/delayed.

48.0 Local Manpower

Successful suppliers shall ensure maximum utilization of local manpower as far as possible.

49.0 Preservation of tree/vegetation

Existing trees and other forms of vegetation to be preserved by avoiding disturbance / damage due to activities.

50.0 Supplier to indemnify Govt. against Patent Rights

The Supplier shall fully indemnify and deem indemnified EPI/NTPC against any action, claim or proceeding relating to infringement or use of any patent or design or any alleged patent or design rights and shall pay any royalties which may be payable in respect of any article or part thereof included in the contract. In the event of any claims made under the action brought against EPI/NTPC in respect of any such matter as aforesaid the Supplier shall be immediately notified thereof and the Supplier shall be at liberty, at his own expenses, to settle any dispute or to conduct any litigation that may arise there from, provided that the Supplier shall not be liable to indemnify EPI/NTPC if the infringement of the patent or design or any alleged patent or design right is the direct result of an order passed by the Engineer-in-Charge of EPI/NTPC in this behalf.

51.0 Recovery

Any amount found recoverable from the Supplier shall be recovered without prejudice to any other mode of recovery.

52.0 Release of Security Deposit

The entire Security Deposit (SD) amount shall be released to the Supplier after Ninety (90) days of expiry of defect liability period if all the defects are rectified by Supplier, raised during defect liability period.

53.0 Water Supply
The Supplier shall make their own arrangements for water required for construction as well as for drinking and other purposes for their staffs and labour and the personnel of EPI / NTPC.

54.0 **Electricity**

a) Supplier shall obtain temporary power connection from Local Authorities at his cost.

b) Supplier shall make his own arrangements for further distribution as per their requirement and cost of cables switches, fuses, meters etc. shall be borne by Supplier. It is to be noted that power from local authority may not be continuous and there may be possibilities of disruption of power. Hence Supplier shall install sufficient number of generators of adequate capacity duly approved by EPI/NTPC bearing all operating and installation.

c) EPI/NTPC reserves the right to supply power at mutually agreed rates as and when sufficient availability of same is attained.

55.0 **Gate keeper & Watchman**

The Supplier shall provide, maintain at his own expense gate keepers and watchmen to ensure at all times effective protection of the works, materials and workmen, until completion of the project, at his own risk and cost.

56.0 **Safety Measures**

It shall be the sole responsibility of the Supplier to ensure all safety measures giving proper, prior notices etc. and obtaining prior permission from concerned local authorities as per bye-laws or directions issued by them at his own cost. No claim of the Supplier in this regard shall be entertained.

57.0 **Recovery against Labour Safety**

In respect of all labour directly or indirectly employed in the work for the performance of the Supplier’s part of this contract, the Supplier shall at his own expense arrange for the safety provisions as per CPWD Safety Code framed from time to time and shall at his own expense provide for all facilities in connection therewith. Failing which, necessary action as deemed fit shall be taken by EPI/NTPC.

58.0 **Sanitation/safety facilities for workers**

The Supplier shall adhere to guidelines laid down in the National Building Code of India 2005 for constructional practices and safety of workers Health and Sanitation facilities for workers/working residing on site. This shall include, but not limited to, safety equipment (safety helmets, jackets, boots, gloves etc), safety nets/harnesses, appropriate warning/safety signs, fire extinguishers, adequate light for working during evenings/night, regular maintenance and repairs of machinery / equipments and adequate sanitation/portable drinking water facilities. The Acts and rules as stipulated by Govt. of India, enforced by the Chief Labour Commissioner (Central) (refer web site clc.gov.in) and revised time to time shall be applicable in case of any violations with respect safety.

59.0 **Supplier's risks**
All risks of loss of or damage to physical property and of personal injury and death which arise during and in consequence of the performance of the contract other than the excepted risks are the responsibility of the Supplier.

60.0 Warranty

Clause 17. of GPC stands deleted and shall be read as below.

The supplier shall warrant that every material/plant, machinery and equipment to be supplied be new and free from all defects and faults in design, material, workmanship and manufacture and shall be of the highest quality.

The items should be consistent with the established, recognized or stipulated standards for material of the type usually used for the purpose and in full conformity with the specifications and drawings or samples, if any. Equipment offered must be capable, during operation, of withstanding extreme dusty, wet, humid and sultry conditions. The warranty shall continue not withstanding inspection, payment, acceptance of tendered equipment and shall expire except in respect of complaints notified to supplier prior to such date within 12 months from the date of Taking Over.

61.0 House Keeping

General:

a) Conduct cleaning and disposal operations to comply with local authority and antipollution Laws.
b) Store volatile waste in covered metal containers and remove from premises at the end of each working day.
c) Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.

Materials:

For surfaces Use only cleaning materials recommended by manufacturer and as recommended by cleaning material manufacturer.

Cleaning:

a) Provide on-site containers for collection of waste materials and debris.
b) Dispose waste materials and debris off site.
c) Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

Final Cleaning:

a) Remove grease, dust, dirt, stains, labels, fingerprints and other foreign materials, from finished surfaces including glass and other polished surfaces.
b) Remove debris and surplus materials from crawl areas and other accessible concealed spaces.

62.0 Brand Name
The specific reference in the Specifications and documents to any material by trade name, make or catalogue number shall be construed as establishing standard or quality and performance and not as limited competition.

63.0 Submission of Manuals / Catalogues

Maintenance manuals, product catalogues, all warranties and guarantees against each section of work shall be submitted hardbound in triplicate on completion as per direction of EPI.

64.0 Shop Drawings

Clause 21 of GPC stands deleted and shall be read as below:

The supplier shall submit the required drawings / data sheets alongwith documents for prior approval of EPI / NTPC. Nothing extra shall be payable on this account.

65.0 CONCILIATION AND ARBITRATION

Clause 23. of GPC stands deleted and shall be read as below.

Before resorting to arbitration as per the clause given below, the parties if they so agree may explore the possibility of conciliation as per the provisions of Part III of the Arbitration and Conciliation Act, 1996 as amended by Arbitration and Conciliation (Amendment) Act, 2015. When such conciliation has failed, the parties shall adopt the following procedure for arbitration:

65.1 Except where otherwise provided for in the contract, any disputes and differences relating to the meaning of the Specifications, Design, Drawing and Instructions herein before mentioned and as to the quality of workmanship or materials used in the work or as to any other questions, claim, right, matter or things whatsoever in any way arising out of or relating to the Contract, Designs, Drawings, Specifications, Estimates, Instructions, or these conditions or otherwise concerning the works of the execution or failure to execute the same whether arising during the progress of the work or after the completion or abandonment thereof shall be referred to the Sole Arbitrator appointed by the Chairman & Managing Director (CMD) of Engineering Projects (India) Limited (EPI) or any other person discharging the functions of CMD of EPI. The person approached for appointment as Arbitrator shall disclose in writing circumstances, in terms of Sub-Section (1) of Section (12) of the Arbitration and Conciliation Act, 1996 as amended by Arbitration and Conciliation (Amendment) Act, 2015 as follows:

(i) such as the existence either direct or indirect, of any past or present relationship with or interest in any of the parties or in relation to the subject- DLI/C&E/WI-675/306 ADDITIONAL PURCHASE CONDITIONS (APC) Page 7 of 8 matter in dispute, whether financial, business, professional or other kind. Which is likely to give rise to justifiable doubts as to his independence or impartiality; and

(ii) which are likely to affect his ability to devote sufficient time to the arbitration and in particular his ability to complete the entire arbitration within a period of twelve months. The Arbitrator shall be appointed within 30 days of the receipt of letter of invocation of arbitration duly satisfying the requirements of this clause.

Signature of Contractor

Page 18 of 22

Medical Equipments – Package- IV
65.2 If the arbitrator so appointed resigns or is unable or unwilling to act due to any reason whatsoever, or dies, the Chairman & Managing Director aforesaid or in his absence the person discharging the duties of the CMD of EPI may appoint a new arbitrator in accordance with these terms and conditions of the contract, to act in his place and the new arbitrator so appointed may proceed from the stage at which it was left by his predecessor.

65.3 It is a term of the contract that the party invoking the arbitration shall specify the dispute/ differences or questions to be referred to the Arbitrator under this clause together with the amounts claimed in respect of each dispute.

65.4 The Arbitrator may proceed with the arbitration ex-parte, if either party, in spite of a notice from the arbitrator, fails to take part in the proceedings.

65.5 The work under the contract shall continue as directed by the Engineer-InCharge, during the arbitration proceedings.

65.6 Unless otherwise agreed, the venue of arbitration proceedings shall be at the venue given in the ‘Memorandum’ to the ‘Form of Tender’.

65.7 The award of the Arbitrator shall be final, conclusive and binding on both the parties.

65.8 Subject to the aforesaid, the provisions of the Arbitration and Conciliation Act, 1996 as amended by Arbitration and Conciliation (Amendment) Act, 2015 or any statutory modifications or re-enactment thereof and the Rules made thereunder and for the time being in force shall apply to the arbitration proceedings and Arbitrator shall publish his Award accordingly.

Note: Not withstanding anything contained herein above, this clause shall not be applicable where the dispute is between EPI and another Public Sector Enterprise or Govt. Department for which a separate Arbitration Clause is provided vide Clause No. A given below:-

**A. ARBITRATION BETWEEN PUBLIC SECTOR ENTERPRISES INTERSE/GOVERNMENT DEPARTMENTS.**

1. In the event of any dispute of difference relating to the interpretation and application of the provisions of the contracts, such dispute or differences shall be referred by either party for Arbitration to the sole Arbitrator in the Department of DLI/C&E/WI-675/306 ADDITIONAL PURCHASE CONDITIONS (APC) Page 8 of 8 Public Enterprises to be nominated by the Secretary to the Government of India in-charge of the Department of Public Enterprises. The Arbitration and Conciliation Act, 1996 and The Arbitration and Conciliation Act, 2015 shall not be applicable to arbitration under this clause. The award of the Arbitrator shall be binding upon the parties to the dispute, provided, however, any party aggrieved by such award may make a further reference for setting aside or revision of the award to the Law Secretary, Department of Legal Affairs, Ministry of Law & Justice, Government of India. Upon such reference the dispute shall be decided by the Law-Secretary or the Special Secretary/Additional Secretary, when so authorized by the Law-Secretary, whose decision shall bind the Parties finally and conclusively. The Parties to the dispute will share equally the cost of arbitration as intimated by the Arbitrator"
2. Subject to any amendment that may be carried out by the Government of India from time to time the procedure to be followed in arbitration shall be as is contained in F. No. 4(1)/2013-DPE(PMA)/FTS-1835 Dated: 11/04/2017 of Department of Public Enterprises, Ministry of Heavy Industries & Public Enterprises or any modification issued in this regard.

66.0 Court Jurisdiction

Clause 24.0 of GPC stands deleted and shall be read as below:

Disputes of any nature that may arise in connection with the execution of the contract shall be subjected to the jurisdiction of courts situated in Kolkata only.
CONTEMPLATED CHANGE NOTICE

To

Submit Quotation to:

Project No.:

Supplier

CCN No:

Date:

Sub:

It is proposed to make the following change in the work. You are requested to quote a firm price for any revision to the contract amount arising from the change. No work should be undertaken on this change until a change order / written authorization has been signed and issued.

Quotation to be submitted within seven (7) days of the date of this notice.

The work shall conform to the contract documents where applicable unless otherwise stated.

Initiator ____________________________ Reasons for Change ____________________________
Annexure – VIII

CHANGE ORDER

Project No.: Change Order No.: 

Location:

Description: Construction of Medical College & Hospital at Sundergarh, Odisha

Project Management & Execution Consultant :-
Architect :-

Suppliers Name and Address


<table>
<thead>
<tr>
<th>Original Amount of Contract</th>
<th>Approved Amount to Date</th>
<th>C.O. Amount</th>
<th>Present Amount</th>
<th>C.O. Revised Contract Amount</th>
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</table>

Description of Change – Refer CNN No.

Recommended by: M/s EPIL

Approved By:
## Annexure : VIII

### Supply, Storage, Installation, Testing, Commissioning and Handing Over of Medical equipments (Package-IV) for Medical College and Hospital at Sundergarh Odisha”.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Description of Item</th>
<th>List of Approved Make</th>
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<tr>
<td>1.0</td>
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<td>Nihon kohoden /Interkardio/Astromed,EMS/ Cadwell/ Geratherm/ Biodex/ RMS India/ Alliance/Visys/Integra/ ROHANIKA(Allen Medical,Zeihrm,thiler) (579)</td>
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<td>6.0</td>
<td>Electro Convulsive Therapy (E.C.T.) machine preferably with ECG monitoring</td>
<td>Nihon kohoden/ RMS/ MECTA corporation (750,751)</td>
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<td>7.0</td>
<td>EEG machine &amp; monitor</td>
<td>Nihon kohoden /Interkardio/Astromed,EMS/ Cadwell/ Geratherm/ Biodex/ RMS India/ Alliance/Visys/Integra/ ROHANIKA(Allen Medical,Zeihrm,thiler) (579)</td>
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<td>BD/ Baxter/ Terumo</td>
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<td>14.0</td>
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<td>Origin Corporate/ Condair/ Sigma air tech/ Fisher &amp; Packel</td>
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<tr>
<td>72.0</td>
<td>Proctoscope</td>
<td>SISCO/ Online Surgical/ Kalekar Surgical/ Venus Surgical</td>
</tr>
<tr>
<td>73.0</td>
<td>Sigmoideoscope</td>
<td>Olympus/ Pentax/ Fujinon</td>
</tr>
<tr>
<td>74.0</td>
<td>Bronchoscope Rigid</td>
<td>Olympus/ Pentax/ Fujinon</td>
</tr>
<tr>
<td>75.0</td>
<td>Cystoscope</td>
<td>Richard Wolf/ Karl Storz/ Genuine Medica</td>
</tr>
<tr>
<td>76.0</td>
<td>Laser (May be shared with other departments) 1</td>
<td>Lumenis/ G3 Lasers/ Alma</td>
</tr>
<tr>
<td>77.0</td>
<td>Drill machine</td>
<td>B Braun/ Stryker/ Medtronics/ Zimmer/ Synthes/ Bosch/ INCO instruments &amp; Medical Devices</td>
</tr>
<tr>
<td></td>
<td>Oesophagoscope</td>
<td>Pentax/Fujinon/Olympus/ Richard Wolf</td>
</tr>
<tr>
<td>78.0</td>
<td>Nd Yag laser</td>
<td>Lumenis/ G3 Lasers/ Alma</td>
</tr>
<tr>
<td>79</td>
<td>Drill Machine</td>
<td>Stryker/ Medtronics/ Zimmer/ Synthes/ Bosch</td>
</tr>
<tr>
<td>80</td>
<td>Hand Saw</td>
<td>Stryker/ Medtronics/ Zimmer/ Synthes</td>
</tr>
<tr>
<td>S.No.</td>
<td>Description of Item</td>
<td>List of Approved Make</td>
</tr>
<tr>
<td>-------</td>
<td>---------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>81</td>
<td>Band saw for sectioning body and limbs</td>
<td>Stryker/ Medtronic/ Zimmer/ Synthes</td>
</tr>
<tr>
<td>82.1</td>
<td>Mortuary cooler with arrangement to keep 1 body Single body mortuary cooler</td>
<td>Voltas/Bluestar/Electrolux/Celfrost/Yorco/ Thermofisher scientific</td>
</tr>
<tr>
<td>82.2</td>
<td>Mortuary Cooler – 6 Bodies.</td>
<td>Voltas/Bluestar/Electrolux/Celfrost/Yorco/ Thermofisher scientific</td>
</tr>
<tr>
<td>83</td>
<td>Incubator B.O.D.</td>
<td>Remi/ Yorco/ Terumo Penpol/ Thermolab Scientific/Microlab Instruments</td>
</tr>
<tr>
<td>84</td>
<td>Stage incubator/ Warmer for microscope</td>
<td>Remi/ Yorco/ Terumo Penpol/ Thermolab Scientific/Microlab Instruments</td>
</tr>
<tr>
<td>85</td>
<td>Hemoglobin-meter Sahli’s or Hellige (with spaces).</td>
<td>Biorad/ FreseniusKabi/Labtronics/Sigma/Erba/Hemocue</td>
</tr>
<tr>
<td>86</td>
<td>Spirometer</td>
<td>Carefusion(Jaeger)/Schiller/Mergan/RMS India/NDD Medical Technologies</td>
</tr>
<tr>
<td>87</td>
<td>Perimeter with charts (Lister’s).</td>
<td>Nidek co.LTD/Topcon/Appasamy Associates/Carl Zieiss</td>
</tr>
<tr>
<td>88</td>
<td>Maddox rod.</td>
<td>Nidek co.LTD/Topcon/Appasamy Associates/Carl Zieiss</td>
</tr>
<tr>
<td>89</td>
<td>Colorimeter</td>
<td>Yorco/Beckman/Eppendorf/Roche/Remi Laboratory</td>
</tr>
<tr>
<td>90</td>
<td>Voltage stabilizer</td>
<td>Toshiba/philips, Siemens/Wipro GE/ Servomate/ Vguard</td>
</tr>
<tr>
<td>91</td>
<td>Balances</td>
<td>Tulaman/Seca/Kern &amp; Sohan/Giri Brothers</td>
</tr>
<tr>
<td>91.2</td>
<td>Analytical Balance : It has a weighing capacity in the range 100-500g and readability of 0.1 mg- 0.001 mg.</td>
<td>Tulaman/Seca/Kern &amp; Sohan/Giri Brothers</td>
</tr>
<tr>
<td>91.3</td>
<td>Balance Micro 300 gm. x 0.001 gm. (1 mg.)</td>
<td>Tulaman/Seca/Kern &amp; Sohan/Giri Brothers</td>
</tr>
<tr>
<td>91.4</td>
<td>Balance, chemical with weights</td>
<td>Tulaman/Seca/Kern &amp; Sohan/Giri Brothers</td>
</tr>
<tr>
<td>91.5</td>
<td>Balance for weighing organs</td>
<td>Tulaman/Seca/Kern &amp; Sohan/Giri Brothers</td>
</tr>
<tr>
<td>91.6</td>
<td>Balance for weighing food stuff (Capacity 2 Kg).</td>
<td>Tulaman/Seca/Kern &amp; Sohan/Giri Brothers</td>
</tr>
<tr>
<td>92</td>
<td>Hot Air Oven</td>
<td>Eppendorf/ J &amp; J/Thermofisher Scientific/ SM Scientific Instruments/ Bionic Scientifcs/Yorco/PL Tondon/</td>
</tr>
<tr>
<td>93</td>
<td>Glucometer</td>
<td>Dolphin Pharmacy Instruments/Omron/ Dr. Morepen/ Accucheck/ Onetouch</td>
</tr>
<tr>
<td>94</td>
<td>Fume Hood</td>
<td>LabGuard/ Yorco/Eppendorf/ Erlab/ Waldnar Lab</td>
</tr>
<tr>
<td>95</td>
<td>Weighing Machine</td>
<td>Tulaman/SECA/Omron/Kern &amp; Sohan</td>
</tr>
<tr>
<td>95.3</td>
<td>Weighing Machine For Fetus</td>
<td>Seca/Tulaman/ Omron/ Kern &amp; Sohn</td>
</tr>
<tr>
<td>95.5</td>
<td>Baby weighing machine</td>
<td>Seca/Tulaman/ Omron/ Kern &amp; Sohn</td>
</tr>
<tr>
<td>96</td>
<td>Heated Paraffin Embedding Module</td>
<td>Yorco/ Eppendorf/ Lieca Microsystem/ SM scientific Instruments/PL tondon/ Thermo Scientific</td>
</tr>
<tr>
<td>97</td>
<td>Cold Plate for Modular Tissue Embedding System</td>
<td>Yorco/ Eppendorf/ Lieca Microsystem/ SM scientific Instruments/PL tondon/ Thermo Scientific</td>
</tr>
<tr>
<td>98</td>
<td>Automated Tissue Processor</td>
<td>Lieca Microsystem/SM scientific Instruments/Yorco/Thermo Scientific/Lucent Biomed</td>
</tr>
<tr>
<td>99</td>
<td>Autoclave</td>
<td>Steris/ Periclave/ Natsteel/ CISA/ Sterifag</td>
</tr>
<tr>
<td>S.No.</td>
<td>Description of Item</td>
<td>List of Approved Make</td>
</tr>
<tr>
<td>-------</td>
<td>----------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>100</td>
<td>Autopsy table</td>
<td>Dolphin Pharmacy Instruments/ INCO instruments &amp; Chemicals/ A &amp; T Enterprises/ Global Solutions / Care Well / Mortech Manufacturing/fisher Scientific</td>
</tr>
<tr>
<td>101</td>
<td>Fully Automated high throughput Multi-Stainer</td>
<td>Dolphin Pharmacy Instruments/ INCO instruments &amp; Chemicals/ LabIndia/ Aerospray/ Thermo Scientific/Yorco</td>
</tr>
<tr>
<td>102</td>
<td>Fully Automated Embedding System</td>
<td>Yorco/ Eppendorf/ Lieca Microsystem/ SM scientific Instruments/PL London/ Thermo Scientific</td>
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<tr>
<td>103</td>
<td>Stand alone cold plate</td>
<td>Dolphin Pharmacy Instruments/ INCO instruments &amp; Chemicals/ Leica/ Dolphin Pharmacy Instruments/ Sysmex/ Jain Dental and Surgical</td>
</tr>
<tr>
<td>104</td>
<td>Grossing Station</td>
<td>SM Scientific Instruments/ Dolphin Pharmacy Instruments/ INCO instruments &amp; Chemicals/ Best Scientific/ Refkit Industries</td>
</tr>
<tr>
<td>105</td>
<td>Automatic High Speed Slide Scanner</td>
<td>INCO instruments &amp; Chemicals/ Leica/ Dolphin Pharmacy Instruments/ Sysmex/ Jain Dental and Surgical</td>
</tr>
<tr>
<td>106</td>
<td>Sphygmomanometer</td>
<td>Diamond/Rudolf Riester/Welch Allyn/Hiene</td>
</tr>
<tr>
<td>107</td>
<td>Drill for boring glass</td>
<td>Bosch/ Hitachi/ Stanley/ Makita/ Eastman/ B Braun/ Biotech Ortho System/ Jain Dental And Surgical</td>
</tr>
<tr>
<td>108</td>
<td>Haemacytometers with red and white pipettes</td>
<td>Leica Microsystems/ SM Scientific/ Eppendorf/ Beckman/ BD/ transasia/ Backman/</td>
</tr>
<tr>
<td>109</td>
<td>CO2 Incubator</td>
<td>Remi/ Leica Microsystem/ Yorco/ Eppendorf</td>
</tr>
<tr>
<td>110</td>
<td>Deep Freezee</td>
<td>Voltas/ Bluestar/ Celfrost/ Yorco/ Thermofisher scientific/ Electrolux/</td>
</tr>
<tr>
<td>111</td>
<td>Freezer</td>
<td>Voltas/ Bluestar/ Celfrost/ Yorco/ Thermofisher scientific/ Electrolux/</td>
</tr>
<tr>
<td></td>
<td>Internal minimum capacity about 300 L, double door with adjustable at least 4-5 shelves each with separate inner door for better sample protection through minimum sample warming, External casing should be MS sheet made and duly powder coated body</td>
<td>Voltas/ Bluestar/ Celfrost/ Yorco/ Thermofisher scientific/ Electrolux/</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>112</td>
<td>Colposcope</td>
<td>Carl Zeiss/Welch Allyn/ Promise</td>
</tr>
<tr>
<td>113</td>
<td>Haemoglobino meter</td>
<td>Thermofisher/ Remi/ Beckman Cluter/ Terumo Penpol</td>
</tr>
<tr>
<td>114.0</td>
<td>Lithium analyzer</td>
<td>Roche Diagnostics/ transasia/ Siemens</td>
</tr>
<tr>
<td>115.0</td>
<td>Direct Laryngoscope Set</td>
<td>Welch Allyn/ Hiene/ Explore Medical/ Escorts Medical/ BPL</td>
</tr>
<tr>
<td>116.0</td>
<td>Electronic Typewriter:</td>
<td>Dolphin Pharmacy Instruments/ INCO instruments &amp; Chemicals/ S.S. Enterprises/ Universal Consultants/ Concord International</td>
</tr>
<tr>
<td>117.0</td>
<td>Zerox Copier</td>
<td>Dolphin Pharmacy Instruments/ INCO instruments &amp; Chemicals/ Xerox/ Canon/ Epson/Konica minolta/ Epson</td>
</tr>
<tr>
<td>118.0</td>
<td>Biofeed-back instruments (sets)</td>
<td>Dolphin Pharmacy Instruments/ INCO instruments &amp; Chemicals (583)</td>
</tr>
<tr>
<td>119.0</td>
<td>Automatic Tissue Processor</td>
<td>Leica Microsystem/ SM scientific Instruments/ Yorco/ Best Scientific/ Thermo Scientific</td>
</tr>
<tr>
<td>120.0</td>
<td>Water Bath</td>
<td>Dolphin Pharmacy Instruments/ Eppendorf/ SM scientific Instruments/ Yorco/ Thermo Scientific/ Tanco</td>
</tr>
<tr>
<td>120.1</td>
<td>Water baths with lids and holes thereon for holding test tubes etc.</td>
<td>Dolphin Pharmacy Instruments/ Eppendorf/ SM scientific Instruments/ Yorco/ Thermo Scientific/ Tanco</td>
</tr>
<tr>
<td>121.0</td>
<td>Boiling Water baths, with lids having 8-12 Holes</td>
<td>Dolphin Pharmacy Instruments/ Eppendorf/ SM scientific Instruments/ Yorco/ Thermo Scientific/ Tanco</td>
</tr>
<tr>
<td>122.0</td>
<td>Constant temperature water bath</td>
<td>Dolphin Pharmacy Instruments/ Eppendorf/ SM scientific Instruments/ Yorco/ Thermo Scientific/ Tanco</td>
</tr>
<tr>
<td>123.0</td>
<td>Water bath (Serological ) 37 degree Celsius</td>
<td>Dolphin Pharmacy Instruments/ Eppendorf/ SM scientific Instruments/ Yorco/ Thermo Scientific/ Tanco</td>
</tr>
<tr>
<td>S.No.</td>
<td>Description of Item</td>
<td>List of Approved Make</td>
</tr>
<tr>
<td>-------</td>
<td>----------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>124.0</td>
<td>Water bath (Serological) 56 degree Celsius</td>
<td>Dolphin Pharmacy Instruments/ Eppendorf/ SM scientific Instruments/ Yorco/ Thermofisher/ Tanco</td>
</tr>
<tr>
<td>125.0</td>
<td>Water Bath / Incubator</td>
<td>Dolphin Pharmacy Instruments/ Eppendorf/ SM scientific Instruments/ Yorco/ Thermofisher/ Tanco</td>
</tr>
<tr>
<td>126.0</td>
<td>Refrigerator (100 ltr.)</td>
<td>Voltas/Bluestar/Electrolux/Celfrost/Yorco/ Thermofisher scientific</td>
</tr>
<tr>
<td>127.0</td>
<td>Refrigerator (165 ltr.)</td>
<td>Voltas/Bluestar/Electrolux/Celfrost/Yorco/ Thermofisher scientific</td>
</tr>
<tr>
<td>128.0</td>
<td>Refrigerator</td>
<td>Voltas/Bluestar/Electrolux/Celfrost/Yorco/ Thermofisher scientific</td>
</tr>
<tr>
<td>129.0</td>
<td>Blood Refrigerator (280 bags ) capacity</td>
<td>Voltas/Bluestar/Electrolux/Celfrost/Yorco/ Thermofisher scientific</td>
</tr>
<tr>
<td>130.0</td>
<td>Hot air Oven</td>
<td>Dolphin Pharmacy Instruments/ Eppendorf/ J &amp; J/Thermofisher Scientific/ SM Scientific Instruments/ Bionic Scientific</td>
</tr>
<tr>
<td>131.0</td>
<td>Laminar Air Flow</td>
<td>Dolphin Pharmacy Instruments/ INCO instruments &amp; Chemicals/ Thermofisher scientific/Redmon Metron/Life sciences Technology/ Tanco/ Glowmax Engineers/ Narag Scientific</td>
</tr>
<tr>
<td>132.0</td>
<td>Flow cytometry</td>
<td>Partec GmbH/Beckman Coulter International S.A./Life technologies Ltd./ Thermo Fisher Scientific</td>
</tr>
<tr>
<td>133.0</td>
<td>Blood Collection Mixers</td>
<td>Terumo Penpol/ Remi/ Radiometer/ SM Scientific</td>
</tr>
<tr>
<td>134.0</td>
<td>Walk-in cooler having 400 bag capacity</td>
<td>Voltas/Bluestar/Electrolux/Celfrost/Yorco/ Thermofisher scientific</td>
</tr>
<tr>
<td>135.0</td>
<td>Plasma Thawing Bath</td>
<td>Terumo Penpol/ Remi sales/ Radiometer/Yorco</td>
</tr>
<tr>
<td>136.0</td>
<td>Platelet Agitator with Incubator</td>
<td>Terumo Penpol/ Remi sales/ Radiometer/Yorco/SMS scientific</td>
</tr>
<tr>
<td>137.0</td>
<td>Deep Freezers which maintains temperature at –40 degree C</td>
<td>Voltas/Bluestar/Electrolux/Celfrost/Yorco/ Thermofisher scientific</td>
</tr>
<tr>
<td>138.0</td>
<td>Insulated blood bag containers</td>
<td>Terumo Penpol/ Remi sales/ Radiometer/ Yorco/ Voltas/ Bluestar</td>
</tr>
<tr>
<td>139.0</td>
<td>Dry Air oven</td>
<td>Yorco/Terumo Penpol/ Remi sales/ Radiometer/Thermo Fisher Scientific</td>
</tr>
<tr>
<td>140.0</td>
<td>Automated component extractor for pre storage Luecdepletion of blood components.</td>
<td>Terumo Penpol/ Remi sales/ Radiometer/ SR Pharma</td>
</tr>
<tr>
<td>141.0</td>
<td>Steriliser</td>
<td>Steris/ Getinge/ Periclave/ Natsteel/ CISA/ Steriflag/ Machin Fabrik/YORCO</td>
</tr>
<tr>
<td>142.0</td>
<td>Sterilizer (Instrument)</td>
<td>Steris/ Getinge/ Periclave/ Natsteel/ CISA/ Tattunauer/ Machin Fabrik (30)</td>
</tr>
<tr>
<td>143.0</td>
<td>Haemoglobinometer</td>
<td>Thermofisher/ Remi/ Beckman Cluter/ Terumopenpol</td>
</tr>
<tr>
<td>144.0</td>
<td>Cryo Unit</td>
<td>Dolphin Pharmacy Instruments/ INCO instruments &amp; Chemicals/ Thermofisher/SM Scientific/ Biobase/ Medimeas/ Tanco/ Narang Scientific</td>
</tr>
<tr>
<td>145.0</td>
<td>Autoclave</td>
<td>Steris/ Periclave/ Natsteel/ CISA/ Getinge/ Steriflag</td>
</tr>
<tr>
<td>146.0</td>
<td>IABP machine</td>
<td>Arrow/ Translux/MAT Medical System / Maquet</td>
</tr>
<tr>
<td>147.0</td>
<td>Basic-Boyle’s</td>
<td>Wiporo GE/Draeger Medical/BPL Medical Technologies</td>
</tr>
</tbody>
</table>
### Technical Specification

#### Suction Unit

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Technical</th>
<th>Electrical</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Housing MS Powder Coated, SS Top on two wheels.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Max. Vacuum : LPM Electric - 600 mm Hg, 45 liters / mi.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Pedal - 600mm Hg, 200 ml / stroke.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Pump Type Electric - Diaphragm / Pedal - Piston.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Jars 2 x 2 Liter. PC Jar.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Filter Bacterial Filter Auto clavable / Reusable Tubing.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. 10 mm ID x 2 mtr. (PVC).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Vacuum Gauge 6.25 cm dia 0-760 mm Hg.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Dimensions 42 x 39 x 64 cms.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Net Weight 15.5 Kg.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Suction Unit Manual

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Technical</th>
<th>Manual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Housing Plastic Molded.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Max. Vacuum : LPM - 600 mm Hg, 200 ml / stroke.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Pump Type Piston Pump.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Jars 1 x 1 Liter. PC Jar.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Filter Bacterial Filter Auto-clavable / Reusable.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Tubing 8 mm ID x 2 mtr. (Silicon).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Vacuum Gauge 5 cm dia 0-760 mm Hg.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Power Supply N/A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Noise Level N/A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Dimensions 33 x 18 x 30cm.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Tool Kit, Filter Paper &amp; Push-in Nozzle</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Suction Machine

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Technical</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>1. Volt - 230 Vac.</td>
<td></td>
</tr>
<tr>
<td>2. Rating of Motor - continuous</td>
<td></td>
</tr>
<tr>
<td>3. Suction Bottle Capacity - 2 x 2000 ml minimum (with safety valve)</td>
<td></td>
</tr>
<tr>
<td>4. Gauge - 0 to 760 mm Hg</td>
<td></td>
</tr>
<tr>
<td>5. Pump - Oil lubricates rotary pump</td>
<td></td>
</tr>
<tr>
<td>6. Suction Tubing - ID 7 mm, 5m long and non-collapsible.</td>
<td></td>
</tr>
<tr>
<td>7. Should have air tight lids.</td>
<td></td>
</tr>
<tr>
<td>8. Should have a noiseless operation</td>
<td></td>
</tr>
<tr>
<td>9. Should provide filter to absorb moisture and water particles entering into the oror.</td>
<td></td>
</tr>
<tr>
<td>10. Should have an external provision for topping up of lubricant.</td>
<td></td>
</tr>
<tr>
<td>11. Should be well-designed, cabinet made of mild steel powder coated</td>
<td></td>
</tr>
</tbody>
</table>

#### High suction machine

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Technical</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>1. Volt - 230 Vac.</td>
<td></td>
</tr>
<tr>
<td>2. Rating of Motor - continuous</td>
<td></td>
</tr>
<tr>
<td>3. Suction Bottle Capacity - 2 x 2000 ml minimum (with safety valve)</td>
<td></td>
</tr>
<tr>
<td>4. Gauge - 0 to 760 mm Hg</td>
<td></td>
</tr>
<tr>
<td>5. Pump - Oil lubricates rotary pump</td>
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<tr>
<td>6. Suction Tubing - ID 7 mm, 5m long and non-collapsible.</td>
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<td>7. Should have air tight lids.</td>
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<td>8. Should have a noiseless operation</td>
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<td>9. Should provide filter to absorb moisture and water particles entering into the oror.</td>
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<tr>
<td>10. Should have an external provision for topping up of lubricant.</td>
<td></td>
</tr>
<tr>
<td>11. Should be well-designed, cabinet made of mild steel powder coated</td>
<td></td>
</tr>
</tbody>
</table>

#### EEG machine

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Technical</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0</td>
<td></td>
</tr>
<tr>
<td>1. Excellent performance for routine EEG exam rooms as well as epilepsy centers, sleep labs and research facilities.</td>
<td></td>
</tr>
<tr>
<td>2. High expandability with a wide variety of hardware and software s gives the capability to handle routine EEG recording to high level brain function research.</td>
<td></td>
</tr>
<tr>
<td>3. DSA trendgraph and several types of mapping, frequency spectrum analysis and phase comparison</td>
<td></td>
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<tr>
<td>5. 3-D voltage mapping displays voltage maps in 6 different views or a sequence of voltage maps in one view</td>
<td></td>
</tr>
<tr>
<td>6. EEG Scope - Data review during acquisition</td>
<td></td>
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<tr>
<td>7. Including standard</td>
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</tbody>
</table>

#### Electro Convulsive Therapy (E.C.T.) machine preferably with ECG monitoring

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Technical</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.0</td>
<td></td>
</tr>
<tr>
<td>1. LCD / LED Display for stimulus voltage &amp; Time</td>
<td></td>
</tr>
<tr>
<td>2. Output voltage 90 to 190 V</td>
<td></td>
</tr>
<tr>
<td>3. Manual, Timer &amp; Ectonus Modes</td>
<td></td>
</tr>
<tr>
<td>4. Filtered in brief case.</td>
<td></td>
</tr>
<tr>
<td>5. Timer 0.1 to 5.9 sec. in step of 0.1 sec</td>
<td></td>
</tr>
<tr>
<td>6. Cardiac Stimulation 0 to 40 volts</td>
<td></td>
</tr>
<tr>
<td>8. Power input to be 220-240VAC, 50Hz fitted with Indian plug</td>
<td></td>
</tr>
<tr>
<td>9. UPS of suitable rating with voltage regulation and spike protection for 60 minutes back up</td>
<td></td>
</tr>
</tbody>
</table>

#### EEG machine & Monitor

<table>
<thead>
<tr>
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</table>

#### Nebulizer

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Technical</th>
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</thead>
<tbody>
<tr>
<td>8.0</td>
<td></td>
</tr>
<tr>
<td>1. Ultrasonic energy for uniform and highly dense 1-5 microns.</td>
<td></td>
</tr>
<tr>
<td>2. More than 90% of 0.5 micron or larger air borne dust particles is effectively shut out with the air filter to provide purified air for aerosol nebulization.</td>
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</tr>
<tr>
<td>3. Medication cup with replaceable diaphragm.</td>
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<tr>
<td>4. Easily detachable fan cover and pneumoclean (Air filter).</td>
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</tr>
<tr>
<td>5. Made of highly resistant stainless steel.</td>
<td></td>
</tr>
<tr>
<td>6. With solution bottle for safety.</td>
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<tr>
<td>7. Nebulizing rate: 4 ml/min or greater.</td>
<td></td>
</tr>
<tr>
<td>8. Mist particle size: Approx 1-5 microns.</td>
<td></td>
</tr>
<tr>
<td>10. Accessories: Tray set for nebulizer with tray track and pole mount fitting</td>
<td></td>
</tr>
</tbody>
</table>
9.9 Ventilator (Transport)
1. Purpose and Definition
a. For the safe transport of ventilator dependent patient into and out of ICU.
b. For the safe transport of ventilator dependent patient into and out of ICU.
c. OT and accident & Emergency unit.
d. Should be capable of supporting Pediatrics and Adult patients with wide variety of clinical conditions with dual limb patient circuit facility.

2. Technical Specification
a. Should be microprocessor controlled, portable, light weight.
b. Should operate with main electric supply as well as with battery.
c. Should be able to work both with cylinders and pipeline, connectors and high pressure tubing of appropriate length to be supplied.
d. Should have turbine/piston technology for supplying air-oxygen mixture.
e. Should have built-in air source through internal compressor / micro piston gas/ Turbine delivery system. With battery back up to 3 hours.
f. Should have facility to work on both low flow oxygen supply and high flow oxygen supply source.
g. Should have following modes of ventilation CMV, Assist –control, SIMV, PS-PEEP, CPAP, NIV.
h. Should have tidal volume setting from 25 to 2000 ml in VCV modes & flow from 3 to 100L/min.
i. Should have the pressure support ranges from 0 to 50cm HG.
j. Should have built in Oxygen Monitoring with alarms.
k. Should be US FDA or CE Approved.

Audio –visual alarms for
l. Low supply pressure
m. High/low airway pressure
n. Leakage/disconnection
o. Power failure
p. Apnea
q. Low battery
r. High Pressure 4 to 90cm HG

Technical Specification

a. High Pressure 4 to 90cm HG
b. Should have following settings
(i) TV 50-150ml
(ii) PEEP/CPAP & Pressure Support
(iii) RR up to 40pm
(iv) I/E rate 1:3 to 2:1
(v) FIO2 40-100%

b. Rechargeable batteries
c. Should fit, on rails of transport trolley and on stand with wheels.
d. Two sets of reusable silicon ventilator circuits.
e. Should have menu for easy operation as well as setting up the patients

Accessories:

a. Adult circuits – 2Nos.
b. Pediatric Circuits – 2Nos.

1. Purpose and Definition
a. For the safe transport of ventilator dependent patient into and out of ICU’s and dialysis unit.
b. Should be capable of supporting Pediatrics and Adult patients with wide variety of clinical conditions with dual limb patient circuit facility.

10.0 Stress Test

1. State of the art, latest mode, high end equipment must be quoted.
2. System should simultaneously acquire and analyze at least 15 ECG leads.
3. System should have digital acquisition preferably in the form of acquisition module.
4. Facility for CRT display processed, signal averaged distortion free ECG signals updated every 5 beats with at least 15 channels and at least 3 rhythm channels.
5. Should display of 1 or 2 leads updated every 5 beats with maximum ST deviation with preset and updated ECG.
6. Facility to display all the 15 channels simultaneously with preset and updated ECG with ECG analysis.
7. System should have facility for storage of all ECG data in hard disk for retrieval, replay and transmission.
8. Should have facility for recording 15 lead resting ECG, selectable minute by minute ECG’s pre-programmed distortion free exercise ECG’s and ECG during recovery test and with ST segment analysis report.
9. Should have provision of software, driven user programmable exercise protocols and/or standard protocols.
10. System should print comprehensive minute by minute ST segment changes, ST segment trend plot and acceleration of the ST segment.
11. Should have facility for editing of final report.
12. Should have facility for display of 6 channels of rhythm user defined levels.
13. Should have capability for adjusting the isoelectric point, J-point and ST level during any phase of stress test.
14. Should have hard disk memory for storing current patient data including wave forms.
15. Should have facility for storage of all ECG data in hard disk for retrieval, replay and transmission.
16. Should have trend facility for HR, ST slope, blood pressure, Pvc/mm.R wave amplitude, J point changes, work load, rate pressure product, ST/HR slope.
17. Should have ability to reanalyze of ST segment of ST measurement points i.e., to set new points and move the isoelectric complexes through a new measurement points generating a new final report even after the test is over and stored.
18. System should have dynamic scan facility to display automatically the worse ECG lead.
19. System should have automatic noise free programmable treadmill, which should be manufactured by the same manufacturer run by the system it should also have manual controls.
20. Automatic arrhythmia detection and documentation.
21. System should be defibrillation protected.
22. Should have facility to store current patient data on floppy disk and facility to retrieve data back and print out.
23. Should have bicycle ergometry compatible.
24. Should not be assembled unit.

11.0 MR Syringe

MR Syringe is used for manual aspiration procedure
Manufactured from polypropylene polymer
Specially designed syringe to apply suction during surgical abortion procedure
MR syringe provides high vacuum suction during procedure
Constructed of 0.34” thick (9 mm) tungsten, attenuates FIDG F-18 by 85%
Lead Glass: 5.6 density
Easily sanitized with alcohol wipes.

12.0 EMG and nerve conduction velocity machine

Page 2 of 23
The software should have also facility for Left vs Right comparison in NCV, F, H and Evoked potential tests.

32) The software should be supplied with branded Pentium Core 2 Duo Processor 2.7 GHz, 512 MB RAM, 120 GB Hard Disk, 15” flat panel TFT LCD monitor, DVD Writer, Laser Printer, UPS and CVT, Trolley & Electrode starter kit.

33) The system should have Quantitative EMG with Multi MUP, Interference pattern with online cloud-pist. Single fiber EMG with Histograms, Motor unit number estimation, P300, Reflex hammer, Skin temperature probe.

13.0 Neonatal Incubator (NICU)

14.0 Vacuum Extractor and suction machine

Delivery with an extraction cup takes approx. 6 minutes, a forceps delivery takes approx. 15 to 20 minutes.

Compared to a caesarean section the extraction cup birth is more time - and cost-saving - less time in GT, less time in cีnc, less wound treatment. In conclusion the birth process is more natural and the bond between mother and child is more intimate than with a caesarean.

The reason for the quick delivery is because the extraction cup can be applied when the baby is still deep inside the 1. Suction capacity: 36 ± 2 mm2, 2. vacuum: -90 kPa / -900 mbar / -675 mmHg, 3. dimensions without trolley (H x W x D): 300 x 330 x 200 mm, 4. dimensions with trolley (H x W x D): 870 x 450 x 420 mm, 5. weight without trolley and canister: 10.2 kg, voltage: 230 V~, 50 / 60 Hz, 6. Included in delivery: collection canister 1.5 l including lid, double hose connector, trolley, foot control, operating instructions. 7. Voltage: 230 V~, 50 / 60 Hz

15.0 Weighing machine, height scale, stadiometer/Caliper of each in each ward

1. Should have an accuracy of 500 gms.
2. Should be dial type having a magnifying lens to see the measurement.
3. Should measure a maximum weight of 150kgs.
4. Should have zero adjustment.
5. Should be Round shape of diameter 300mm (minor variations will be accepted)
6. Should have a maximum weight of 150kgs.
7. Shall be made of Metal, epoxy powder coated with rust proof parts.

16.0 Steam Inhaler

1. Input Supply 5Amp.
2. Heat Protecting Body of Steam Inhaler

17.0 OTT Machines

1. The system should be Microprocessor based Foetal Monitor providing continuous monitoring of foetal heart rate (FHR) alongwith maternally sensed foetal activity during antepartum testing for NITT (Non-Stress Test) and for intraoperative monitoring of active labor, with twin foetal monitoring facility at the same time.
2. Transducer
   Type: Multi-crystal wide-beam transducer
   Technique: Autsocorrelation
   Quantity: 2 nos. (FHR 1, FHR 2)
   Frequency: 1 MHz to 2 MHz
   Sensitivity: Less than 100mV/Sq cm.
   Resolution: 18PM
   Heart Rate counting Range: 30 to 250 BPM
3. Features
   1. Twin fetal monitoring with TOCO transducers – 01 No
   2. It should have clinical event marker
   3. It should have monitoring of Bradycardia & Tachycardia alarm events.
   4. It should have facility to control the volume of FHR sound.
   5. It should have battery back up of 4-6 hours
   6. Power Supply: 230Vac, 50/60Hz
   7. Should provide rechargeable battery along with recharging unit (Charger/ Adaptor).
   8. Should provide a pre-cut semi-elasticized belt with buckle shall enable easy transducer positioning for more accurate traces - 02Nos
   9. Vibrosomatic stimulator – 01 No
   10. Display
       1. Display Minimum 5”
       2. Actual FHR & FHR in BPM
   11. Ultrasound Contraction Activity in %
   12. High / Low FHR limits
   13. Alarm Message Display
   14. Battery charging and Low indication.

8.0 Neonatal (Inferior) Incubator (Ward)
1. Visual and audible alarms for:
   a. Patient and air high/low temperature alarm.
   b. Air circulation / probe / system / power failure alarm.
   c. Heater power indicator.
   d. Air velocity 0.35m/s.
   e. Oxygen input flow rate 5.15 liters/min or oxygen concentration range 25 to 70%.
   f. Maximum CO2 concentration made indicative 0.2%.
   g. Internal noise level ≤ 60 dB.
   h. Mode of operation should be properly displayed.
   i. Green indicator light should be provided for its to be ready to be in normal use.
   j. Infants straps should be provided to restrict the baby movement.
   k. Skin temperature probe should be small in size not more than 10mm diameter and 4mm in height to fit the probe firmly on the infant. Baby contact material should be biocompatible as per ISO 10993 standard requirement.
   l. Infant bed should be drawable. Mattress foam density should be minimum 25kg/cm³ and infant bed mattress cover should be biocompatible material.
   m. Examination light should be provided for inspection.
   n. Should have heater power indicator.
   o. Warmup time 30-45 minutes and shall not differ by more than 20%.
   p. Shall be equipped with a thermal cut-out. It shall be so arranged that the heater is disconnected and an auditory and visual warning is given at an incubator temperature which does not exceed 40 deg C.
   q. Should have elbow operable ports and head access door.
   r. It should not slope over at 10 deg inclined plane.
   s. Infant skin temperature range: 35 deg C to 37.5 deg C over ride upto 39 deg C.
   t. Air temperature range: 30 deg C to 39 deg C; Temperature resolution ± 0.1 deg C; Temperature accuracy less than ± 0.2 deg C.
   u. Settings: Patient skin temperature range: 35 deg C to 37.5 deg C; Air temperature range: 30 deg C to 39 deg C; Humidity: 40-60%.
   v. User’s interface Display is to be backlit and allows easy viewing in all ambient light levels.

2. 4mm bed and mattress should be less than 100 µs.

2.4 Software and/or standard of communication in built

Ch. 1 Patient leakage current should be less than 100 µs.

2. Temperature on the baby mattress should not exceed 40 deg C and 43 deg for other materials.

3. Uniformity of temperature on the horizontal mattress shall not exceed ± 1.5 deg C and in tilted mattress not exceed 2 deg C.

4. The overshoot temperature shall not exceed 2 deg C.

5. The stability of temperature during steady temperature shall not differ from the average temperature by more than 1 deg C.

5. PHYSICAL & MECHANICAL Requirements:

   a. Dimensions (metric) Bed size: 600mm×800mm and the canopy should be of 800×1200 mm. Weight (lbs, kg) not exceeding 40deg. (without cylinders). Oxygen port with tubing, also mount for oxygen cylinder of 5 litre size. Accommodates sleeves, suction unit and IV poles. Double-walled cabinet with at least two hand ports.

   b. Should be capable of tilting with lockable castors. Mounted on mobile base, lower height setting of which shall be at least 60 cm high. Minimum castor diameter 120mm. At least two castors must be fitted with brake facility. Castors must be made of conductive material and rotate (swivel) freely around the vertical axis. The canopy and infant bed should be crease free for ease of cleaning. Noise (in dBA = 60 dBA. Audible sound level shall be at least 65dBA at 1 meter distance from the device; the alarm sound level in the compartment shall not exceed 65dBA. Head disturbance should maintain up to 37 deg temp mobility, portability. Yes, on castors.

   c. sPares: BREAKERS: 10, 15, 20, 30 A or 240V, 220V, 50 Hz Battery operated Battery charger to be integral to mains power supply, and to charge battery during main power operation of unit. Electrical protection by resettable overcurrent breakers or replaceable fuses, fitted in both live and neutral lines. Battery backup of 2 hours for equipment operation. The battery should be protected from overcharging.

19.0 Baby Warmer

1. CE & FDA Certification

2. Smooth bed tilting of ±15° continuous positions optimizes clinical flexibility, especially during resuscitation.

3. The swinging overhead heater moves to either side for easier access to baby

4. "Check Baby" alarm sounds if baby's skin temperature deviation by ± 1 degree C of set point. The unit stops heating if the temperature exceeds the desired value by 1 degree C and re-starts only when the temperature falls back into the 1 degree C range.

5. Well-positioned lights illuminate procedures and reduce the need for external lighting and extra equipment.

6. APGAR timer with audible tones at 1, 5, 10 minutes enables clinicians to concentrate on caring for the baby rather than looking at the screen. Continuous + 15. 15 degree Bed tilting with self-lock mechanism optimises clinical flexibility. The swinging overhead heater moves to either side for easier access to baby. An integrated X-ray tray below the transparent mattress allows imaging without moving the infant.

7. Dimension: Height: 1850 mm (with bed at base level)

8. Depth: 1120 mm

9. Width: 655 mm

10. Weight (excl. accessories): 72 kg

11. Mattress Size: 462×640×25 mm

12. Bed to Floor Height: 880, 950, 1020 mm

13. Service adjustable heights

14. Heater Rotation 90° to the side to facilitate X-ray procedures. The heater automatically shuts off when in this position.


16. Heater Output: 0–540 W power adjustabl from 0-100% in twenty 5% increments

17. Baby Control 30-38°C in increments of 0.1°C (Servo Mod)

18. Temperature: ≤30°C at 30°C to 40°C Temperature: ≤1°C 40.80.000 3 200.000

19. Display Resolution: Power Requirements: 230 Volt ± 10%, 50/60 Hz; 4 Amps

20. Nominal Power: 600 W max Consumption

20.0 Phototherapy unit

1. Phototherapy should be based on CFL tube/LED technology, which after filtering should provide a light of wavelength approximately 430 to 470 nm with peak wavelength of 450-460 nm range.

2. Incubator Hour meter shows total exposure time for current patient to be clearly visible by operator.

3. Effective light field = 700 cm².

4. Lamps should be minimum 2000 hours in case of LED and 1000 hours in case of CFL and should have timer to indicate its usage.

5. Over temperature safety cut to be included.

6. Up, down and lifting of head should be possible.

7. The unit should be mounted with castor wheels with brakes.

8. Variation in intensity over 5-6 hours ≤ 10%.

9. The irradiance ratio (min to max) should be greater than 40% on mattress.

10. Green indicator light shall be provided to indicate that equipment is ready for normal use.

11. Interruption and a restoration of the power supply do not change preset values. CFL/LED heat can be reduced by natural cooling.

12. CFL/LED should be protected from free fall.

13. It should not topple at 10 deg inclined angle.

14. The temperature of baby bed and metal surfaces should not exceed 40deg C and 43 deg for other accessible surfaces.

15. There should be intuitive method to indicate the light surface is at the appropriate treatment distance.

16. Mobile stand with movable castors and height adjustment facility along with easy servicing of source box. Unit can be used along with Infant care trolley. Radiant Warmer and incubator.

2.2 Settings UP/DOWN adjustment of Over Head Unit: The phototherapy unit should be able to provide effective treatment for beds and incubators of varying heights (generally 1.0 to 1.3m). Adjustment of light intensity may be provided.

2.3 User’s Interface Manual

2.4 Software and/or standard of communication where ever required: LED Display and intuit software Configuration Clear cabinet for observation of infant. Infant basinette is an integral unit which should be detachable. Unit to provide shelling of infant in the event of bulb breakage. Bulb mount to have angle adjustment of at least 30 degrees. All surfaces to be made of corrosion resistant materials. Light unit tilting facility and height adjustment facility: noise (in dBA) = 60 dBA heat dissipation. The temperature of baby bed and metal surfaces should not exceed 40deg C and 43 deg for other accessible surfaces.

1. Spares: (main ones) No spares required. Infant eye masks of both available sizes (term and pre term babies).

2. Spare parts (mandatory, standard) Complete set of replacement tubes to allow 3 months’ continuous operation. Two replacement sets of fuses, if replaceable type used. Protection should not exceed 40deg C and 43 deg for other accessible surfaces.

3. It should not topple at 10 deg inclined angle.

4. The temperature of baby bed and metal surfaces should not exceed 40deg C and 43 deg for other accessible surfaces.

5. There should be intuitive method to indicate the light surface is at the appropriate treatment distance.

6. Mobile stand with movable castors and height adjustment facility along with easy servicing of source box. Unit can be used along with Infant care trolley. Radiant Warmer and incubator.

2.2 Settings UP/DOWN adjustment of Over Head Unit: The phototherapy unit should be able to provide effective treatment for beds and incubators of varying heights (generally 1.0 to 1.3m). Adjustment of light intensity may be provided.

2.5 Heat warmer
| 2. Integrated tuck flaps at the shoulders help maintain blanket position. |
| 3. Foot drape minimizes risk of thermal injury to the feet and lower leg areas. |

### Technical Requirement

| Drape Length 24 Inch |
| Drape Length (metric) 61 cm |
| Drape Width 24 Inch |
| Drape Width (metric) 61 cm |
| Length 60 Inch, 62 Inch, 84 Inch |
| Length (Metric) 152 Centimeter, 163 Centimeter, 213 Centimeter |
| Model 30000, 30500, 31000, 31500, 40068 |
| Net Weight (Metric) 134 g, 142 g, 146 g, 150 g |

#### 22.0 Humidifier (O& Gyneac ward)

| Voltage 220-240 V |
| Humidification capacity 150 ml/h |
| Noise level 27 - 40 dB |
| Operation time 8 hour(s) |
| Water tank capacity 1.3 L |
| Weight 14 W |
| F box dimensions (W x D x H) 355 x 225 x 225 mm |
| F box weight (incl. product) 1.72 kg |
| Product dimensions (W x D x H) 162 x 198 x 308 mm |
| Product weight 1.36 kg |

#### 23.0 Humidifier (PICU/NICU)

| Voltage 220-240 V |
| Humidification capacity 150 ml/h |
| Noise level 27 - 40 dB |
| Operation time 8 hour(s) |
| Water tank capacity 1.3 L |
| Weight 14 W |
| F box dimensions (W x D x H) 355 x 225 x 225 mm |
| F box weight (incl. product) 1.72 kg |
| Product dimensions (W x D x H) 162 x 198 x 308 mm |
| Product weight 1.36 kg |

#### 24.0 Radiant Warmer

**Operational Requirements:**

- It should be microprocessor controlled radiant warmer with manual and servo s.

**Technical Specifications:**

1. It should have facility to display both skin and air (ambient) temperature separately.
2. Should have user friendly touch panel control.
3. It should have ceramic infra Red heater.
4. It should have audiovisual alarm facility for overheating beyond set temperature range.
5. It should have alarm facility for patient temperature less than or greater than the required temperature i.e. above or below the set range.
6. It should rotate and swing in different direction, so as to allow taking X-ray.
7. The light should be dazzle free.
8. It should have alarm for power failure.
9. It should have alarm for heater failure.
10. It should have alarm for probe failure.
11. It should have time out alarm in manual mode.
12. It should have inbuilt or provided along rechargeable battery to run equipment in case of power failure for at least 1 hour.
13. It should have facility to Auto reset the system in case of hang up caused by power fluctuation.
14. It should have manual setting for high and low alarm setting.
15. In servos mode, the heater output should be controlled to maintain the baby at the required set temperature.
16. In manual mode, the heater output should be directly controlled by a setting on the front panel.
17. It should have a facility to lock the keyboard to avoid unwanted user.
18. The desired temperature range from 25 to 40 degrees C.
19. The resolution should be 0.1 degree C.
20. The height of the warmer should be adjustable for different types of bed.
21. Halogen based observation light should be provided for observing the baby.
22. It should be mounted on a pole with sturdy base with lockable castors.
23. It should have separate bassinet trolley.

**Environmental factors:**

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

**Technical Specifications:**

- LCD Display (55mm x 27mm)
- Ultrasonic Emission Frequency - 1 MHz
- Power-Less than 5mW/cm²
- Resolution - 160 x 128
- Audio Output - 1W
- Battery Voltage - 3*1.2V (Alkaline Battery)
- F-box weight (incl. product) 1.72 kg
- Product dimensions (W x D x H) 162 x 198 x 308 mm
- Product weight 1.36 kg

**Operational Requirements:**

- LCD Display (55mm x 27mm)
- Ultrasonic Emission Frequency - 1 MHz
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- Resolution - 160 x 128
- Audio Output - 1W
- Battery Voltage - 3*1.2V (Alkaline Battery)
- F-box weight (incl. product) 1.72 kg
- Product dimensions (W x D x H) 162 x 198 x 308 mm
- Product weight 1.36 kg
30.0 Otoscope

- Should be a convenient pocket type otoscope.
- Should provide no reflections and obstructions.
- Should detachable of various sizes.
- Should have built-in rechargeable battery. Recharge should be possible with direct mains supply.

31.2 Hysterec. Audiometer

1. Probe tone: 220 or 226 Hz/678Hz/1000Hz (For Pediatric testing also)
2. Probe assembly with contralateral test facility (with supra aural earphones: TDH 39/TDH39A/TDH49/TDH49A/TDH 50 with MX 41 AR ear cushions or insert earphones)
3. Test cavities (0.5, 2, 5 cc)
4. Probe tips - assorted
5. Shall have Printer
6. Tests required:
   a. Compensated tympanometry (ear canal volume and tympanometric peak pressure)
   b. Ipsilateral and contralateral acoustic reflexes
   c. Eustachian tube function tests - intact and perforated
7. Air pressure range: + 200 da Pa to - 400 da Pa
8. Stimuli for acoustic reflexes:
   a. Type: Pure tones
   b. Frequencies: 500Hz, 1000Hz, 2000Hz and 4000Hz
   c. Intensity: up to 120 dB HL
9. Power supply: Battery operated & main
10. Should operate in 230-240 V AC 50 Hz
11. Shall have Self-calibration

31.3 Puretone Audiometer

1. Probe tone: 220 or 226 Hz/678Hz/1000Hz (For Pediatric testing also)
2. Probe assembly with contralateral test facility (with supra aural earphones: TDH 39/TDH39A/TDH49/TDH49A/TDH 50 with MX 41 AR ear cushions or insert earphones)
3. Test cavities (0.5, 2, 5 cc)
4. Probe tips - assorted
5. Shall have Printer
6. Tests required:
   a. Compensated tympanometry (ear canal volume and tympanometric peak pressure)
   b. Ipsilateral and contralateral acoustic reflexes
   c. Eustachian tube function tests - intact and perforated
7. Air pressure range: + 200 da Pa to - 400 da Pa
8. Stimuli for acoustic reflexes:
   a. Type: Pure tones
   b. Frequencies: 500Hz, 1000Hz, 2000Hz and 4000Hz
   c. Intensity: up to 120 dB HL
9. Power supply: Battery operated & main
10. Should operate in 230-240 V AC 50 Hz
11. Shall have Self-calibration

33.0 Nasal Speculum

Set of Different Sizes
- Material: Austenitic steel
- Specifications: Nasal speculum to open and dilate nasal cavity
- Size: small, medium and large
- Packaging: Unit presentation: individual, with protective wrapping
- The following should appear on the packaging:
  - name and address of supplier (manufacturer)

34.0 Gauze Dressings

Set of Different sizes
- 1. ASL 410 & 420 Certificate
- 2. ISO certificate 9001:2008 (Manufacture of surgical Instrument & Stainless Steel)
- 4. CE Certificate of Conformity of Surgical Instrument Anesthesia.

35.0 Laryngeal Mirror

Instruments as per given sizes made of SS 410 & 420 Medical grade complying certificates
- 1. ASI 410 & 420 Certificate
- 2. ISO certificate 9001:2008 (Manufacture of surgical Instrument & Stainless Steel)

36.0 Nasopharyngeal Mirror

Instruments as per given sizes made of SS 410 & 420 Medical grade complying certificates
- 1. ASI 410 & 420 Certificate
- 2. ISO certificate 9001:2008 (Manufacture of surgical Instrument & Stainless Steel)

37.2 Nasal Speculum

Instruments as per given sizes made of SS 410 & 420 Medical grade complying certificates
- 1. ASI 410 & 420 Certificate
- 2. ISO certificate 9001:2008 (Manufacture of surgical Instrument & Stainless Steel)

38.0 Ear Suction

Instruments as per given sizes made of SS 410 & 420 Medical grade complying certificates
- 1. ASI 410 & 420 Certificate
- 2. ISO certificate 9001:2008 (Manufacture of surgical Instrument & Stainless Steel)

39.0 Nasal Speculum

Instruments as per given sizes made of SS 410 & 420 Medical grade complying certificates
- 1. ASI 410 & 420 Certificate
- 2. ISO certificate 9001:2008 (Manufacture of surgical Instrument & Stainless Steel)

40.0 Esophageal/Gastric pH & pressure recorder

- 1. Sensor probe for assessment of esophageal and gastric acidity level in veiling cather with sensor
41.0 Retinoscope
1. Should have an external focusing sleeve which is easy to grip and manipulate.
2. Should have crossed-linear polarizing filter.
3. Should allow one-hand operation for streak focus and 360º streak rotation.
4. Should be interchangeable to plane mirror and concave mirror mode by sleeve movement.
5. Should use LED streak lamp.
6. Should have 100% dust proof housing and multi-coated optics.
7. Should have detachable brow rest for spectacle wearer.
8. Should be battery/rechargeable battery operated.
9. Should have a carrying case.
10. Should be supplied with the following:
    - Bulb - 5 nos.
    - Bulb holder
    - Bulb cover

42.0 Scotioscope
1. Four mirrors angled at 62 deg. Should be suitable in viewing all quadrants of the anterior chamber without rotation.
2. Should have Detachable Handle (can be fixed straight or at an angle).
3. Should come with a good quality leather case.
4. Made in Quartz Glass.
5. Useful for both diagnostic and dynamic gonioscopy.

43.0 Optical chair
1. Should have microcontroller or microprocessor based control and operating system.
2. Should have controls from multiple locations.
3. All movement of chair should be adjusted with control switches.
4. Should have chair zero position.
5. Should have telescopic drawer for trial lens set.
6. Should have minimum two instrument table.
7. Should have side top with telescopic drawer.
8. Should have ophthalmoscope stand and indirect ophthalmoscope stand.
9. Should have foot switch for chair adjustment.
10. Should have head rest on chair.
11. Should have an adjustable foot rest.
12. Chair rotation should be 0 - 180 degree.
13. Chair reclining should be 0 - 170 degree.
14. Seat height should be UP movement 736 mm and DOWN movement 533 mm.
15. Weight carrying capacity up to 150 +/- 10 % Kg.
16. Chair unit should be available with left and right hand side.
17. Chair unit available with different colours.
18. Should supply the following:
    - Trail sets are available in three models.
    - Prisms (1 to 12).
    - Cylinder - (-0.12D to -6D).
    - Cylinder + (+0.12D to +6D).
    - Spherical - (-0.12D to -20D).
    - Spherical + (+0.12D to +20D).

44.0 Colour vision chart
1. Observers with normal color vision can detect the hue difference between figure and background and consequently can easily read the figures, but observers with defective color vision may fail to distinguish between figure and background colors and hence fail to read the figures.
2. A standard printed sheet with various size of fonts & figures.
3. Smaller chart-Snellen drum with or without remote control.
4. A Snellen chart is an eye chart that can be used to measure visual acuity.
5. The Bjerrum Tangent Screen is a flat, usually black surface, used to measure the central 30 degrees of the visual field. The Bjerrum screen is made of black matte material and stitched with radial lines at 15 degree intervals and circles at 5 degree intervals. For use at 1 meter with Traquair or similar stimuli.
6. • Only tray with lenses for chair unit without wooden box.
7. • Internally illuminated with wooden box (with power cord).
8. • Slit, Red, Green, Pin hole occluder.
9. • Trail sets are available in three models.
10. • Prisms (1 to 10).
11. • Bowl illumination: 31.5 ASB.
12. • Bowl testing distance: 30cm.
13. • Stimulus Duration: 200 msec.
14. • Stimulus Wavelength: Broadband visible light.
15. • Maximum Stimulus Intensity: 10,000 ASB.
16. • Silver, Red, Green, Pin hole occluder. Trail sets are available in three models.
17. • Internally illuminated with wooden box.
18. • Only tray with lenses for chair unit without wooden box.

45.0 Perimeter
1. Maximum Stimulus Intensity: 10,000 ASB.
4. Bowl Testing Distance: 30cm.
5. Bowl Illumination: 31.5 ASB.
6. Max Temporal Range: 90 degree (Full field).
7. Stimulus/Background colour: White on White.
8. General Testing Features: Goldmann Stimulus size 1 to 1’ Foveal Threshold.

46.0 Applanation tonometer
1. Should be Applanation type.
2. Should be based on Goldmann Tonometry principle.
3. Should have a measuring range from 0 to 78 mmHg in steps of 2 mmHg.
4. Should have an accuracy of ±0.5 mmHg.
5. Should be supplied with calibration bar, Prism and tonometer mount base to fix with optics.
6. Should be compatible with all models of slit lamps.
7. Should supply 1 no spare prism.
8. Controls should be visible and clearly defined.
9. Labels and markings should be clean and visible.

47.0 Gonioscope
1. Four mirrors angled at 62 deg. Should be suitable in viewing all quadrants of the anterior chamber without rotation.
2. Should have Detachable Handle (can be fixed straight or at an angle).
3. Should come with a good quality leather case.
4. Made in Quartz Glass.
5. Useful for both diagnostic and dynamic gonioscopy.

48.0 Perimeter
1. Maximum Stimulus Intensity: 10,000 ASB.
4. Bowl Testing Distance: 30cm.
5. Bowl Illumination: 31.5 ASB.
6. Max Temporal Range: 90 degree (Full field).
7. Stimulus/Background colour: White on White.
8. General Testing Features: Goldmann Stimulus size 1 to 1’ Foveal Threshold.

49.0 Perimeter
1. Maximum Stimulus Intensity: 10,000 ASB.
4. Bowl Testing Distance: 30cm.
5. Bowl Illumination: 31.5 ASB.
6. Max Temporal Range: 90 degree (Full field).
7. Stimulus/Background colour: White on White.
8. General Testing Features: Goldmann Stimulus size 1 to 1’ Foveal Threshold.
1. Keratometer for measuring the corneal curvature. Hand held and portable.
3. LCD display of measured values. Comfortable working distance.
4. Suitable printer.
5. Suitable AC adapter cord.
6. Suitable accessory for attachment to a slit lamp (carrying case).

- Radius curvature:
  1. Range: 5.00mm to 10.00mm.
  2. Steps: 0.01mm.

- Refractive power:
  1. Range: 33 to 67 D.
  2. Steps: 0.01/0.12/0.25D.

- Astigmatism range:
  1. 0 to +/−10.0D.
  2. Steps: 0.01/0.12/0.25D.

- Axis:
  1. 0 to 180.

6. Synoptophore:
   - Horizontal movement: +40° to -50° (Range); +/- 1° (Tolerance).
   - Vertical movement: +/-30° (Range); +/- 1° (Tolerance).
   - Torsion movement: +/-20° (Range); +/- 1° (Tolerance).
   - Inter-pupillary distance (IPD) 45-75 mm.
   - Chin rest height 71-133 mm.
   - Weight: 15.0 kg.
   - Dimensions (packaged): 48 x 44 x 56 cm.
   - Dimensions (unpackaged): 32 x 29 x 32 cm.

7. Pulmonary Function Test machine with facility for spirometry, lung volume and diffusion capacity:
   1. Suitable for measuring pulmonary volumes and capacities.
   2. Software to analyze blood pressure, ECG, heart rate.
   3. The system should come with all the necessary including power cords and cables and should be installed by the deliverer to ensure it subserves all the above functions.
   4. It should come with owner’s manual guide.
   5. The following is a summary of specifications:
      - Flow Range: -12 L/Sec. to +14 L.
      - Volume Range: -12 L to +14 L.
      - Flow & Volume Accuracy: +/-2% Resolution to 0.008L/Sec.
      - Sampling Rate: 100 samples per second (4096 byte resolution).
      - Test Storage: Unlimited (average usage approximately 6Kbytes per patient per session); 30 sec per test.
      - Calibration: 3.0SL . Creative Biomedics Calibration Syringe.
      - BTPS Temperature Correction: Automatic, accurate to 1 degree C.
      - Sensor Dimensions: 6.5in x 5.5in x 3in (16.5cm x 12.7cm x 7.6cm).
      - Sensor Weight: 0.57 kg.
      - Computer Requirements: Processor (486 or higher recommended), 1 GB RAM, 60 GB Hard Disk, VGA Graphics, RS 232 Serial Port, Parallel Printer Port.
      - Colour printer.
      - Tests performed:
        - Pre/ post FVC, SVC, MVV and challenge with bronchial provocation software.
        - Patient database.
        - Pulmonary consult interpretation software.
        - Trend reports.

8. Bjerrum Screen:
   - The Bjerrum Tangent Screen is a flat, usually black surface, used to measure the central 30 degrees of the visual field. The Bjerrum screen is made of black matte material and stitched with radial lines at 15 degree intervals and circles at 5 degree intervals. For use at 1 meter with Traquair or similar stimuli.
   - Size: 64" H x 44" W.
Spirometer

1. Suitable for measuring pulmonary volumes and capacities.
2. Software to analyze blood pressure, ECG, heart rate.
3. The system should come with all the necessary equipment, including power cords and cables and should be installed by the deliverer to ensure it subserves all the above functions.
4. It should come with owner's manual guide.
5. The following is a summary of specifications:
   a. Measurement Device: Fleisch Pneumotachometer (unheated)
   b. Flow Range: -12 L/Sec. to +18 L/Sec.
   c. Volume Range: -12 L to +44 L.
   d. Flow & Volume Accuracy: +/-2% Resolution to 0.008L/Sec.
   e. Calibration: Automatic, accurate to 1 degree C.
   f. BTPS Temperature Correction: +/-1 degree C throughout the chamber.
   g. Controller Accuracy: +/-0.5 degree C of set value for Temp.
   h. Uniformity: +/-1 degree throughout chamber.
   i. Air Heater Element: Special Type S.S. Tubular Air Heaters with fins.
   j. Heat up Time: 30 min. up to 60 degree C without load.
   k. Controller: Pt-100
   l. Inner Acrylic Door: Inner Full Size See through Acrylic 8 mm thick.
   m. External: Mild Steel Powder Coated
   n. Internal Chamber: Stainless Steel 304 grade.
   o. Sensor: Pt-100
   p. Sensor Weight: 1.25 lbs. (0.57 kg)
   q. Automatic, accurate to 1 degree C.
   r. BTPS Temperature Correction: +/-1 degree C throughout the chamber.
   s. Controller Accuracy: +/-0.5 degree C of set value for Temp.
   t. Uniformity: +/-1 degree throughout chamber.
   u. Air Heater Element: Special Type S.S. Tubular Air Heaters with fins.
   v. Heat up Time: 30 min. up to 60 degree C without load.
   w. Controller: Pt-100
   x. Inner Acrylic Door: Inner Full Size See through Acrylic 8 mm thick.
   y. External: Mild Steel Powder Coated
   z. Internal Chamber: Stainless Steel 304 grade.
   aa. Sensor: Pt-100
   bb. Sensor Weight: 1.25 lbs. (0.57 kg)
   cc. Automatic, accurate to 1 degree C.
   dd. BTPS Temperature Correction: +/-1 degree C throughout the chamber.
   ee. Controller Accuracy: +/-0.5 degree C of set value for Temp.
   ff. Uniformity: +/-1 degree throughout chamber.
   gg. Air Heater Element: Special Type S.S. Tubular Air Heaters with fins.
   hh. Heat up Time: 30 min. up to 60 degree C without load.
   ii. Controller: Pt-100
   jj. Inner Acrylic Door: Inner Full Size See through Acrylic 8 mm thick.
   kk. External: Mild Steel Powder Coated
   ll. Internal Chamber: Stainless Steel 304 grade.
   mm. Sensor: Pt-100
   nn. Sensor Weight: 1.25 lbs. (0.57 kg)
   oo. Automatic, accurate to 1 degree C.
   pp. BTPS Temperature Correction: +/-1 degree C throughout the chamber.
   qq. Controller Accuracy: +/-0.5 degree C of set value for Temp.
   rr. Uniformity: +/-1 degree throughout chamber.
   ss. Air Heater Element: Special Type S.S. Tubular Air Heaters with fins.
   tt. Heat up Time: 30 min. up to 60 degree C without load.
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   ww. External: Mild Steel Powder Coated
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   vv. BTPS Temperature Correction: +/-1 degree C throughout the chamber.
   ww. Controller Accuracy: +/-0.5 degree C of set value for Temp.
   xx. Uniformity: +/-1 degree throughout chamber.
Elisa Reader

1. Should have 96 wells and should have reading capability of 1 to 96 wells individually.
2. Should have a linear measurement range of 0 to 3,000 Abs.
3. Should have wavelength range from 400 to 750 nm.
4. Should have a photometric accuracy of ±0.5% or better.
5. Should have a resolution of 0.0001 Abs.
6. Should have variable speed plate shaking capability.
7. Should have easy access 0 position filler wheel.
8. Should have automatic filter selection.
9. Should have automatic calibration before each reading.
10. Should have at least 6 second reading speed.
11. Should have facility for storage of calibration curves.
12. Capable of doing multi-standard tests and controls.
13. Should have different types of blanking facility like air wise and well wise.
14. Should be capable of reading U, V and flat type wells.
15. Should be capable of reading 8 or 12 well strip plates.
16. Should use halogen light source and two spare bulbs should be provided.
17. Should have in-built resource and dispensing pumps to ensure accurate and quick washing.
18. Should have solution based wash buffer intake.
19. Should have external printer connectivity.
20. Should work with input 200 to 240 Vac 50 Hz supply.

Hot Plate

1. Rectangular Hot Plate is made of thick M.S./S.S. surface – 304 x 40 cm minimum size
2. Suitable to work in 220 V AC
3. Should have a thermostat with digital display.
4. Maximum surface temperature 300°C.
5. Controlled by energy regulator.
6. Possible to set a desired temperature
7. Temperature accuracy should be ± 0.5 degree C

Hot Air Steriliser

1. Thermally controlled, temperature range ambient to 250°C with fine and coarse adjustment, Memmert type, with fan, digital display, approx.
2. Overall size 81 cm (H) x 58 cm (L) x 71 cm (W), internal size 46 cm (H) x 40 cm (W) x 35 cm (D) stainless steel (SS) interiors with supports on three sides for adjustable shelves of size 30 cm x 34 cm.
3. Number of shelves: 3.
4. Fan convection to ensure uniform temperature, fitted with load indicator and safety thermostat take over indicator lamp.
5. Temperature variation +1°C, LCD/LED indicator.

Serum Insopicators

1. A shallow polish stainless tray nested inside a tank containing water.
2. The whole underside of the tray is in contact with water at a constant temperature which ensures that the temperature of the McCartney bottles with media is also constant.
3. The surface of the tray is a series of sloping steps (at 9 degree angle above the horizontal) and will hold 162 universal containers.
4. A blanket is placed over the containers to exclude draughts and a quilted cover provides thermal insulation: both blanket and quilt are made from insect-resistant materials.
5. The temperature of the water under the tray is controlled by a digital immersion thermostat.
6. Accuracy and reproducibility of set temperature are ensured with the digital display of actual and, at the touch of a button, set temperature.
7. The control unit is mounted on a bridge plate over one end of the bath, from which heater, stirrer and temperature sensors project down into the bath.
8. All moving parts are incorporated in the control unit which removable for servicing.
9. The tray and tank are made of polished stainless steel and are fitted in an outer case of laminated wood.
10. should work with input 200 to 240 Vac 50 Hz supply.
11. Should be supplied with online pure sinewave UPS of sufficient capacity with minimum 30 minutes back up time and dust cover for both machines.
Colposcope

1. Should have 96 wells and should have reading capability of 1 to 36 wells individually.
2. Should have a linear measurement range of 0 to 3.000 Abs.
3. Should have wavelength range from 400 to 750nm.
4. Should have a photometric accuracy of ±5% or better.
5. Should have a resolution of 0.0001Abs.
6. Should have variable speed plate shaking capability.
7. Should have easy access 6 position filter wheel.
8. Machine should be supplied with 4 standard filters.
9. Should have automatic filter selection.
10. Should have automatic calibration before each reading.
11. Should have at least 6 second reading speed.
12. Should have facility for storage of calibration curves.
13. Capable of doing multi standard tests and controls.
14. Should have different types of blunting facility like air-wise and wall-wise.
15. Should be capable of reading U, V and flat type wells.
16. Should be capable of reading 8 or 12 well strip plates.
17. Should use halogen light source and two spare bulbs should be provided.
18. Should have internal thermal printer and 5 rolls of thermal should be supplied along with the unit.
19. Should have external printer connectivity.
20. Should work with input 200 to 240Vac 50 Hz supply.

ELISA WASHER ELISA WASHER

1. Should have capability to wash flat, U or V bottomed micro plates or 8 or 12 well strip plates.
2. Should have 8 or 12 way manifold.
3. Should have 25 wash program memory or more.
4. Should have programmable washing time, volume and soaking time.
5. Should have minimum 6 wash cycles.
6. Should have continuous operating cycle.
7. Should have residual volume less than 5µl.
8. Should have removably and autoclavable plate carrier.

Biochemical analyzer

1. Special design for optimal colon insertion flexibility.
2. Silicone free Air-Water & Suction Valves for easy maintenance.
3. 3 or 4 remote switches for maximum control of functions with the user.
5. Field of view More than 140 degree
6. Direction of view 0 degree (Forward viewing)
7. Depth of field 3mm to 13.2 mm
8. Data LS outer diameter 13 mm 13.2 mm
9. Insertion tube outer diameter12.6 mm to 12.9 mm
10. The vertical stand should have at least 4 wheels and at least 2 of them should have breaking facility.
11. Should work with input 200 to 240Vac 50 Hz supply.

Histology Slide Processor

1. Should have 96 wells and should have reading capability of 1 to 36 wells individually.
2. Should have a linear measurement range of 0 to 3.000 Abs.
3. Should have wavelength range from 400 to 750nm.
4. Should have a photometric accuracy of ±5% or better.
5. Should have a resolution of 0.0001Abs.
6. Should have variable speed plate shaking capability.
7. Should have easy access 6 position filter wheel.
8. Machine should be supplied with 4 standard filters.
9. Should have automatic filter selection.
10. Should have automatic calibration before each reading.
11. Should have at least 6 second reading speed.
12. Should have facility for storage of calibration curves.
13. Capable of doing multi standard tests and controls.
14. Should have different types of blunting facility like air-wise and wall-wise.
15. Should be capable of reading U, V and flat type wells.
16. Should be capable of reading 8 or 12 well strip plates.
17. Should use halogen light source and two spare bulbs should be provided.
18. Should have internal thermal printer and 5 rolls of thermal should be supplied along with the unit.
19. Should have external printer connectivity.
20. Should work with input 200 to 240Vac 50 Hz supply.

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8. Data LS outer diameter 13 mm 13.2 mm
9. Insertion tube outer diameter12.6 mm to 12.9 mm
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1. Should have 96 wells and should have reading capability of 1 to 36 wells individually.
2. Should have a linear measurement range of 0 to 3.000 Abs.
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6. Should have variable speed plate shaking capability.
7. Should have easy access 6 position filter wheel.
8. Machine should be supplied with 4 standard filters.
9. Should have automatic filter selection.
10. Should have automatic calibration before each reading.
11. Should have at least 6 second reading speed.
12. Should have facility for storage of calibration curves.
13. Capable of doing multi standard tests and controls.
14. Should have different types of blunting facility like air-wise and wall-wise.
15. Should be capable of reading U, V and flat type wells.
16. Should be capable of reading 8 or 12 well strip plates.
17. Should use halogen light source and two spare bulbs should be provided.
18. Should have internal thermal printer and 5 rolls of thermal should be supplied along with the unit.
19. Should have external printer connectivity.
20. Should work with input 200 to 240Vac 50 Hz supply.

Biochemical analyzer

1. Special design for optimal colon insertion flexibility.
2. Silicone free Air-Water & Suction Valves for easy maintenance.
3. 3 or 4 remote switches for maximum control of functions with the user.
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7. Depth of field 3mm to 13.2 mm
8. Data LS outer diameter 13 mm 13.2 mm
9. Insertion tube outer diameter12.6 mm to 12.9 mm
10. The vertical stand should have at least 4 wheels and at least 2 of them should have breaking facility.
11. Should work with input 200 to 240Vac 50 Hz supply.

Histology Slide Processor

1. Should have 96 wells and should have reading capability of 1 to 36 wells individually.
2. Should have a linear measurement range of 0 to 3.000 Abs.
3. Should have wavelength range from 400 to 750nm.
4. Should have a photometric accuracy of ±5% or better.
5. Should have a resolution of 0.0001Abs.
6. Should have variable speed plate shaking capability.
7. Should have easy access 6 position filter wheel.
8. Machine should be supplied with 4 standard filters.
9. Should have automatic filter selection.
10. Should have automatic calibration before each reading.
11. Should have at least 6 second reading speed.
12. Should have facility for storage of calibration curves.
13. Capable of doing multi standard tests and controls.
14. Should have different types of blunting facility like air-wise and wall-wise.
15. Should be capable of reading U, V and flat type wells.
16. Should be capable of reading 8 or 12 well strip plates.
17. Should use halogen light source and two spare bulbs should be provided.
18. Should have internal thermal printer and 5 rolls of thermal should be supplied along with the unit.
19. Should have external printer connectivity.
20. Should work with input 200 to 240Vac 50 Hz supply.
**Drill Machine**

- **Drill Head Motor:** 1.5 HP/1440 rpm
- **Traveling Motors:** 1 HP/144 rpm
- **Helical V Belt:** B 35X2

**1. Drill Machine**

- **Technical Specifications:**
  - 1. The table top drill mounted on stand should have spring loaded lever of high quality.
  - 2. Should have variable speed operation, high speed drill.
  - 3. The single phase ac motor should have approx 000 W.
  - 4. It should be compact with overall length (320mm Approx.) and weight (Approx. 1.8Kg)
  - 5. Aluminum die-casting inner cover and gear cover should be used for increased durability.
  - 6. Should be easy to operate with a 2-finger sized trigger switch and a speed control dial
  - 7. It should have a reliable and convenient push button type forward/reverse changeover switch.
  - 8. Should have 2-speed transmission.
  - 9. Shortest chuck offset (23.5mm(15/16”))
  - 10. It should have soft grip handles for comfortable operation
  - 11. It should have low operation noise 79dB
  - 12. To be provided with high speed tungsten carbide bits of 1/2", 3/8", 1/4", 3/16", 1/8" or equivalent mm size.

**2. Drill Head**

- **Technical Specifications:**
  - 1. Should use treatment laser type ND-YAG.
  - 2. Energy should be continuously variable from 2 to 10 mJ.
  - 3. Should have a cone angle of 16° or greater.
  - 4. Should have a wavelength of 1084nm.
  - 5. Should have a wavelength of 1064nm.
  - 6. Should have a spot size of 8 mm.
  - 7. Should have pulse width of 4 nano-sec (typical).
  - 8. Should have burst mode of 1.23 Pules and each burst separation between pulse shall be of 25 micron-sec.
  - 9. Should have repetition rate of better than 1 pulse per second.
  - 10. Should have continuously adjustable YAG laser offset shift of up to 500Tm both anterior and posterior around aiming focal plane.
  - 11. The aiming beam laser shall be diode of red colour.
  - 12. Should have 3/5 step magnification for the laser delivery system.
  - 13. Should have a focus of 250 microns posterior offset.
  - 14. Should have an eye piece of at least 10.0X/12.5X.
  - 15. Should have an inter pupillary distance of 48 to 78 mm.
  - 16. Should have slit width from at least 0 to 14 mm continuously variable.
  - 17. Should have slit length from 0 to 14 mm continuously variable.
  - 18. Should have slit rotation from 0 to 180°.
  - 19. Should have red-free, cobalt blue filters.
  - 20. Should operate from 200 to 240Vac, 50 Hz input supply.
  - 21. Should be supplied with motorized table.
  - 22. Should have safety certificate from a competent authority (CE / FDA (US)/ STQC)
  - CB certificate / STQC S certificate or valid detailed electrical and functional safety test report from ERTL. Copy of the certificate / test report shall be produced along with the technical bid.

**3. Mortuary Cooler**

- **Technical Specifications:**
  - 1. Mortuary cooler with arrangement to keep 1 body. Single body mortuary cooler all size in mm. Inner size : 615 x 515 x 2300 mm (W x H x L). Outer size : 720 x 615 x 2560 mm (W x H x L).
  - 2. Height from ground level 740 mm.

**4. Nd Yag Laser**

- **Technical Specifications:**
  - 1. Should be supplied with essential accessories
  - 2. Special teeth design which should be sharp at edges
  - 3. Should be high carbon steel blades, hard and durable, anti rust and smooth, which leads to less friction.
  - 4. Blades should be chrome plated to prevent body fluid /chemical corrosion.
  - 5. For HRC, Blade materials should reach 52 degrees and teeth reaches 60 degrees (+/- 3)
  - 6. Blades should be chrome plated to prevent body fluid /chemical corrosion.
  - 7. Should be high carbon steel blades, hard and durable, anti rust and smooth, which leads to less friction.
  - 8. Should be high carbon steel blades, hard and durable, anti rust and smooth, which leads to less friction.
  - 9. Should be high carbon steel blades, hard and durable, anti rust and smooth, which leads to less friction.

**5. Mortuary Cooler**

- **Technical Specifications:**
  - 1. Should have safety certificate from a competent authority CE / FDA (US)/ STQC
  - 2. Should have repeated rate of better than 1 pulse per second.
  - 3. Should have continuously adjustable YAG laser offset shift of up to 500Tm both anterior and posterior around aiming focal plane.
  - 4. Should have a cone angle of 16° or greater.
  - 5. Should have a wavelength of 1084nm.
  - 6. Should have a wavelength of 1064nm.
  - 7. Should have a spot size of 8 mm.
  - 8. Should have pulse width of 4 nano-sec (typical).
  - 9. Should have burst mode of 1.23 Pules and each burst separation between pulse shall be of 25 micron-sec.
  - 10. Should have repetition rate of better than 1 pulse per second.
  - 11. Should have continuously adjustable YAG laser offset shift of up to 500Tm both exterior and posterior around aiming focal plane.
  - 12. Should have 3/5 step magnification for the laser delivery system.
  - 13. Should have a focus of 250 microns posterior offset.
  - 14. Should have an eye piece of at least 10.0X/12.5X.
  - 15. Should have an inter pupillary distance of 48 to 78 mm.
  - 16. Should have slit width from at least 0 to 14 mm continuously variable.
  - 17. Should have slit length from 0 to 14 mm continuously variable.
  - 18. Should have slit rotation from 0 to 180°.
  - 19. Should have red-free, cobalt blue filters.
  - 20. Should operate from 200 to 240Vac, 50 Hz input supply.
  - 21. Should be supplied with motorized table.
  - 22. Should have safety certificate from a competent authority (CE / FDA (US)/ STQC)
  - CB certificate / STQC S certificate or valid detailed electrical and functional safety test report from ERTL. Copy of the certificate / test report shall be produced along with the technical bid.

**6. Drill Machine**

- **Technical Specifications:**
  - 1. The table top drill mounted on stand should have spring loaded lever of high quality.
  - 2. Should have variable speed operation, high speed drill.
  - 3. The single phase ac motor should have approx 000 W.
  - 4. It should be compact with overall length (320mm Approx.) and weight (Approx. 1.8Kg)
  - 5. Aluminum die-casting inner cover and gear cover should be used for increased durability.
  - 6. Should be easy to operate with a 2-finger sized trigger switch and a speed control dial
  - 7. It should have a reliable and convenient push button type forward/reverse changeover switch.
  - 8. Should have 2-speed transmission.
  - 9. Shortest chuck offset (23.5mm(15/16”))
  - 10. It should have soft grip handles for comfortable operation
  - 11. It should have low operation noise 79dB
  - 12. To be provided with high speed tungsten carbide bits of 1/2", 3/8", 1/4", 3/16", 1/8" or equivalent mm size.
Incubator (8) (L)

Technical specifications:
1. Forced air circulation, by means of a motorised blower
2. Oven should be 21 CFR 11 Compliant
3. Should have option to connect with wireless data logger through Computer/Laptop
4. Capacity: 350 Litres (+/-10 Liters)
5. Shelf/6 SS Wire mesh for uniform temperature with heavy Duty: 3/4
6. Construction: Double wall with insulation provided with outer stainless steel door and inner glass viewing door.
7. Temperature range: 5°C to 60°C
8. Temperature resolution: 0.1 °C
9. Temperature accuracy: ±0.2 °C
10. Temperature uniformity: ±0.5 °C
11. Temperature Control must be Microprocessor based PID Control with auto Tuning CE Marked.
12. Temperature sensor should be P/R 0 Class 1 type and must Made in Germany/Switzerland
13. Temperature sensor accuracy: ±0.25 °C
15. Heating should be through U Shaped Nichrome Wire heater in SS Sheathing.
16. CFC Free compressor gas R 134A eco friendly refrigerant, with condenser, motor, relay complete unit Copeland Make.
17. High temperature cut off with Audible and visible alarm.
18. Calibration of temperature sensor probe & Temperature controller calibration with traceability online should be provided
19. Validation certificates IQ, OQ and PQ documentation and protocols should be provided with equipment.

Stage Incubator / Warmer for microscope stage incubator with glass covered petri dish.

Technical Specifications:
1. Temperature control and timer function regulated by Microprocessor Controller
2. Fast heating and accurate temperature (+ 0.2 C accuracy)
3. An anodised aluminum plate of less than 10 mm thickness with 50 mm central groove with glass and 175 (L) X 155(W) mm dimensions,
4. Maximum operating temperature from ambient to 400°C Digital temperature display (Desired/Actual value) accurate to 0.1°C.

Hemoglobin-meter Sahli's or Hellige (with spaces):

General Specifications:
Should have permanent non-fading colour standards made with optical precision for accurate and exact matching of colour.

Technical Specifications:
1. Measuring range should be 40-160 g/litre.
2. It should measure optical density of a solution with precision not worse than 1 %.
3. The total error of definition of concentration of a haemoglobin (in view of an error of a method, and also errors of dosing of a blood and solutions), obtained at comparative medical tests, should not exceed 2 %.
4. The volume of liquid for photometry should be not less than 1 ml.
5. Optical length of a cuvette or cylindrical test tube should be 10 ± 0.1 mm.
6. System Configuration Accessories, spares and consumables
   - Graduated dilution tube
   - Dropping pipette
   - Haemoglobin pipette
   - Brush
   - Glass rod
   - Stere
   - Amber coloured acid vial
   - Pasteur pipette etc.
   - Blood pipette
   - Suction tube

Spirometer

1. Capacity of Spirometer
   - 6 litre capacity ordinary
   - s.s chamber 30l with chain compensated counter balance to float, Pulley calibrated to denote volume, inlet & outlet tubes. Complete with corrugated rubber tube, mouth piece & recording lever.

2. The system should measure the following:
   - Slow and forced Spirometry, VT, BF, MV, ERV, FVC, FEV1, VCin, VCex, MEF 50, MEF 75, PEF, MIVV etc
   - Lung Subvolumes : FRC, RV, TLC, RV%, TLC etc.
   - Diffusion capacity of the Lungs : DLCO-SB, DLCO – RB.

3. The system should have a demand valve unit for direct breathing (no inspiratory bag) from pre-mix gas container, to minimize wastage of gas.

4. Indian predictive values should be available

5. The system should be an economically oriented lung function measuring system by using the single Breath technique.

General specifications:
1. Electronic with computer attachment and print out with software for complete analysis
2. The System should be an economically oriented lung function measuring system by using the single breath technique.
3. Suitable for measuring Diffusion Capacity (DLO2) by the Fick method technique for patients with distribution impairments of the lungs, to minimise patient co-operation
4. Indian predictive values should be available

Technical Specifications:
- The system should measure the following :
  - a) Slow and forced Spirometry, VT, BF, MV, ERV, FVC, FEV1, VCin, VCex, MEF 50, MEF 75, PEF, MIVV etc
  - b) Lung Subvolumes : FRC, RV, TLC, RV%, TLC etc.
  - c) Diffusion capacity of the Lungs : DLCO-SB, DLCO – RB.
  - The system should have an easy to exchange, bidirectional heated pneumotach with the following specifications. Range - Should be 0 to 20 litre/sec. Accuracy - Should be +/-2% Resistance should be less than 0.059 kPa/Nl/sec
  - The system should have carbon monoxide analyser, He analyser and O2 Analyser with the following specifications:
    - a) Carbon monoxide analyser : Range - Should be from 0 to 4.0% Resolution/Accuracy should be 0.005%/0.005% Reproducibility should be 0.006% Reproducibility should be 0.006%
    - b) He Analyser : Range - Should be 0 to 9.5% Resolution/Accuracy should 0.05%/0.05% Reproducibility should be 0.00%
    - c) O2 analyser Range - Should be 0 to 100%. Resolution / Accuracy should be 0.05% / 1.0% Reproducibility should be 0.1% . .
  - The system should have a demand valve unit for direct breathing (no inspiratory bag) from pre-mix gas container, to minimize wastage of gas.
  - The computer system should have the following specification: Branded - P/3.4 Ghz PC(Advanced/equivalent System with 500 GB HDD, 4 GB RAM, CD/DVD W/IR 21" TFT Monitor. Keyboard, Mouse, HP colour laserjet printer ORIGINAL WINDOWS XP PROFESSIONAL LATEST O.E.M WITH LATEST SERVICE PACKS

- Information in a single basic system

- If should be possible to upgrade the system to the following:
  - a) Arterial resistance by shunt method.
  - b) Respiratory impedance by Impulse Oscillometry system.
  - c) Respiratory muscle strength, Respiratory drive.
  - d) Compliance - Static / Dynamic system
  - e) Body Plethysmographs.
  - f) Aerosol Provocation system.
  - g) Ergospirometry & Stress test ECG
  - h) Breathing Analysis for children.

Perimeter with charts (Sahli's):

- Perimeter with charts (Sahli's):
  - It consists of:
    - 1. A vertical stand with metallic arc.
    - 2. It also bear a circular black disc in which the arc in shape of a semicircle with radius 130 mm.
    - 3. The arc is graduated from 0º to 90º with a movable test object (white color spot of size 10mm diameter).
  - An adjustable chin rest
  - Detachable leveling bar. A scale and circular chart frame to hold the chart paper.
  - A metallic graduated scale with a movable pin-punch pointer is fixed to mark on the perimeter chart paper.

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89 Colorimeter

89.1 Digital Photo Colorimeter 8 Filters

Technical specifications: (7 Filters)
1. mains operated with optical density in 2½ Digit LED Display, 1ml solution measurement.
2. Photometric Range : 0-2.000(Transmittance)
3. 0-3.000(Absorbance)
4. Sample Container : Square cuvette 10x10x45(mm)
5. Round cuvette 10(OD),12(ID),15(L)mm
6. Should work on 230/50 Hz

Accessories
7. Filter case-1 pc
8. Filter 7 Pc
9. Analog output cable-1 Pc
10. Power cord-1 Pc
11. Bulbs-3 nos
12. Extra Cuvettes-10 nos

Documentation:
13. The supplier should be ISO certified for quality standards.
14. Should be FDA/CE or BIS approved product

90 Voltage stabilizer

Voltage stabilizer
1. AVR Rating : As suitable.
2. For Single phase Input Voltage 160-260 V AC 50 Hz and output 220-240 V AC 50 Hz
3. For Three phase : Input Voltage 275-440 V 50 Hz (Output : 400 V+/- 1%, 50 Hz).
4. Three phase four wires (for more than 16.5 cum capacity cold room)

Common Spec: 3-4 sec cut off and 2 minutes restart delay.

Facilities for manual control of output.

Arrangements for direct supply bypassing the stabilizer in case of failures, voltmeter and indicators on front panel, suitable safety and protection devices.

Quick start arrangement for bypassing restart delay

able to run both the working and stand by units simultaneously.

91 Balances

91.1 Digital Balance capacity 200 gms with resolution of upto 1.001 mg.

Analytical balance
1. Aluminium alloy body material and stainless steel platter with clear glass wind shield
2. Large quantities of materials can be weighed
3. LCD display with backlight makes it easy to read in all lighting conditions
4. Electromagnetic Force Compensation technology
5. Overload protection, bubble level adjustment, under hook, full capacity subtraction, check weighing, percentage weighing, piece 6. counting and multi weighing unit conversion between different units
7. Can operate on AC and DC adapter
8. Certified calibration weight supplied as standard
9. Can be connected to RS232 interface

91.2 Analytical Balance

It has a weighing capacity in the range 100-500g and readability of 0.1 mg / 0.001 mg.

91.3 Balance Micro 300 gm. x 0.001 gm. (1 mg.)
1. Pan Dia 60 mm.
2. With Wind Shield.
3. LCD display with white back light.
4. AC / DC 6 V - 100 mA.
5. RS 232 Port for connectivity to Printer or computer.

91.4 Balance, chemical with weights

Technical Specification
1. A base plate on which the weighing balance is mounted
2. A balance pan with minimum dimension of 30 cm length and 20 cm width
3. An LED display screen for display of parameters
4. Range of measurement from 0.5 microgram to 1000 gram Sensitivity of measurement is 0.5 microgram

91.5 Balance for weighing organs
1. The capacity of these scales is upto 15 kgs
2. Technical specification:
3. Digital display
4. Platform size 350 mm x 350 mm approx
5. SS 304 grade construction
6. Complete as Platform for easy cleaning and anti-staining
7. Maximum of 15 kg
8. Accuracy up to 2 gms
9. Rechargeable battery back-up pack provided for usage in power failure
10. Tare function provided
11. Imported load cells for enduring performance

91.6 Balance for weighing food stuff (Capacity 2 kg.)
1. The capacity of these scales is upto 2 kgs
2. Technical specification:
3. Digital display
4. Platform size min 350 mm x 350 mm approx
5. SS 304 grade construction
6. Complete as Platform for easy cleaning and anti-staining
7. Accuracy up to 2 gms
8. Rechargeable battery back-up pack provided for usage in power failure
9. Tare function provided
10. Imported load cells for enduring performance

92 Hot Air Oven

92.1 Hot Air Oven more than 200 ltrs / Hot Air Oven temperature upto 250 degree C, accuracy +/- 1 degree C. Double walled, inner chamber of Stainless Steel, Elements of Three Stages. Chamber size : 600x600x600 mm.

Use in inches : 24"x24"x24"(HxWxD). No. of Shelves 2. Capacity 224 ltrs. With Air Circulation Fan.

General specifications:
1. Microprocessor based digitally controlled equipment suitable for daily usage.
2. Should have double walled construction, special high quality insulated steel.
3. Facility for adjustable shelves, 10 removable shelves to be provided.
4. Capacity 224 ltrs. With Air Circulation Fan
5. Size of inner chamber approx 550x550x70 cm approx with internal lighting facility
6. Insulated door fitted with heavy hinges, mechanical door lock.
7. Temperature range 30-250°C, Digitally temperature setting accuracy
9. Supplied with cord & plug, operate at 120/50 Hz AC supply

Documentation:
10. CE / ISI mark or other equivalent quality certification.
92.3 Hot Air Oven
1. Capacity - Approximately 90 litres
2. Shelves - Stainless steel construction: 3 in number, must have pilot light on shelves
3. Temperature range : 50°C to 250°C. Built in thermometer
4. Walls (three layered) - Outer covered with stainless steel, inner two walls made of stainless steel with glass wool insulation in between of minimum 15mm thickness.
5. Size - Approximately 18” x 18” x 18”
6. Controls - Thermostat control, Digital display, rotary control
7. Heating elements - Stainless steel, U shaped
8. Air circulation fan must be present
9. Power cord must be of acceptable durability, quality, length and current carrying capacity and should be compatible with Indian standard power socket
10. Electrical rating unit should function with 200-230Vac, 50/60 Hz input power supply
11. Certification should have safety certificate from a competent authority CE / FDA (US) or valid detailed electrical and functional safety test report from BIS

93 Vaccumeter
93.1 Vaccumeter with strips ( For POC )
TECHNICAL SPECIFICATION
1. Should be a hand held meter
2. Reading range/battery from 20 to 600 mg/dl
3. Maximum reading time of less than 10 seconds
4. Minimum blood sample less than 1.5ul
5. LCD display
6. Minimum memory of 50
7. Supplied with three types of control solutions of each at least 20 ml vial
8. Should have safety certificate from a competent authority CE / FDA (US) / STQC CB certificate / STQC S certificate or valid detailed electrical and functional safety test
9. GLUCOSE STRIPS GLUCOSE STRIPS
10. Should be able to use capillary blood samples.
11. Should have a minimum 4 months shelf life after opening the strip vial.
12. All strips should have at least one year expiry date from the date of supply.
13. 30 strips should be supplied along with the equipment.
14. Strips should be available in the local market.

94 Fume Hood
Fume Hood Specifications:
1. Powder Coated MS construction, SS 304 work surface, counter balanced vertical sliding pumpe door, Fitted with Gas cock, Water faucet, SS basin and flexible drain pipe, Fitted with one under table drawer and one utility cabinet with openable door, one openable door for maintenance access. Supplied without external plumbing and external exhaust pipework. Supplied with exhaust pipe connecting socket.

95 Weighing Machine
95.1 Weighing Machine for weighing dead bodies /
1. Floor level - 200 kg.
2. Digital display
3. SS 304 grade construction
4. Complete as platform for easy cleaning and anti-staining
5. Platform area 2100 mm x 600 mm approx
6. Accuracy 20 gms
7. Rechargeable battery back-up pack provided for usage in power failure

95.2 Weighing Machine for weighing dead bodies / Cadavers weighing machine
1. Floor level - 150 kg.
2. Digital display
3. SS 304 grade construction
4. Complete as platform for easy cleaning and anti-staining
5. Platform area 2000 mm x 400 mm approx
6. Accuracy 20 gms

95.3 Weighing Machine For Fetus
95.4 Weighing machine adult
1. MS steel body
2. Anti slip mats
3. Thick magnifying lens

95.5 Baby weighing machine
Display Type Electrical
Mode Of Operation Digital
Overall Dimensions 555mm(L) x 385mm(W) x 240mm(H) with bowl
Power Supply AC 230v +/-10%, 50 Hz, +/-2%
Battery Rechargeable 6V, 4AH
Maximum Capacity 30Kg

95.6 Scales Baby weighing machine
1. Capacity 20 kg.
2. Material ABS / Metal Body
3. Graduation 100 gms
4. Top and bottom hook with weighing trouser

96 Heated Paraffin Embedding Module
Heated Paraffin Embedding Module
1. Sealed work surfaces
2. Brightly lit orientation space for use in block preparation
3. Wae flow control system
4. Superior design & construction
5. 3.0 ltr paraffin tank
6. One collection tank for easy cleaning
7. Four-position, integral forceps warming block
8. Flexible goose neck magnifying glass
9. Ready to use with electrically heated forceps
10. Hot plate : 55º C to 70º C
11. Tissue storage : -40º C to 80º C
12. Paraffin tank : -40º C to 80º C

97 Cold Plate for Modular Tissue Embedding System
1. Sealed work surfaces
2. Brightly lit orientation space for use in block preparation
3. Wae flow control system
4. Superior design & construction
5. 3.0 ltr paraffin tank
6. One collection tank for easy cleaning
7. Four-position, integral forceps warming block
8. Flexible goose neck magnifying glass
9. Ready to use with electrically heated forceps
10. Cold plate : 0º C (optional -10º Deg, C)
11. Tissue storage : -40º C to 80º C
12. Paraffin tank : -40º C to 80º C

98 Automated Tissue Processor
Automated Tissue Processor – (Histokinette)

Structural specification:

1. Slipt Tissue Processor Basic Instrument 100 – 240 V 50-60 Hz with
2. 1 Basic Instrument, 10 PE reagent beakers,
3. 2 Paraffin baths,
4. 1 Standard cassette basket, stainless steel,
5. 2 Specimen cover, 1 Tool – Kit, 1 Instruction manual 1. Processing of minimum 100 cassettes at a time
6. 2. permanent memory of 9-10 stored processing protocols.
7. Highly resistant reagent vessels made up of polypropylene with capacity to hold 1.5 to 1.8 liters of reagent.
8. The equipment should be equipped centrifugal agitation or vacuum for better infiltration and avoid carry over contamination.
9. The paraffin baths supplied should be from 50-75 Degree C with over temperature cut off facility.
10. Battery backup for 15 minutes for safety of tissues
11. Lift of the the carousel by automatic movement
12. built in features like error messages audible alarms, warning signals for maximum safety.
13. The infiltration time programmable should be 5 min – 99 hrs
14. The instrument should be supplied with a steel vessel to hold the cassettes with a counter weight

Autoclave:

1. Autoclave vertical / Double drum vertical (12"x15") 300 x 500 mm All SS.
2. With pressure gauge,
3. safety valve, water level indicator, Max 15 PSI.

Autopsy Table:

1. All S.S. Construction sturdy support framework.
2. One end mounted integrated large SS wash basin with one free rotating faucet and one long reach hand shower.
3. Built in under table plumbing and drainage.
4. No.of Faucets 2 (1 fixed rotatable and 1 hand shower)
5. Wash Basin
6. Overhead portable light on castors = 1
7. Total corrosion resistant ≥ 4 Gauge Stainless Steel acidproof and alkaliproof, Hydraulic Height Adjustment facility adjustable both 5. in vertically and horizontally, exhaust system,
8. Hydro Aspirator with built-in vacuum breaker.
9. Construction 304 type stainless steel with large radius inside corners for easy cleanup.
10. Three solid stainless steel sliding body supports, wooden headrest, table length: “ Width-3 ” approx Dissection wing length-62” width 3 “ approx Inch/Centi etre Ruler on Work Surface

Fully Automated high through put Multi Stainer

staining from slides 1 to 1,600. It also offers the fastest glass coverslipping drying time on the market at only 5 minutes,

Fully Automated Embedding System

1. Rated voltage and current: Single phase, 200VAC ± 10%, 50/60 Hz, 12A, Single phase, 230VAC ± 10%, 50/60 Hz, 11A (NEMA L6-20 dedicated receptacle)
2. Interface: USB Type A ports (2) LAN (2)
3. Dimensions: 48 (W) x 30 (D) x 70 (H) inches, 120 (W) x 75 (D) x 175 (H) cm, Weight 1,168 lbs (530 kg)
4. Throughput Up to 120 Paraform Cassettes per hour
5. Operating conditions Temperature: 59 to 86°F (15 to 30°C)
6. Relative Humidity: 30-80%, non-condensing
7. Noise level <65 dB
10. Regulatory status IVD, FDA Class I

Stand alone cold plate

Technical Specifications:

1. holding more than 100 cassettes
2. double walled unit with both inner and outer made of stainless steel
3. The gap between the two walls is filled with high-grade glass wool
4. Temperature from ambient to 70°C is controlled by hydraulic type thermostat
5. Tap system is provided for the outlet of molten paraffin wax.

Stand alone cold plate

1. range from 20mm to 300mm
2. environment adaptive control module to make sure the operating temperature is always stabilised at -6 °C.

Grossing Station - Stainless steel, with Control panel, air filtration system, Track mounted adjustable computer arm with articulation, LED lights that are color and intensity, Dedicated USB ports for camera control and data transfer adjustable, Integrated pathology camera system, Instrument Set (High quality) Height Adjustable

Automatic High Speed Slide Scanner

1. for converting Slides in Digital Format with software and Database Management with backup for Data Storage
2. Required computer set

Sphygmomanometer

1. Sphygmomanometer (digital)
2. battery-6.0V(AA*4),
3. LCD Display,
4. Dimension145x103x56 mm
106.2 Mercury type Sphygmomanometer
1. Should be Portable mercurial type.
2. Should have ISI mark.
3. Should have ON and OFF provision for mercury reservoir.
4. Should have a measuring range from 0 to 300 mm Hg.
5. Should be provided with adult arm cuffs of size medium & large and paediatric cuff.
6. The control valve should have a knurled thumb control device. The leak rate should not exceed 10 mm of mercury per minute.
7. The manometer scale markings and graduations should be permanent and clearly visible and filled with pigments.
8. The internal diameter of the manometer glass tube should be 1.5 ± 0.1 mm and the thickness not less than 2 mm.
9. All parts, if any used should not crack, flake, peel or disintegrate in normal use.
10. The inflating rubber bag should be capable of withstanding an internal pressure of 450 mm Hg without leaking.
11. The inflating bulb should be soft and should not have any joints or ridges.
12. The mercury used should be clean, double distilled and of 99.9% purity.
13. The fastening arrangements of the cuff should be of hook and loop type (Velcro).
14. The threading and fastening arrangement of the cuff should show no sign of slip or failure when subjected to the maximum test conditions.
15. The rubber tubes used should have an internal diameter of 3 ± 0.5 mm and the external diameter should not be less than 8 mm.
16. Sphygmomanometer – Aneroid Type
   1. Should be aneroid type.
   2. Should have ISI mark.
   3. Should have a measuring range from 0 to 300 mm Hg.
   4. Should be provided with adult arm cuffs of size medium & large and paediatric cuff.
   5. The dial manometer markings and graduations should be permanent and clearly visible and filled with pigments, with diameter of minimum diameter of 160 mm.
   6. Body & Base – Aluminium die casted (Powder coated), screw type base
   7. Sensing corrugated phosphorous bronze twin capsule bellows.
   8. Movement mechanism – Brass
   9. Connection – brass, nickel plated for 3-4 mm rubber hose.
   10. Dial – Aluminium
   11. Pointer – White coated, thin & sharp made of phosphorous Bronze
   12. Window lenses – Clear plastic.

107.0 for boring glass
3. The cutting-edge machinery used for drilling is equipped with diamond tipped drill bits received for their superior ability to cut holes and give a smooth finish.

108. Haemacytometers with red and white pipettes
Nickel cytometers with red and white pipettes
1. Improved Neubauer's chamber having bright counting lines.
2. RBC pipette and WBC pipette etc. & to be supplied in a durable box.
3. Should be of high quality German make.

109. CO2 Incubator
CO2 Incubator (without CO2 sensor/Meter)
1. Inner chamber measuring 45 x 71 x 95 cm.
3. A full view inner glass door is provided along with outer double walled door provided with magnetic gasket.
4. A full view inner glass door is provided along with outer double walled door provided with magnetic gasket.
5. Inlet nozzle for Carbon Dioxide or Air mixture
6. Temperature range 5°C to 60°C ± 2°C
7. Above ambient to 60°C ± 2°C.
8. Complete with pressure gauge, inlet/outlet of air/gas, cord plug etc.
9. Humidity reservoir
10. Workable on 220V AC 50Hz single phase.
11. Optional Air compressor
Carbon Dioxide cylinder with rubber pipes

110. Deep Freezer
110.1 Deep Freeze: -20°C & Deep Freezer
1. One -70 degree deep freezer, temperature range: -500°C to -860°C.
2. Capacity cu ft/liters: 350 or more.
3. Cryo Box Capacity 2°C/350 or more,
4. Max shelf Weight: 120lbs/65 kg or more, Refrigeration HP: Two 1.25 HP each, Voltage: 230V, 50/60 Hz. Heavy gauge, cold rolled steel cabinets with a powder coat paint finish for a uniform exterior that resists chipping and rust, 5" (12.7 cm)
5. Insulated panels – polyurethane insulation.
6. Suitable voltage stabilizer to be supplied to support the instrument.

111. Power
Power
Internal minimum capacity about 300 L, double door with adjustable at least 4-5 shelves each with separate inner door for better sample protection through minimum sample warming. External casing should be MS sheet made and duly powder coated body.

112. Colposcope
Colposcope
1. Should be a basic model with binocular tubes with inter papillary adjustment and vertical stand.
2. Should have a working range with fine focus of minimum 40mm.
3. Should have a 12.5x or 15.5x or 15x eyepiece.
4. Should have a standard objective of working distance between 250 to 300mm.
5. The vertical stand should have at least 4 wheels and at least 2 of them should have breaking facility.
6. The vertical joint should be rotatable and should have vertical height adjustment.
7. The head should be tiltable and should have positioning handle.
8. It should use a halogen light source with coaxial illumination.
9. Should work with input 200 to 240Vac 50 Hz supply.

113. Haemoglobinometer
Haemoglobinometer
Black counting chamber, round/square Hb tube (german), 20 ul h. B. Pipette (german), rubber tube with mouth piece, cleaning brush, glass dropper with rubber teat, glass rod, amber bottle with white tamper stopper and screw cap (black/white).

114.1. Urine analyzer
114.1.1 Normal 55 µL
Capillary 50 µL
Urine 500 µL
Analysis Time
Serum/Plasma/Blood: 35 seconds
Urine: 60 seconds (Na+/K++Cl- only)
System Size and Weight
Width 37.0 cm (14.5 in.)
Depth 18.0 cm (7 in.)
Height 22 cm (8.5 in.)
Weight 7.3 kg (16 lbs.) with reagent module
Power Requirements
Voltage: 100V (85-110V), 120V (102-122V), 230V (187-242V), 240V (204-264V)
Frequency: 50/60 Hz
Environmental
Temperature: 15°C to 30°C
115.1 Direct Laryngoscope Set

Medium, universal size, triangular spatula shaped, lateral outer channels for fo light carrier and suction, with FO light carrier for laryngoscope

Surgical instruments, as per given name complying with
- a. AISI 410 & 420 Certificate
- b. ISO certificate 9001:2008 (Manufacture of surgical Instrument & Stainless Steel)

116.0 Electronic Typewriter:

1. Memory
   1.1 text memory of at least 22k.
   1.2. correction memory of at least 500 characters
   1.3 format memory
   1.4 memory protection of at least 500 hours

2. Display
   2.1 visual display of not less than 40 characters

3. Automated Features
   3.1 auto centering
   3.2 auto carrier return
   3.3. auto underlining
   3.4 space, half or fractional space
   3.5 auto indent
   3.6 auto page end alert
   3.7 relocation key
   3.8 auto-repeat key
   3.9 auto paper feed
   3.10 stop code
   3.11 auto right flush
   3.12 decimal tabulation
   3.14 bold print capability

4. Print Unit
   4.1 paper width of at least 420mm
   4.2 print width of at least 330mm
   4.3 10, 12 and 15 pitches
   4.4 printing speed of at least 17 characters per second
   4.5 1, 1.5 and 2 line spacing
   4.6 exchangeable daisywheel
   4.7 exchangeable ribbons

4.8 cut stencils with good quality printout
4.9 print table with good quality
4.10 print at least 4 copies (65-80 gsm)
4.11 acoustic shield
4.12 print on envelopes up to 100 gsm

5. Equipment Requirement
5.1 All equipment shall be designed to satisfy, where applicable, the following standards or their equivalents:
   5.1.1 BS 415 "Specification for safety requirements for mains-operated electronic and related apparatus for household and similar general use."
   5.1.2 BS 4743 "Specification for safety requirements for electronic measuring apparatus."
   5.1.3 BS 3456 "Specification for safety of household electrical appliances."
   5.1.4 BS 7494 "Specification for safety of household electrical appliances."
   5.2 Unless specified otherwise, the equipment shall operate to the specification within the following mains supply range:
   220-240V A.C., single phase, 50±1Hz
   Power transformer shall preferably to integral with the respective equipment.
   5.3 The equipment shall be bonded to earth through a three core supply cable and three rectangular pin suitably fused plug complying with B.S. 1363 : 1984.
   5.4 Unless specified otherwise, all equipment shall function in full compliance with the quoted and any other manufacturer specifications, under the following environmental conditions:
   5.4.1 temperature 0-40ºC
   5.4.2 relative humidity 10-95%
   5.4.3 salty atmosphere found in tropical coastal regions

117.0 Zerox Copier

Standard functions: Copy
functions: Print, Scan, Walkup fax
Copy speeds up to: 25 ppm
Device memory (standard/max) 256 MB / 512 MB
Hard drive (Standard) 40 GB
Document handler (Automatic Document Feeder) Capacity: 75 sheets
Size: 5.5 x 8.3 in. to 11.7 x 17 in.
Standard paper capacity: 1,100 sheets
Maximum paper capacity: 5,100 sheets

118.0 Biofeedback instruments (sets)

118.1 EEG (Alpha), EMG, Pulse, Temperature, Respiration, QMS, ECG & HRV.
Continuous graphical display of all parameters simultaneously and singular. Visual feedback through digital display and colour bargraph Audio feedback through headphones and speakers. Facility to play audio of your choice for relaxation. Storage of patient data for review. Plotting old graph depicting patients progress for every parameter. User definable event marker. Facility for video and audio recording

119.0 Automatic Tissue Processor

119.1 Carousel lid 820 mm Ø
   Height 595 - 780 mm
   Diameter of rollers 610 mm
   Dry weight (including accessories) 60 kg
   Max baths 2 (3 optional)
   Wax baths capacity 1.8 liters
   Wax bath temperature range 45 °C - 65 °
   Standard tissue basket capacity max 100 cassettes
   Nominal voltage 100/120/230/240 V AC ± 10%
   Nominal frequency 50/60 Hz
   Excess temperature cutout 75 °C ± 4 °C
   Reagent containers 10 (9)
   Reagent container capacity 1.8 liters
   Standard tissue baskets 1 (2 optional)
   Programs 9, freely selectable
   Programmable infiltration time per station 99 h 59 min
   Delayed start 9 days
   Drain time 60 s
   Vacuum device pressure difference max 500 hPa (approx. 0.5 bar)

120.0 Water Bath
capacity: 10 l.
1. double walled made of stainless steel.
2. outer wall ms powder coated.
3. space between double walls is filled with glass wool for insulation.
4. provided with drain plug for easy emptying.
5. reliable immersion heating elements.
6. thermostat controlled temperature from ambient to 100 degree celsius +/- 0.5.
7. digital display of temperature with appropriate regulators, on/off switch, alarm.
8. voltage: 800 w suitable to operate on 220 v ac supply.
9. should be supplied with:
   1. stirrer with s/s rods and blades.
   2. test tube racks of ss.

120.1 water baths with lids and holes thereon for holding test tubes etc.
1. stainless steel 304, insulated double walled, inner wall of stainless steel 304, thermostatic temp.
2. control from ambient to 85 - 900 c (20.50) complete with immersion heater, aluminium/ss cover, brass drain cock, 220-240 volts ac, 50hz., dimensions outside: approx.(364x41x25 cms), inside: approx(270x30x15 cms).
3. capacity not given because the dimensions specified are required for the proper functioning of the water bath in the laboratory for optimum utilization of the space.
4. power: approx.480w; digital microprocessor display to set temp. point preventing thermal runaway.
5. seamless reservoir with no welds to leak or rust, seethrough cover is hinged and removable, and steeply gabled to accept taller samples.
6.iec-1010 approved.
7. equipment quoted should comply with indian standards institutions guidelines or any other national or international guidelines.
8. voltage regulator of appropriate rating to be included to cope with 160-260 v.

121.0 boiling water baths, with lids having 8-12 holes
power supply: 220/250v. c.
power: 2000w
1. stainless steel, insulated double walled, inner wall of stainless steel 304, thermostatic temp.
2. control from ambient to 85 - 900 c (20.50) complete with immersion heater, aluminium/ss cover, brass drain cock, 220-240 volts ac, 50hz., dimensions outside: approx.(364x41x25 cms), inside: approx.(270x30x15 cms).
3. capacity not given because the dimensions specified are required for the proper functioning of the water bath in the laboratory for optimum utilization of the space.
4. power: approx.480w; digital microprocessor display to set temp. point preventing thermal runaway.
5. seamless reservoir with no welds to leak or rust, seethrough cover is hinged and removable, and steeply gabled to accept taller samples.
6. iec-1010 approved.
7. equipment quoted should comply with indian standards institutions guidelines or any other national or international guidelines.
8. voltage regulator of appropriate rating to be included to cope with 160-260 v.

122.0 constant temperature water bath
1. should have a double walled construction.
2. the inner chamber and top lid should be made of stainless steel.
3. the space between the two walls should be packed with thick glass wool.
4. should provide with a microprocessor based variable digital temperature controller with digital display.
5. working temperature should be from ambient to 80ºc having an accuracy of +/-1ºc.
6. should have an approximate inner chamber dimension of 450mm x 300mm x 175mm

123.0 water bath (serological ) 37 degree celsius
1. stainless steel, insulated double walled, inner wall of stainless steel, thermostatic temp.
2. control from ambient to 85 - 900 c (20.50) complete with immersion heater, aluminium/ss cover, brass drain cock, 220-240 volts ac, 50hz., dimensions outside: approx.(364x41x25 cms), inside: approx(270x30x15 cms).
3. capacity not given because the dimensions specified are required for the proper functioning of the water bath in the laboratory for optimum utilization of the space.
4. power: approx.480w; digital microprocessor display to set temp. point preventing thermal runaway.
5. seamless reservoir with no welds to leak or rust, seethrough cover is hinged and removable, and steeply gabled to accept taller samples.
6. iec-1010 approved.
7. equipment quoted should comply with indian standards institutions guidelines or any other national or international guidelines.
8. voltage regulator of appropriate rating to be included to cope with 160-260 v.

124.0 water bath (serological ) 37 degree celsius
1. stainless steel, insulated double walled, inner wall of stainless steel, thermostatic temp.
2. control from ambient to 85 - 900 c (20.50) complete with immersion heater, aluminium/ss cover, brass drain cock, 220-240 volts ac, 50hz., dimensions outside: approx.(364x41x25 cms), inside: approx(270x30x15 cms).
3. capacity not given because the dimensions specified are required for the proper functioning of the water bath in the laboratory for optimum utilization of the space.
4. power: approx.480w; digital microprocessor display to set temp. point preventing thermal runaway.
5. seamless reservoir with no welds to leak or rust, seethrough cover is hinged and removable, and steeply gabled to accept taller samples.
6. iec-1010 approved.
7. equipment quoted should comply with indian standards institutions guidelines or any other national or international guidelines.
8. voltage regulator of appropriate rating to be included to cope with 160-260 v.

125.5 water bath / incubator
1. stainless steel, insulated double walled, inner wall of stainless steel, thermostatic temp.
2. control from ambient to 85 - 900 c (20.50) complete with immersion heater, aluminium/ss cover, brass drain cock, 220-240 volts ac, 50hz., dimensions outside: approx.(364x41x25 cms), inside: approx(270x30x15 cms).
3. capacity not given because the dimensions specified are required for the proper functioning of the water bath in the laboratory for optimum utilization of the space.
4. power: approx.480w; digital microprocessor display to set temp. point preventing thermal runaway.
5. seamless reservoir with no welds to leak or rust, seethrough cover is hinged and removable, and steeply gabled to accept taller samples.
6. iec-1010 approved.
7. equipment quoted should comply with indian standards institutions guidelines or any other national or international guidelines.
8. voltage regulator of appropriate rating to be included to cope with 160-260 v.

126.0 refrigerator
capacity: 100 l.
power supply 50 hertz, 130-280 volts
1. shelves: 2
additional requirement: thicker insulation for better cooling retention, external thermostat control, high efficiency compressor, adjustable shelves, door lock

127.0 refrigerator
1. vertical, capacity 100l frost free, cpc free, single door, 220v ac, 50 Hz house hold refrigerator required.
2. equipment quoted should comply with indian standards institutions guidelines.
3. voltage regulator of appropriate rating to be included to cope with 160-260 v.
1. Controller Microprocessor / Micro-controller based temperature controller.
2. Temperature Display
3. Audio-visual high & low temperature alarm.
4. Construction
5. Refrigeration system
6. Compressor
7. Condenser
8. Evaporator Internal evaporator system Forced draught.
9. Refrigerant Non-CFC/HCFC environmental friendly based on compressor capacity.
10. Air Circulation Forced air circulation to maintain chamber uniformity.
11. Alarms
12. Alarm systems like door ajar, condenser faults etc.
13. Alarm system with rechargeable battery backup.
14. Alarm system for various parameters with rechargeable battery backup; Voltage Safety System; Backup refrigeration system etc. Power Supply* 

20.0 Blood Refrigerator (280 bags) capacity

1. Controller Microprocessor / Micro-controller based temperature controller.
2. Temperature Display
3. Digital LED/LCD High & Low Alarm.
4. Audio-visual high & low temperature alarm.
5. Construction
6. Outer Panels Outer panels are made of GI coated/ CPRCA sheet/Stainless Steel
7. Interior Panels Interior panels are made of Stainless Steel Door.
8. Standard hinged door with Double gasket seal between the door and the cabinet increases system efficiency.
9. includes dual door system or vacuum insulated glass door.
10. Insulation Polyurethane foam insulation with a thickness of 50mm.
11. Trays Adjustable stainless steel trays with perforated design.
12. Interior lighting Interior fluorescent lighting.
13. Castors Castors for minimal effort mobility.
14. Refrigeration system
15. Refrigeration system SPENCERS superior refrigeration system with Backup refrigeration system.
16. Compressor Heavy duty Air-cooled compressor.
17. The compressor is distinguished by its excellent performance, low noise level (c0dB) and minimal vibration.
18. Condenser Highly efficient condenser with automatic condensate evaporating system.
19. Evaporator Internal evaporator system Forced draught.
20. Refrigerant Non-CFC/HCFC environmental friendly based on compressor capacity.
21. Air Circulation Forced air circulation to maintain chamber uniformity.
22. Alarms
23. Alarm systems like door ajar, condenser faults etc.
25. Controls
26. Temperature Control.
27. Micro-processor based Temperature controller cum indicator.

30.0 Air Oven

1. Temperature chart recorder or data logger with software for storing and downloading data to computer for storage & print.
2. Computer Interface
3. Temperature Controller with computer interface for computer based monitoring and data storage. Software is provided for monitoring and data recording.
4. Memory & Print
5. Memory for temperature data storage and printer port for printing stored data.
6. High & Low alarms
7. Auto-visual high & low temperature alarms.
8. Alarm system for various parameters with rechargeable battery backup; Voltage Safety System; Backup refrigeration system etc. Power Supply* 

50.0 laminar Air Flow

1. Size: 2 x 2 FT Outer MS powder coated
2. Outer body: MS powder coated
3. Working surface: AISI SS 304
4. Filters: With HEPA (microsat) Pre Filters
5. Filter Efficiency: 99.97%  
6. Lamp Light: White Light & UV lamp
7. Mammeter and castor wheels & extra electrical point 16A socket.
8. Should work with input 200 to 240Vac 50 Hz supply.

80.0 Flow cytometry

1. Bench top Flow Cytometer Cell Sorter (3 laser) 8 parameters – 8 Fluorescence parameters and 2 scatter Parameters, stream-in-well cell sort with 488nm, 640nm and 405nm lasers.
2. The system should have up to six color analysis capabilities along with FSC & SSC
3. The system and software should support index sorting application
4. The system and software should support index sorting application
5. Should have the facility to collect cells automatically using Automated computerized cell deposition unit.
6. The system should support completely exchangeable fluids for sterile sorting application
7. The instrument should have the capability to sort at least 10,000 events per second with a minimum of 98% purity and a yield of more than 80% of Petriani’s expected yield for all populations
8. System should offer different sort modes like enrich, purify, single cell, yield etc.
9. System should support completely exchangeable fluids for sterile sorting application
10. Should have capability of cooling and heating of sample tubes
11. System should support completely exchangeable fluids for sterile sorting application
12. The system should be upgradable with a biosafety cabinet for additional user protection and aerosol management unit
13. Should come with one work station and necessary software for data acquisition, analysis and sorting.
14. System should offer the latest technology
15. Should have a full-fledged flow cytometer training centre in India providing regular training courses on research applications

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133.9 Blood Collection Mu

1. Should have a facility for gentle and uniform mixing of blood and anticoagulant.
2. Should have a facility to view the collection time.
3. Should have detachable tray for easy cleaning.
4. Should have motor activated clamping system and automatic clamping for low rate, <20 ml/min for more than 2 mins.
5. Should have protection against Electrical shock.
6. Oscillation details: 13±2 RPM, Motor driven
7. Should have volume setting range from 50 ml to 500 ml in steps of 5 ml, Automatic storage and recall of set volume.
8. Should have a LCD display with backlight.
9. Accuracy: ± 2% of programmed volume.
10. Should have the following alarm indications:
   a. LCD indication and audible alarm for detent flow when flow rate goes below 20 ml/min or high flow rate above 180 ml/min.
   b. LCD indication and audible alarm at the end of collection.
   c. LCD indications & audible alarm during power failure.
   d. LCD indication and audible alarm during battery low.
11. Should be operated on 200-240Vac, 50Hz supply and have an 
    inbuilt maintenance free lead acid battery with charger and a
    battery having a minimum of 5 hours backup.

134.0 Walk-in cooler having 400 bag capacity

Walk-ins shall be test assembled at the factory.

PANEL CONSTRUCTION
Each panel shall consist of inner and outer metal skins SS 304, a 4" insulation core, and be equipped with cam-action locking devices. The locking devices shall be operable from inside the walk-in and a hex-shaped wrench shall be supplied. Press-fit plug buttons shall be provided to seal wrench holes after assembly is complete.

PARTITIONS
When specified, walk-ins shall be divided by compartments by the use of panels that are constructed in accordance with the specifications for all panels.

FLOOR
Exposed Prefabricated Floor: Prefabricated refrigirator or freezer floor panels must have R-28 rating or greater; allowable stationary load of 275 kg per sq. ft.

FLOOR SCREENS
Floor screens shall be provided for all floorless walk-ins. The screens shall be in vinyl, and have NSF® approved cover both inside and out.

PANEL FINISH
Metal finish of the panels shall be as follows. (Specify finish desired, combinations may be used) Interior or exterior walls, ceilings, and exterior floors

- 26 gauge smooth white galvanized steel
- 26 gauge bright zinc embossed galvanized steel
- 26 gauge white zinc embossed galvanized steel
- 26 gauge ten zinc embossed galvanized steel.
- 24 gauge smooth stainless steel interior floors (When specified)
- 22 gauge smooth stainless steel
- 20 gauge smooth galvanized steel (used for use with query tile application)
- 24 gauge smooth white galvanized steel

INSULATION
Panel insulation may be Erobrad Polystyrene, manufactured in an HFC and CFC free process, made from 60% recycled materials and 100% recyclable. Door insulation may be Polyurethane. Or panel insulation may be foam-in-place polyurethane, manufactured with a HFC and CFC free process.

135.0 Plasma Thawing Bath

1. Should be able to thaw 4/8 plasma bags (FEP / Apheresis or plasma bags of any
   size).
2. Should be a water bath based system operating at a preset and precise temperature of 37oC.
3. Should have separate slot for holding the plasma bags of all size.
4. Provision for programmable time setting for length of thawing.
5. Should have digital timer clearly displaying the programmed set time or
6. Remaining cycle in minutes.
7. Should have audio /visual over-temperature alarm system.
8. Should have a deep thawing chamber with a stirrer/pump
9. Should have a system to drain the chamber within 3 to 5 minutes
10. Should be supplied with a cover to keep the unit covered when not in use.

136.0 Platelet Agitator with Incubator

1. Capacity : 40 Platelets Bags holding Capcity
2. Temperature : 220 C
3. Oscillation : 60 - 75 cycles per minute
4. Temperature controller : Micro controller based Temperature controller
5. Agitator : 230V AC induction motor with agitating mechanism
6. Outer body : MS powder coated
7. Inner body : AISI SS 304
8. Trays : Minimum 6 Removable Trays for easy handling
10. Battery having a minimum of 5 hours backup.

137.0 Deep Freezers which maintain temperature at +40 degree C

1. Upright Model: CFC free high efficiency double refrigeration system for cooling and freezing filled in the bottom.
2. Temperature: 4°C-10°C + - 2°C.
3. Temperature Control:
   a. Digital temperature controller
   b. Microprocessor Control/Microcontroller for temperature setting
3. Alarms for: Voltage, Over heat, Over cool
5. Electricity: 220 volts AC, 50Hz single phase.
6. Refrigeration system:
   a. Heavy-duty maintenance free refrigeration system with hermetically sealed refrigeration compressors and reliable cascaded refrigeration to minimize noise and vibration.
   b. Air-cooled with security lock to prevent unintentional switch off.
   c. Short cooling time of 4 to 5 hours at 400C ambient temperature.
   d. The equipment should be of continuous duty and frostfree.
   e. Access port for CO2 back up.
   f. LCD indications & audible alarm during power failure.
   g. Battery having a minimum of 5 hours backup.

138.0 Insulated blood bag containers
190.0  Dry Air oven

Table: Top Large Capacity
- Temperature range: 50°C - 200°C
- Timer function: On/Off
- Exterior Finish: Coated Steel
- Stainless steel interior and rounded edges for easy cleaning

Easy to use Microprocessor control
- Many shelving positions available for flexible use of chamber space
- Overtemperature alarm
- All table top units are easily stackable

190.0  Automated component extractor for pre storage Leucodepletion of blood components.

Should be compatible with top and bottom bags besides other bags. Should include several programs of work to satisfy most of the needs of modern blood bank. They should be variable and fully customizable to be able to prepare leukoreduced blood components. Should automatically do clamping and integrated sealing at the end of the process. Should be Microprocessor/Microcontroller controlled electrically driven through regulator with mechanism to reduce layer disturbance. Should have optic sensors to detect presence of Red cells. Pressure plate should have at least 25 psi and a sensor flow RISU 25 optic sensors to control red interface and process flow. Data acquisition should be a feature of the system. The system should have an audible and visual alarm for in process control. Should be provided with a facility to weigh obtained blood component with infra red detection sensor. LCD screen and control panel. Pack hangers and canula breaker should be provided with a facility to hold SAGM ADSOL blood bags. Power input to be 220-240VAC, 50Hz with Indian plug.

191.0  Sterilizer

1. Vertical Double Drum Autoclave is completely made out of Stainless Steel having pressurized top and ring and argon arc welded.
2. The unit has 3 layers - outer cover, jacket and inner chamber.
3. The unit is set to create 20 psi of steam, having pressure gauge, 3 safety Valves for additional precaution, water level indicator.
4. Automatic condensed water ejector for perfect autoclaving, having pressure gauge and long lasting silicon gasket working on 220 VAC.
5. Fully Automatic Autoclave
   a. The above autoclave is available in fully automatic version, fitted with Sanford Pressure switch, timer, over boat, magnetic switch, contractor etc. and shuts off after per set time.
   b. Same as above, but Digital without Sanford switch fitted with LCD display, solenoid valve, sensor etc.
   c. Sizes: 100 dia x 250 height fitted with 3 KW Heater for 110 x 90 two drums
   d. 160 dia x 240 height fitted with 2 nos 2 KW Heater for 150 x 100 two drums
   e. 150 x 120 two drums
f. The above is available as fully automatic, with Sanford or Digital version.

192.0  Sterilizer (Instrument)

1. Premium quality.
2. Compact design.
3. Long working life in any desired sizes.

193.0  Haemoglobinometer

1. Should have reading range linearity from 20 to 600 mg/dl.
2. Should have a maximum reading time of less than 10 seconds
3. Should use a minimum blood sample less than 1.5µl
4. Should have a minimum memory of 50 tests

194.0  Gas Unit

1. ASLT 410 & 420 Certificate
2. ISO certificate 9001:2008 (Manufacture of surgical Instrument & Stainless Steel)

195.0  Autoclave

1. Vertical Double Drum Autoclave is completely made out of Stainless Steel having pressurized top and Argon arc welded.
2. The unit should have 3 layers - outer cover, jacket and inner chamber.
3. The unit should set to create 20 psi of steam, having pressure gauge, 3 safety Valves for additional precaution, water level indicator.
4. Automatic condensed water ejector for perfect autoclaving, having pressure gauge and long lasting silicon gasket working on 220 VAC.
5. Fully Automatic Autoclave
   a. The above autoclave is available in fully automatic version, fitted with Sanford Pressure switch, timer, over boat, magnetic switch, contractor etc. and shuts off after per set time.
   b. Digital without Sanford switch fitted with LCD display, solenoid valve, sensor etc.
   c. Sizes: dia 12” X 20” height fitted with 3 KW
   d. 160 dia x 240 height fitted with 2 nos 2 KW Heater for 150 x 100 two drums
   e. 150 x 120 two drums
f. The above is available as fully automatic, with Sanford or Digital version.

196.0  A&D machine

1. Color Display: 8.9” 21.6 cm/6.8” 21.5 cm/6.8” 21.5 cm; up, 45°, down, 55°, right 70°, left 70°; viewing angle: Rotates 330°; 160 x 160. Detachable/Laptop-like closure for storage end protection;
2. Preferences Menu: User may select display sweep speed (25 or 50 mm/sec), brightness (low, med, high), balloon wave form (on/off), ECG inflation markers (on/off), flashing alarms (on/off), Dynamic Mode: Auto, Semi Auto, Manual
3. ECG Trigger: Threshold dynamically adjusted by system for high sensitivity and selectivity of the R-wave detection; Minimum 3 µV ± 20 µV at normal gain; 40 µV at max. gain.
4. Pressure trigger: Detects the R-wave threshold is automatically adjusted to 38% of the difference between peak systolic and end diastolic (avg. over multiple cycles). In variable mode: User adjustable between 2 and 30 mmHg ± 3 mmHg
5. Pacer A: Triggers R-wave detections (as above) except paced blanking is extended to 100 ms
6. Pacer V: Fixed rate up to 185 bpm (no demand pacing) A-V Pacer: fixed rate up to 125 bpm (no demand pacing) with A-V intervals between 80-224 ms
7. T-Wave Rejection: ECG and Pacer A Mode: Rejects all T-Waves where Q-T interval is <200 ms and the amplitude is <70% of QRS input amplitude
8. Pacer Rejection: ECG and Pacer A mode: Rejects all pulses of amplitude ±2.0 mV±700mV (ECG and Defibrillator Protection: Dischargelevel=60J II (trace returns to screen in 5 sec)
1. Should be portable stainless steel, with large antistatic sturdy castor wheels fitted with brakes.
2. Gas cylinder (pin indexed) yokes with sliding stainless steel/sturdy clamping bars for easy handling.
3. Two Pin index yokes for connecting cylinders each for O2, N2O.
4. Regulator two each for O2 and N2O with output pressure 4.22kg/cm². N2O regulator is activated only when minimum oxygen on flow.
5. Should have pressure gauge for all gas inlets including central lines mounted on the front panel for easy visibility.
6. Should have audible alarm for O2 failure.
7. N2O supply should cut off if O2 supply fails (Anti-hypoxic guard).
8. Oxygen and Nitrous oxide should be linked either mechanically or pneumatically to ensure a minimum of 25% oxygen delivery at all times to avoid delivery of hypoxic mixture.
9. Should have dual cascade type flow meter for O2 and N2O calibrated in multiple scale.
10. Provision to mount any two selectable vaporizer with interlocking facility to allow use of only one vaporizer at a time.
11. Iso-flurane vaporizer of newer generation having specifications equivalent to tech 7 type to be provided.
12. Non-return cum pressure relief valve when pressure exceeds 120cm of H2O.
13. Should have change over from open circuit to closed circuit and vice versa.
14. Should provide with oxygen flush switch.
15. Circle absorber with corrugated reusable breathing circuit for closed circuit system with each unit.
16. Should have low flow anesthesia technique.
17. Should have a provision for mount monitors on top of the machine.
18. The table top made up of stainless steel/chemical resistant fiber.
20. Reservoir bag (2litter): 3 nos. with each machine.
21. Connectors for bains circuit: 5 nos. with each machine.
22. AMBU bag: 1 no. with each machine.
23. Pressure regulated valve with 5 meter hose and connector (conversion kit) for oxygen should be provided with each machine.

1. Should be supplied with driver gas hoses with necessary attachments (colour coded).