

**NORTH-EAST INSTITUTE OF SCIENCE AND TECHNOLOGY  
(Formerly Regional Research Laboratory)  
(Council of Scientific & Industrial Research)  
JORHAT – 785 006 (ASSAM) INDIA**

**TENDER DOCUMENT  
OPEN (WEB) TENDER IN *[TWO BIDS]* System**

**To Be Submitted To**

**Stores & Purchase Officer,  
North-East Institute of Science and Technology,  
(Formerly Regional Research Laboratory)  
(Council of Scientific & Industrial Research)  
Jorhat – 785 006  
Assam: India**

**NB: THIS BID DOCUMENT IS **FREE OF COST** IF DOWNLOADED FROM THE WEBSITE**

FAX: + 91 - 0376 – 2372921 TEL: 0376 - 2372710 EPABX: +91- 0376 - 2370117,  
121, 139 Ext. 2288, Website: <http://www.rrljorhat.res.in> / [www.neist.res.in](http://www.neist.res.in)



**NORTH – EAST INSTITUTE OF SCIENCE AND TECHNOLOGY**  
(Formerly Regional Research Laboratory)  
(Council of Scientific & Industrial Research)

**NOTICE INVITING TENDER No. V I / 2010 - 11**

Director N E I S T, Jorhat, Assam, India invites sealed offers in **two bid system** from reputed firms for the supply, installation & commissioning of the following item:

Sl. No.	Reference No.	Items	Qty.	EMD (Rs.) in the form of DD/BC/BG	Tender Document Fee (Rs.) in the form of DD only.
1	1(PEQ)/435/10 -11/PUR	Supply & Installation of Instruments / apparatus on turnkey basis to be installed in 58 Nos. of Science Colleges in 8 (Eight) States in North East Region.	One Package for 58 Colleges .	20,00,000/--	300/-

(1). Last date & Time for Submission: 10.05.2011 (17.00 HRS)

(2). Date/Time for Opening of Tech. Bids: 11.05.2011 (10.30 HRS)

Venue of Bid Opening at NEIST, Jorhat – 785 006 (Assam)

The Technical bids will be opened in the presence of representatives of tenderers, if any. **If the date of submission / opening happens to be a holiday, the bids shall be submitted / opened next working day at the same time. Requests for postponement will not be entertained.** Fax/email bids or Late/Delayed tenders shall not be considered. The detailed tender document can also be downloaded from [www.rrljorhat.res.in](http://www.rrljorhat.res.in) / [www.neist.res.in](http://www.neist.res.in) free of cost (Tender Document Fee need not be paid). Director, NEIST, Jorhat reserves the right to accept any or all tenders either in part or in full without assigning any reasons thereof.

**Stores and Purchase Officer**

▼ DETAILS BELOW ▼

**BRIEF SUMMARY OF QUOTATION & CHECKLIST**  
(Not To Be Used For Evaluation/Comparison Purpose)

**FOR Rs. QUOTE FILL RELEVANT INFORMATION IN Rs.**

**(Please Fill It Up. DON'T Write 'AS PER QUOTATION' / 'PLEASE REFER TO OUR OFFER')**

Quotation Ref. No.		Date	
01	Main Items & / Model Nos.		
02	Unit Price with Item-wise Break-up and Total Cost including Taxes / Duties etc, as applicable (NEIST is exempted from Customs / Excise Duties), as applicable on F O R basis.		
03	Insurance & freight Charges, if any.		
04	Payment Terms <b>(Conditional Payment Terms Will NOT Be Accepted)</b>		
05	Delivery Time (Weeks/Months)		
06	Warranty (Months/Years)		
07	Validity of Quotation (Days/Months)		
<b>CHECKLIST</b>		<b>CHECKLIST</b>	
01	Following Things Are Mentioned On The Main (Outer) Envelope Item Name /Reference No. /Last Date For Submission of Tender/Date of Opening of Tender /Firm's Name & Address		
02	EMD is <b>Enclosed</b> (With The Technical Bid Envelope).		
03	Demand Draft(s) Is/Are In Favour Of Director, NEIST Jorhat – 785 006 (Assam) And <b>Payable</b> At Jorhat (Assam). <b>Firm's Name/Ref. No. Etc. Has Been Mentioned On The Back Side of DDs.</b>		
04	The Bid Papers Have Been <b>PUNCHED</b> With A Hole <input checked="" type="checkbox"/> On The <b>Top Left Hand Corner Side</b> And <b>Properly Tagged</b> .		
05	Only <b>Relevant</b> Documents (Technical Brochures/Leaflets Etc.) Required In Support Of The Quoted Item Have Been Enclosed. <b>No</b> Irrelevant Papers like ITCC, User Recommendations etc. Have Been Enclosed Unless Specifically Asked For.		
06	Quotation Have Been Duly Signed And Stamped By The <b>Authorized &amp; Competent</b> Person. All Cuttings/Over Writings Have Been Duly Checked, Initialed And Stamped. (If Applicable)		
07	Single Combined Offer Has Not Been Submitted OR 'Price Bid' Has Not Been Enclosed In The Envelope Marked 'Technical Bid'		
08	This Page Will Be Enclosed With The Price Bid.		

*We have read and understood the tender terms and conditions. The undersigned is competent to sign the tender document including this page on behalf of the quoting*

Date  
Seal)

(Signature with

## CHAPTER – II: INSTRUCTION TO BIDDERS (I T B)

### A. INTRODUCTION

#### 1. Eligible Bidders:

- 1.1 This Invitation for Bids is open to all reputed firms who fulfill the qualifying requirements specified in **Chapter XIII**.
- 1.2 Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the Purchaser to provide consulting services for the preparation of the design, specifications, and other documents to be used for the procurement of the goods to be purchased under this Invitation of Bids.

#### 2. Cost of Bidding

- 2.1 The Bidder shall bear all costs associated with the preparation and submission of its bid, and “the Purchase”, will in no case be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process.

### B. THE BIDDING DOCUMENTS

#### 3. Cost of Bid Document

- 3.1 The complete bid document can be downloaded **FREE OF COST (No Tender Document Fee To Be Paid)** from our website <http://www.rrljorhat.res.in> / [www.neist.res.in](http://www.neist.res.in) Interested eligible bidders may also purchase the Bid Document copy on payment of the prescribed fee as indicated in the NIT above.

#### 4. Contents of Bid Document

- 4.1 The goods required, binding procedures and contract terms are prescribed in this Bid Document which includes the following:

Sl. No.	Title	Chapter No.
01	Notice Inviting Tender	I
02	Instructions to Bidder (ITB)	II
03	General Conditions of Contract (GCC)	III
04	Special Conditions of Contract (SCC)	IV
05	Bid Form	V
06	Bid Security Form	VI
07	Authorization Form from all major manufacturers	VII
08	Bidder's performance Statement Form	VIII
09	Service Support Details	IX
10	Deviation Statement Form (ITB, GCC & SCC)	X
11	Technical Compliance Statement Form	XI
12	Performance Security Form	XII
13	Qualification Requirements	XIII
14	Integrity Pact	XIV
15	Technical Specifications	XV
16	Warranty Details	Annexure - I
17	College wise list of equipments	Annexure - II & III

- 4.2 The Bidder is expected to examine all instructions, forms, terms (ITB/GCC/SCC etc.), and specifications in the bidding documents. Failure to furnish all information required by the bidding documents or submission of a bid not substantially responsive shall result in rejection of the bid.

**5. Amendment To Bid Document**

- 5.1 At any time prior to the deadline for submission of bids, the Purchaser may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder, modify the Bid Document by amendment. Such amendments shall form an integral part of bid documents and it shall amount to an amendment of relevant clauses of the Bid Documents.
- 5.2 All prospective bidders who have **purchased** the Bid Document will be notified of the amendment in writing or by cable or by fax, or by e-mail and will be binding on them.
- 5.3 The prospective bidders are **required** to keep a watch on the NEIST Jorhat website w.r.t. any amendment to the tender document or to clarification to the queries raised by the bidders till 07 (seven) days prior to the opening of the tender. The Purchaser reserves the right to reject the bids if the bids are submitted without taking into account these amendments / clarifications. Further bidder will be fully responsible for downloading of the tender document and amendments thereto, if any, for their completeness.
- 5.4 In order to allow prospective bidders reasonable time in which to take the amendment into account in preparing their bids, the Purchaser, at its discretion, may extend the deadline for the submission of bids.

## C. PREPARATION OF BIDS

### 6. Language of Bid

6.1 The Bid prepared by the Bidder and all correspondence and documents relating to the bid exchanged by the bidder and the purchaser shall be written in English language, provided that any printed literature furnished by the bidder may be written in another language but it is to be accompanied by an English translation of its pertinent page(s) duly signed and verified as true English translation. The responsibility for the correctness of the translation will be solely and completely on the bidder and NEIST (Formerly RRL) Jorhat shall not be responsible for any loss/likely loss due to error in translation whatsoever. In such cases, for the purpose of interpretation of the bid, the English translation shall only govern.

### 7. Documents Comprising the Bid

The bid is required to be submitted in **two parts**. One part is the Techno-Commercial Unpriced Bid and the other part is the Financial/Price Bid.

7.1 The Techno-Commercial Unpriced Bid prepared by the Bidder shall include the following without indicating the price in the Bid Form.

- (i). Bid Security/EMD As Specified In The Invitation To Bids.
- (ii). Service Support Details Form;
- (iii). T&C Deviation Statement Form;
- (iv). Technical Specification Compliance Form;
- (v). Performance Statement Form;
- (vi). Authorization Form from all major manufacturers.
- (vii). Documentary evidence establishing that the bidder is eligible to bid and is qualified to perform the contract if its bid is accepted as per qualification requirements / criteria.
- (viii). Bid Form.
- (ix). The Annual Maintenance Contract (AMC) / Comprehensive Annual Maintenance Contract (CAMC) terms & conditions detailing the exclusions, if any, and the estimated life of the equipment offered.
- (x). If the demonstration of the goods/equipment is deemed essential as per the technical requirements then confirmation reflecting willingness to arrange demonstration of the equipment offered free of charge at NEIST, Jorhat or any other location on a mutually agreeable date, prior to opening of priced bid to ascertain conformity with the tendered specifications.

7.2 The Price / Financial Bid shall comprise the Techno Commercial Bid with price indicated in the bid form.

### 8. Bid Prices

The Bidder shall indicate the unit prices with item wise price break-up and total bid prices of the goods it proposes to supply under the order and enclose it with the priced bid.

8.1 Prices indicated shall be entered separately in the following manner **(For Indigenous Items)**:

- (i). The price of the goods, quoted on F O R basis including all duties and sales and other taxes already paid or payable
- (ii). **Taxes:** We are exempted from payment of Excise Duty in terms of Govt. Notification number 10/97-Central Excise dated 01.03.1997 and Customs Duty in terms of Govt. Notification No. 51/96 – Customs dated 23.7.1996 under Notification number TU/V/RG-CDE (423)/2006 dated 21.st August, 2008 **Hence Excise Duty and Customs Duty, if any, should be shown separately.** Please mention the applicable taxes (VAT/CST/Service) clearly. We don't issue any 'Form C' or 'Form D'. However, being R&D Organization Concessional Sales Tax Forms can be issued, if it is applicable in the State / s from where the material is being supplied. If there is no explicit mention of taxes in the offer then quoted price will be deemed inclusive of such taxes.

**No other charges except those mentioned clearly in the quotation will be paid.**

- (iii). Rates should be quoted **FOR, 58 (fifty-eight) Science Colleges in 8 (eight) States in North East Region as per list enclosed** inclusive of packing, forwarding, insurance, freight, installation and commissioning charges etc.

8.2 If ex-works prices are quoted then packing, forwarding, documentation, freight on door delivery basis and insurance charges must be clearly mentioned separately. Vague terms like "packing, forwarding, transportation etc. extra" without mentioning the specific amount / percentage of these charges will NOT be accepted. Such offers shall be treated as incomplete and rejected. **Where there is no mention of packing, forwarding, freight, insurance charges, such offers shall be summarily rejected as incomplete.**

8.3 Prices quoted by the bidder shall remain fixed during the entire period of contract and shall not be subject to variation on any account. A bid submitted with an adjustable price quotation will be treated as non - responsive and rejected.

#### **9. Bid Currency**

9.1 Prices shall be quoted in Indian Rupees.

#### **10. Documents Establishing Bidder's Eligibility and Qualifications**

10.1 Pursuant to ITB 7, the bidder shall furnish, as part of its bid, documents establishing the bidders' eligibility to bid and its qualification to perform the contract if its bid is accepted.

10.2 That the bidder meets the qualification criteria listed in Bid Document.

#### **11. Documents Establishing Goods' Eligibility and Conformity to Bid Document.**

11.1 Specifications are basic essence of the product. It must be ensured that the offers are strictly as per our specifications. At the same time it must also be kept in mind that merely copying our specifications in their quotation shall not make firms eligible for consideration. The documentary evidence of conformity of the goods and services to the Bid Document may be in the form of literature, drawings and data, and shall consist of:

- (i). A detailed description of the essential technical and performance characteristics of the goods;
- (ii). A list giving full particulars, including available sources and current prices, of spare parts, special tools, etc., necessary for the proper and continuing functioning of the goods for a period of minimum five years, following commencement of the use of the goods by the Purchaser; and
- (iii). An item by item commentary on the Purchaser's Technical Specifications demonstrating substantial responsiveness of the goods and services to those specifications or a statement of deviations and exceptions to the provisions of the Technical Specifications.

11.2 For purposes of the commentary to be furnished pursuant to above, the Bidder shall note That standards for workmanship, material and equipment, and references to brand names or Catalogue numbers designated by the Purchaser in its Technical Specifications are intended to be descriptive only and not restrictive. The Bidder may substitute alternative standards, brand names and/or catalogue numbers in its bid, provided that it demonstrates to the Purchaser's satisfaction that the substitutions ensure substantial equivalence to those designated in the Technical Specifications. Technically unsuitable offers, offers not conforming to tender schedule shall be rejected.

#### **12 Bid Security:**

12.1 The Bidder shall furnish, as part of its bid, a bid security for an amount as specified in the invitation for Bids / NIT. The bid security is required to protect the Purchaser against the risk of Bidder's conduct, which would warrant the security's forfeiture.

12.2 The bid security shall be in Indian Rupees and shall be in one of the following forms:

- (i). A bank guarantee issued by a Nationalized/Scheduled bank, in the form provided in the Bid Document (**CHAPTER VI**) and valid for 45 days beyond the validity of the bid; or
- (ii) A Banker's cheque or (iii) demand draft in favour of the purchaser.

12.3 Any bid not secured in accordance with Clauses 12.1 and 12.2 above will be rejected by the Purchaser as non-responsive.

12.4 Unsuccessful bidder's bid security will be discharged/returned as promptly as possible but not later than 15 days after the expiry of the period of bid validity or placement of order which ever is later.

12.5 The successful Bidder's bid security will be discharged upon the Bidder furnishing the performance security.

12.6 The bid security may be forfeited:

- (i). If a Bidder withdraws its bid during the period of bid validity specified by the Bidder on the Bid Form; or
- (ii). In case of a successful Bidder, if the Bidder fails to furnish Order Acceptance and Performance Security in the prescribed format within 15 days of the order.

**13. Period of Validity of Bids.**

13.1 Bids shall remain valid for 180 days after the date of bid opening prescribed by the Purchaser. A bid valid for a shorter period may be rejected by the Purchaser as non-responsive.

13.2 In exceptional circumstances, the Purchaser may solicit the Bidder's consent to an extension of the period of validity. The request and the responses thereto shall be made in writing (or by cable, telex, fax or e mail). The bid security provided under Clause 12 shall also be suitably extended. A Bidder may refuse the request without forfeiting its bid security. A Bidder granting the request will not be required nor permitted to modify its bid.

13.3 Bid evaluation will be based on the bid prices without taking into consideration the above corrections.

**14. Format and Signing of Bid**

14.1 The Bidder shall submit the bids in two separate envelopes. One envelope shall contain Techno commercial un-priced bid and the other shall contain the priced bid.

14.2 The original and all copies of the bid shall be typed or written in indelible ink and shall be signed by the Bidder or a person or persons duly authorized to bind the Bidder to the Contract. All pages of the bid, except for un-amended printed literature, shall be initialed by the person or persons signing the bid.

14.3 Any interlineations, erasures or overwriting shall be valid only if the persons or persons signing the bid initial them.

14.4 The Bidder shall furnish information on commissions or gratuities, if any paid or to be paid to agents relating to this Bid, and to contract execution if the Bidder is awarded the contract as per the bid form.

**D. SUBMISSION OF BIDS**

**15. Sealing and Marking of Bids**

15.1 The bidder shall seal the Techno Commercial Unpriced Bid and the Price / Financial Bid in two separate envelopes duly marked as "Techno Commercial Unpriced Bid" and "Price / Financial Bid" respectively. Both the envelopes shall then be sealed in one outer (main) envelope.

15.2 The **inner and outer envelopes shall:**

- (i). Be addressed to the Purchaser at the following address: **The Stores & Purchase Officer, North-East Institute of Science and Technology, Jorhat – 785 006 (Assam), India**
- (ii). Bear the Item Name / Reference No./ Last Date For Submission Of Tender / Date Of Opening Of Tender / Firm's Name & Address and a statement "Do not open before Time hrs (IST) on Date." As per the NIT details.

15.3 If the outer envelope is not sealed and marked as required in Clause 15.2, the Purchaser will assume no responsibility for the bid's misplacement or premature opening.

15.4 Telex, Cable, Fax or e-mail bids will be rejected.

**16. Deadline for Submission of Bids**

16.1 Bids must be received by the Purchaser at the address specified under Clause 15.2 no later than the time and date specified in the Invitation for Bids. In the event of the specified date for the submission of Bids being declared a holiday for the Purchaser, the Bids will be received upto the appointed time on the next working day.

16.2 The Purchaser may, at its discretion, extend this deadline for submission of bids by amending the bid documents in accordance with Clause 5, in which case all rights and obligations of the Purchaser and Bidders previously subject to the deadline will thereafter be subject to the deadline as extended.

**17. Late Bids**

17.1 Any bid received by the Purchaser after the deadline for submission of bids prescribed by the Purchaser, pursuant to Clause 16, will be rejected and/or returned to the Bidder.

## **18. Modifications and Withdrawal of Bids**

18.1 The Bidder may modify or withdraw its bid after submission of the bid provided that written notice of the modification or withdrawal is received by the Purchaser prior to the deadline prescribed for submission of bids.

18.2 The Bidder's modification or withdrawal notice shall be prepared, sealed, marked and dispatched in accordance with the provisions of Clause 15. A withdrawal notice may also be sent by telex or cable or fax or e mail but followed by a signed confirmation copy, post marked not later than the deadline for submission of bids.

18.3 No bid may be modified subsequent to the deadline for submission of bids.

18.4 No bid may be withdrawn in the interval between the deadline for submission of bids and the expiration of the period of bid validity specified by the Bidder on the bid form. Withdrawal of a bid during this interval may result in the Bidder's forfeiture of its bid security, pursuant to Clause 12.6

## **E. OPENING AND EVALUATION OF BIDS**

### **19. Opening of Bids by the Purchaser**

19.1 The Purchaser will open all Techno Commercial Unpriced Bids, in the presence of Bidders' representatives who choose to attend, as per the schedule given in invitation to bids.

19.2 The Bidders' representatives who are present shall sign the quotation-opening sheet evidencing their attendance. In the event of the specified date of Bid opening being declared a holiday for the Purchaser, the Bids shall be opened at the appointed time and location on the next working day.

19.3 The bidders' names, bid modifications or withdrawals, specifications, and the presence or absence of requisite bid security and such other details as the Purchaser, at its discretion, may consider appropriate, will be announced at the opening. No bid shall be rejected at bid opening, except for late bid.

19.4 Bids (and modifications sent pursuant to Clause 18.2) that are not opened and read out at bid opening shall not be considered further for evaluation, irrespective of the circumstances.

19.5 If in response to our TWO BID enquiry, a single combined bid is submitted, it will be rejected straightway. Similarly if 'PRICE BID' has been found enclosed in the envelope marked 'TECHNICAL BID' the same shall also be rejected summarily.

### **20. Clarification of Bids**

20.1 To assist in the examination, evaluation and comparison of bids, the Purchaser may, at its discretion ask the bidder for any clarification(s) of its bid. The request for clarification and the response shall be in writing and no change in the price substance of the bid shall be sought, offered or permitted. However no post Bid clarifications at the initiative of the Bidder shall be entertained.

### **21. Preliminary Examination**

21.1 The Purchaser will examine the bids to determine whether they are complete, whether required sureties have been furnished, whether the documents have been properly signed, and whether the bids are generally in order.

21.2 Arithmetical errors in the priced bids will be rectified on the following basis. If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected. If the supplier does not accept the correction of errors, its bid will be rejected. If there is a discrepancy between the price quoted in words and figures, whichever is the higher of the two shall be taken as the bid price.

21.3 The Purchaser may waive any minor informality, non-conformity, or irregularity in a bid, which does not constitute a material deviation, provided such a waiver, does not prejudice or affect the relative ranking of any Bidder. 21.4 Prior to the detailed evaluation, the Purchaser will determine the substantial responsiveness of each bid to the Bid Document. For purposes of these Clauses, a substantially responsive bid is one, which conforms to all the terms and conditions of the Bid Document without material deviations. Deviations from or objections or reservations to critical provisions such as those concerning Bid

Security/ Performance Security, Warranty, Force Majeure, Applicable law and Taxes & Duties will be deemed to be a material deviation. The Purchaser's determination of a bid's responsiveness is to be based on the contents of the bid itself without recourse to extrinsic evidence.

21.5 If a bid is not substantially responsive, it will be rejected by the Purchaser and may not subsequently be made responsive by the Bidder by correction of the non-conformity.

21.6 After downloading, the language of standard clauses etc. mentioned in this 'Bid Document' should not be tampered with / changed / modified in any manner whatsoever. If any such modification etc. comes to our knowledge at any stage, the bid shall be rejected immediately and EMD shall also be forfeited.

## **22. Evaluation & Comparison Of Bids**

22.1 For the bids surviving the technical evaluation which have been found to be responsive the evaluation & comparison shall be made as under:

The final landing cost of purchase after all discounts, freight, forwarding, insurance, taxes etc. shall be the basis of evaluation.

22.2 Conditional tenders/discounts etc. shall not be accepted. Rates quoted without attached conditions (viz. Discounts having linkages to quantity, payment terms etc.) will only be considered for evaluation purpose. Thus conditional discounted rates linked to quantities and prompt/advance payment etc will be ignored for determining *inter-se* position. The Purchaser however reserves the right to use the discounted rate/rates considered workable and appropriate for counter offer to the successful tenderers.

22.3 Where there is no mention of packing, forwarding, freight, insurance charges, taxes etc. such offers shall be rejected as incomplete.

## **23. Contacting the Purchaser**

23.1 Subject to ITB Clause 20, no Bidder shall contact or attempt to contact the Purchaser or anyone related to the Purchaser on any matter relating to its bid, from the time of the bid opening to the time the Contract is awarded. If the bidder wishes to bring additional information to the notice of the Purchaser, it should do so in writing.

23.2 Any effort by a Bidder to influence the Purchaser in its decisions on bid evaluation, bid comparison or contract award may result in rejection of the Bidder's bid.

## **24. Post Qualification**

24.1 In the absence of pre-qualification, the Purchaser will determine to its satisfaction whether the Bidder that is selected as having submitted the lowest evaluated responsive bid is qualified to perform the contract satisfactorily, in accordance with the criteria listed in **ITB Clause 10**.

24.2 The determination will take into account the Bidder's financial, technical, supply and support service capabilities. It will be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to ITB Clause 10, as well as such other information as the Purchaser deems necessary and appropriate.

24.3 An affirmative determination will be a prerequisite for award of the contract to the Bidder. A negative determination will result in rejection of the Bidder's bid.

## **25. Award Criteria**

25.1 Subject to ITB Clause 27, the Purchaser will award the contract to the successful Bidder whose bid has been determined to be substantially responsive and has been determined to be the lowest evaluated bid, provided further that the Bidder is determined to be qualified to perform the contract satisfactorily.

## **26. Purchaser's Right To Vary Quantities At Time Of Award**

26.1 The Purchaser reserves the right at the time of Contract award to increase or decrease the quantity of goods and services originally specified in the Schedule of Requirements without any change in unit price or other terms and conditions.

## **27. Purchaser's Right To Accept Any Bid And To Reject Any Or All Bids**

27.1 The Purchaser reserves the right to accept or reject any bid, and to annul the bidding process

and reject all bids at any time prior to award of Contract, without thereby incurring any liability to the affected Bidder or bidders or any obligation to inform the affected Bidder or bidders of the grounds for the Purchaser's action.

**28. Notification of Award**

28.1 Prior to the expiration of the period of bid validity, the Purchaser will notify the successful bidder in writing by registered letter or by cable or telex or fax or e mail that the bid has been accepted by way of a Purchase Order.

28.2 Upon the successful Bidder's furnishing of performance security pursuant to ITB Clause 29, the Purchaser will promptly notify each unsuccessful Bidder and will discharge its bid security, pursuant to Clause 12.

**29. Performance Security**

29.1 Within 15 days of the receipt of notification of award/purchase order from the Purchaser, the successful Bidder shall furnish the performance security, in the Performance Security Form provided in the Bid Document.

29.2 Failure of the successful bidder to accept the order shall constitute sufficient grounds for the annulment of the award and forfeiture of the bid security and call for new bids.

**30. Order Acceptance**

30.1 The successful bidder should submit acceptance of the Purchase Order immediately but not later than 15 days in any case from the date of issue of the Purchase Order failing which it shall be presumed that the vendor is not interested and his bid security is liable to be forfeited pursuant to clause 12. 6 of ITB.

**CHAPTER – III: GENERAL CONDITIONS OF CONTRACT (GCC)****1. Definitions**

1.1 In this Contract, the following terms shall be interpreted as indicated:

(i). "The Order" means the Purchase Order placed by the Purchaser including all the attachments and

appendices thereto and all documents incorporated by reference therein;

(ii). "The Contract Price" means the price payable to the Supplier under the Order for the full and proper performance of its contractual obligations;

(iii). "The Goods" means all the equipment, machinery, and/or other materials, which the Supplier is required to supply to the Purchaser under the Contract;

(iv). "Services" means services ancillary to the supply of the Goods, such as transportation and insurance, and any other incidental services, such as installation, commissioning, provision of technical assistance, training and other obligations of the Supplier covered under the Contract;

(v). "GCC" mean the General Conditions of Contract contained in this section.

(vi). "SCC" means the Special Conditions of Contract.

(vii). "The Purchaser" as specified in Special Conditions of Contract.

(viii). "The Purchaser's country" is "India".

(xi). "The Supplier" means the individual or firm supplying the Goods and Services under this Contract.

(x). "Day" means calendar day.

**2. Application**

2.1 These General Conditions shall apply to the extent that they are not superseded by provisions in other parts of the Contract.

**3. Standards**

3.1 The Goods supplied under this Contract shall conform to the standards mentioned in the Technical Specifications, and, when no applicable standard is mentioned, to the authoritative standard appropriate to the Goods' country of origin and such standards shall be the latest issued by the concerned institution.

**4. Use of Contract Documents and Information**

4.1 The Supplier shall not, without the Purchaser's prior written consent, disclose the Contract, or any provision thereof, or any specification, plan, drawing, pattern, sample or information furnished by or on behalf of the Purchaser in connection therewith, to any person other than a person employed by the Supplier in performance of the Contract. Disclosure to any such employed person shall be made in confidence and shall extend only so far, as may be necessary for purposes of such performance. The Supplier shall not, without the Purchaser's prior written consent, make use of any document or information enumerated in GCC Clause 4.1 except for purposes of performing the Contract.

4.2 Any document, other than the Contract itself, enumerated in GCC Clause 4.1 shall remain the property of the Purchaser and shall be returned (in all copies) to the Purchaser on completion of the Supplier's performance under the Contract if so required by the Purchaser.

4.3 The purchaser may be under obligation to make any document/information submitted by the bidder in response to this bid public if required under the provision of Right to Information Act 2005. Therefore bidder may explicitly indicate if any document/information in his tender includes information of commercial confidence, trade secrets or intellectual property, the disclosure of which would jeopardize the competitive position of the bidder.

**5. Patent Rights**

5.1 The Supplier shall indemnify the Purchaser against all third-party claims of infringement of patent, trademark or industrial design rights arising from use of the Goods or any part thereof in India.

## **6. Submission of the bids**

6.1 All bids complete in every respect must reach this office within the last date and time of receipt of bid. No extension shall be allowed for any reason what so ever. Late tenders, Tenders received without Bid security / Earnest Money, cost of bidding documents, if applicable etc. shall be rejected summarily.

6.2 Tender documents are available for sale as per the information specified in Invitation for Bids. Interested bidders may purchase the tender documents on payment of the cost there of or download

directly from our website, as indicated in invitation for bids. The Purchaser is not liable for either non-receipt of the tender document or for late receipt of the tender documents.

## **7. Performance Security**

7.1 Within 15 days of receipt of the notification of contract award/purchase order, the Supplier shall furnish performance security for the amount specified in SCC.

7.2 The proceeds of the performance security shall be payable to the Purchaser as compensation for any loss resulting from the Supplier's failure to complete its obligations under the Contract.

7.3 The Performance Security shall be submitted in one of the following forms:

(i). The firm can submit the performance security in the form of Bank Guarantee issued by a Nationalized/Scheduled bank on the format provided in the bidding documents.

7.4 The performance security will be discharged by the Purchaser and returned to the Supplier not later than 60 days following the date of completion of the Supplier's performance obligations, including any warranty obligations, unless specified otherwise in SCC.

7.5 In the event of any contract amendment, the supplier shall, within 15 days of receipt of such amendment, furnish the amendment to the performance security, rendering the same valid for the duration of the contract, as amended for further period of 60 days thereafter.

## **8. Inspections and Tests**

8.1 The Purchaser or its representative shall have the right to inspect and/or to test the Goods to confirm their conformity to the Contract specifications at no extra cost to the Purchaser. SCC and the Technical Specifications shall specify what inspections and tests the Purchaser requires and where they are to be conducted. The Purchaser shall notify the Supplier in writing in a timely manner of the identity of any representatives retained for these purposes.

8.2 The inspections and tests may be conducted on the premises of the Supplier or its Subcontractor (s), at the point of delivery and/or at the Goods final destination. If conducted on the premises of the Supplier or its subcontractor(s), all reasonable facilities and assistance, including access to drawings and production data - shall be furnished to the inspectors at no charge to the Purchaser.

8.3 Should any inspected or tested Goods fail to conform to the specifications, the Purchaser may reject the goods and the Supplier shall either replace the rejected Goods or make alterations necessary to meet specification requirements free of cost to the Purchaser.

8.3 The Purchaser's right to inspect, test and, where necessary, reject the Goods after the Goods Arrival at Project Site shall in no way be limited or waived by reason of the Goods having previously been inspected, tested and passed by the Purchaser or its representative prior to the Goods shipment.

8.4 Nothing in GCC Clause 8 shall in any way release the Supplier from any warranty or other obligations under this Contract.

**9. Packing:** 9.1 The Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their final destination as indicated in the Contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit and open storage. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the Goods' final destination and the absence of heavy handling facilities at all points in transit.

9.2 The packing, marking and documentation within and outside the packages shall comply strictly with such special requirements as shall be provided for in the Contract including additional requirements, if any, specified in SCC and in any subsequent instructions ordered by the Purchaser.

## **10. Delivery and Documents**

10.1 Delivery of the Goods shall be made by the Supplier in accordance with the terms specified by the Purchaser in the order within the period as indicated in the SCC. The details of shipping and / or other documents to be furnished by the supplier are specified in SCC.

## **11. Insurance**

11.1 The Goods supplied under the Contract shall be fully insured against loss or damage incidental to manufacture or acquisition, transportation, storage and delivery in the manner specified in SCC.

## **12. Transportation**

12.1 Where the Supplier is required under the Contract to transport the Goods to a specified place of destination defined as Project site, transport to such place of destination in 8 (eight) States in North East Region including insurance, as shall be specified in the Contract, shall be arranged by the Supplier, and the related cost shall be included in the Contract Price.

## **13. Incidental Services**

13.1 The supplier may be required to provide any or all of the following services, including additional services, specified in SCC, if any:

- (i). Performance or supervision of the on-site assembly and/or start-up of the supplied Goods;
- (ii). Furnishing of tools required for assembly and/or maintenance of the supplied Goods;
- (iii). Furnishing of detailed operations and maintenance manual for each appropriate unit of supplied Goods;
- (iv). Performance or supervision or maintenance and/or repair of the supplied Goods, for a period of time agreed by the parties, provided that this service shall not relieve the Supplier of any warranty obligations under this Contract; and
- (v). Training of the Purchaser's personnel, at the Supplier's plant and / or on-site, in assembly, start-up, operation, maintenance and / or repair of the supplied Goods.

## **14. Spare Parts**

14.1 As specified in the SCC, the Supplier may be required to provide any or all of the following materials, notifications, and information pertaining to spare parts manufactured or distributed by the Supplier:

- (i). Such spare parts as the Purchaser may elect to purchase from the Supplier, providing that this election shall not relieve the Supplier of any warranty obligations under the Contract; and
- (ii). In the event of termination of production of the spare parts:
- (iii). Advance notification to the Purchaser of the pending termination, in sufficient time to permit the Purchaser to procure needed requirements; and
- iv). Following such termination, furnishing at no cost to the Purchaser, the blueprints, drawings and specifications of the spare parts, if requested.

14.2 Supplier shall carry sufficient inventories to assure ex-stock supply of consumable spares for the Goods. Other spare parts and components shall be supplied as promptly as possible but in any case within six months of placement of order.

## **15. Warranty**

15.1 The Supplier warrants that the Goods supplied under this Contract are new, unused, of the most recent or current models and that they incorporate all recent improvements in design and materials unless provided otherwise in the Contract. The Supplier further warrants that all Goods supplied under this Contract shall have no defect arising from design, materials or workmanship (except when the design and / or material is required by the Purchaser's Specifications) or from any act or omission of the Supplier, that may develop under normal use of the supplied Goods in the conditions prevailing in the country of final destination.

**The warranty should be comprehensive and on site.**

15.2 This warranty shall be comprehensive and on site for **5 (five) years** from the date of acceptance, installation & commissioning to the satisfaction of the Purchaser. 15.3 The Purchaser shall promptly notify the Supplier in writing of any claims arising under this warranty.

Upon receipt of such notice, the Supplier shall immediately within in 05 days arrange to repair or replace the defective goods or parts thereof free of cost at the ultimate destination. The Supplier shall take over the replaced parts/goods at the time of their replacement. No claim whatsoever shall lie on the Purchaser for the replaced parts/goods thereafter. The period for correction of defects in the warranty period is 05 days. If the supplier having been notified fails to remedy the defects within 05 days, the purchaser may proceed to take such remedial action as may be necessary, at the supplier's risk and expenses and without prejudice to any other rights, which the purchaser may have against the supplier under the contract.

**16. Payment**

16.1 The method and conditions of payment to be made to the Supplier under this Contract shall be as specified in the SCC.

16.2 The Supplier's request(s) for payment shall be made to the Purchaser in writing, accompanied by an invoice describing, as appropriate, the Goods delivered and the Services performed, and by documents, submitted pursuant to GCC Clause 10, and upon fulfillment of other obligations stipulated in the contract.

16.3 Payments shall be made promptly by the Purchaser normally within thirty (30) days after submission of the invoice or claim by the Supplier.

**17. Prices**

17.1 Prices charged by the Supplier for Goods delivered and Services performed under the Contract shall not vary from the prices quoted by the Supplier in its bid.

**18. Change Orders**

18.1 The Purchaser may at any time, by written notice given to the Supplier pursuant to GCC Clause 30, make changes within the general scope of the Contract in any one or more of the following:

- (i). Drawings, designs, or specifications, where Goods to be furnished under the Contract are to be specifically manufactured for the Purchaser;
- (ii). The method of transportation or packing;
- (iii). The place of delivery; and/or
- (iv). The Services to be provided by the Supplier.
- (v). The delivery schedule.

18.2 If any such change causes an increase or decrease in the cost of, or the time required for, the Supplier's performance of any provisions under the Contract, an equitable adjustment shall be made in the Contract Price or delivery schedule, or both, and the Contract shall accordingly be amended. Any claims by the Supplier for adjustment under this clause must be asserted within fifteen (15) days from the date of the Supplier's receipt of the Purchaser's change order.

**19. Contract Amendments**

19.1 Subject to GCC Clause 18, no variation in or modification of the terms of the Contract shall be made except by written amendment signed by the parties.

**20. Assignment**

20.1 The Supplier shall not assign, in whole or in part, its obligations to perform under the Contract, except with the Purchaser's prior written consent.

**21. Subcontracts**

21.1 The Supplier shall notify the Purchaser in writing of all subcontracts awarded under this Contract if not already specified in the bid. Such notification, in his original bid or later, shall not relieve the Supplier from any liability or obligation under the Contract.

21.2 Sub-contract shall be only for bought-out items and sub-assemblies.

**22. Delays in the Supplier's Performance**

22.1 Since time is the essence of the contract, delivery of the Goods and performance of the Services shall be made by the Supplier in accordance with the time schedule specified by the Purchaser in the Contract.

22.2 If at any time during performance of the Contract, the Supplier or its sub-contractor(s) should encounter conditions impeding timely delivery of the Goods and performance of Services, the Supplier shall promptly notify the Purchaser in writing of the fact of the delay, its likely duration and its cause(s).

22.3 As soon as practicable after receipt of the Supplier's notice, the Purchaser shall evaluate the situation and may, at its discretion, extend the Supplier's time for performance with or without penalty, in which case the extension shall be ratified by the parties by amendment of the Contract.

22.4 Except as provided under GCC Clause 25, a delay by the Supplier in the performance of its delivery obligations shall render the Supplier liable to the imposition of penalty pursuant to GCC Clause 23, unless an extension of time is agreed upon pursuant to GCC Clause 22.2 without the application of penalty clause.

### **23. Penalty**

23.1 Subject to GCC Clause 25, if the Supplier fails to deliver any or all of the Goods or to perform the Services within the period(s) specified in the Contract, the Purchaser shall, without prejudice to its other remedies under the Contract, deduct from the Contract Price, as penalty, a sum equivalent to the percentage specified in SCC of the delivered price of the delayed Goods or unperformed Services for each week or part thereof of delay until actual delivery or performance, up to a maximum deduction of the Percentage specified in SCC. Once the maximum is reached, the Purchaser may consider termination of the Contract pursuant to GCC Clause 24.

### **24. Termination for Default**

24.1 The Purchaser may, without prejudice to any other remedy for breach of contract, by written notice of default sent to the Supplier, terminate the Contract in whole or part:

- (i). If the Supplier fails to deliver any or all of the Goods within the period(s) specified in the order, or within any extension thereof granted by the Purchaser pursuant to GCC Clause 22; or
- (ii). If the Supplier fails to perform any other obligation(s) under the Contract.
- (iii). If the Supplier, in the judgment of the Purchaser has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.

24.2 For the purpose of this Clause:

- (i). "Corrupt practice" means the offering, giving, receiving or soliciting of any thing of value to influence the action of a public official in the procurement process or in contract execution.
- (ii). "Fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Borrower, and includes collusive practice among Bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the Borrower of the benefits of free and open competition;"

24.3 In the event the Purchaser terminates the Contract in whole or in part, pursuant to GCC Clause 24.1, the Purchaser may procure, upon such terms and in such manner, as it deems appropriate, Goods or Services similar to those undelivered, and the Supplier shall be liable to the Purchaser for any excess costs for such similar Goods or Services. However, the Supplier shall continue the performance of the Contract to the extent not terminated.

### **25. Force Majeure**

25.1 Notwithstanding the provisions of GCC Clauses 22, 23 and 24, the Supplier shall not be liable for forfeiture of its performance security, liquidated damages or termination for default, if and to the extent that, its delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.

25.2 For purposes of this Clause, "Force Majeure" means an event beyond the control of the Supplier and not involving the Supplier's fault or negligence and not foreseeable. Such events may include, but are not limited to, acts of the Purchaser either in its sovereign or contractual capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.

25.3 If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser in writing

of such conditions and the cause thereof. Unless otherwise directed by the Purchaser in writing, the Supplier shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

**26. Termination for Insolvency**

26.1 The Purchaser may at any time terminate the Contract by giving written notice to the Supplier, if the Supplier becomes bankrupt or otherwise insolvent. In this event, termination will be without compensation to the Supplier, provided that such termination will not prejudice or affect any right of action or remedy, which has accrued or will accrue thereafter to the Purchaser.

**27. Resolution of Disputes**

27.1 The Purchaser and the supplier shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the Contract.

27.2 If, after thirty (30) days from the commencement of such informal negotiations, the Purchaser and the Supplier have been unable to resolve amicably a Contract dispute, either party may require that the dispute be referred for resolution to the formal mechanisms specified in the SCC. These mechanisms may include, but are not limited to, conciliation mediated by a third party, adjudication in an agreed national or international forum, and national or international arbitration.

**28. Governing Language**

28.1 The contract shall be written in English language. Subject to GCC Clause 30, English language version of the Contract shall govern its interpretation. All correspondence and other documents pertaining to the Contract, which are exchanged by the parties, shall be written in the same language.

**29. Applicable Law**

29.1 The Contract shall be interpreted in accordance with the laws of the Union of India and all disputes shall be subject to place of jurisdiction as specified in SCC.

**30. Notices**

30.1 Any notice given by one party to the other pursuant to this contract/order shall be sent to the other party in writing or by cable, telex, FAX or e mail and confirmed in writing to the other party's address specified in the SCC.

30.2 A notice shall be effective when delivered or on the notice's effective date, whichever is later.

**31. Taxes and Duties**

31.1 Suppliers shall be entirely responsible for all taxes, duties, license fees, octroi, road permits, etc., incurred until delivery of the contracted Goods to the Purchaser. However, VAT in respect of the transaction between the Purchaser and the Supplier shall be payable extra, if so stipulated in the order.

## **CHAPTER – IV: SPECIAL CONDITIONS OF CONTRACT (SCC)**

The following Special Conditions of Contract shall supplement the General Conditions of Contract. Whenever there is a conflict, the provisions herein shall prevail over those in the General Conditions of Contract. The corresponding clause number of the General Conditions is indicated in parentheses.

### **1. Definitions (GCC Clause 1)**

1.1 The Purchaser is 'The Director, North-East Institute of Science And Technology (N E I S T), Jorhat, Assam, INDIA.

### **2. Performance Security (GCC Clause 7)** Substitute clause 7.1 of the GCC by the following:

2.1 Within 15 days after the Supplier's receipt of order, the Supplier shall furnish Performance Security to the Purchaser for an amount of 10% of the contract value, valid upto 60 days after the date of completion of performance obligations including warranty obligations.

2.2 If the performance security is not furnished within the stipulated time as per 2.1 above, the contract shall be deemed terminated in pursuance of GCC Clause 24.

### **3. Inspection and Tests:** Inspection and tests and at final acceptance are as follows:

3.1 The acceptance test will be conducted by the Purchaser, their consultant or other such person nominated by the Purchaser at its option after the equipment is installed at purchaser's site in the presence of supplier's representatives. The acceptance will involve trouble free operation and ascertaining conformity with the ordered specifications and quality. There shall not be any additional charges for carrying out acceptance test. No malfunction, partial or complete failure of any part of the equipment is expected to occur. The Supplier shall maintain necessary log in respect of the result of the test to establish to the entire satisfaction of the Purchaser, the successful completion of the test specified.

3.2 In the event of the ordered item failing to pass the acceptance test, a period not exceeding one week will be given to rectify the defects and clear the acceptance test, failing which the Purchaser reserve the right to get the equipment replaced by the Supplier at no extra cost to the Purchaser.

3.3 Successful conduct and conclusion of the acceptance test for the installed goods and equipments shall also be the responsibility and at the cost of the Supplier.

### **4. Manuals and Drawings**

4.1 Before the goods and equipments are taken over by the Purchaser, the Supplier shall supply operation and maintenance manuals. These shall be in such details as will enable the Purchaser to operate, maintain, adjust and repair all parts of the works as stated in the specifications.

4.2 The Manuals shall be in the ruling language (English) in such form and numbers as stated in the contract.

4.3 Unless and otherwise agreed, the equipment shall not be considered to be completed for the purposes of taking over until such manuals and drawing have been supplied to the Purchaser.

### **5. Packing (GCC Clause 9)** Add as Clause 9.3 of the GCC of the following:

5.1 Packing Instructions: Each package will be marked with proper paint / indelible ink, the following:

- (i). Item Nomenclature
- (ii). Order/Contract No.
- (iii). Supplier's Name and
- (vi). Packing list reference number

### **6. Delivery and Documents (GCC Clause 10)**

6.1 Delivery of the goods should be made within the period specified in purchase order. Within 24

hours of shipment, the supplier shall notify the purchaser and the insurance company by cable/telex/fax/e mail the full details of the shipment including contract number, railway receipt number / C / N number etc and date, description of goods, quantity, name of the consignee, invoice etc. The supplier shall mail the following documents to the purchaser with a copy to the insurance company:

- (i). 4 Copies of the Supplier invoice showing contract number, goods' description, quantity, unit price, total amount;
- (ii). Acknowledgment of receipt of goods from the consignee(s) by the transporter;
- (iii). Insurance Certificate if applicable;
- (iv). Manufacturer's/Supplier's warranty certificate;
- (v). Two copies of the packing list identifying the contents of each package.

6.2 The above documents should be received by the Purchaser before arrival of the Goods (except where the Goods have been delivered directly to the Consignee with all documents) and, if not received, the Supplier will be responsible for any consequent expenses.

#### **7. Insurance (GCC Clause 11)**

7.1 For delivery of goods at site as per list enclosed, the insurance shall be obtained by the Supplier in an amount equal to 110% of the value of the goods from "warehouse to warehouse" (final destinations) on "All Risks" basis including War Risks and Strikes. The insurance shall be valid for a period of not less than 3 months after installation and commissioning.

#### **8. Incidental services (GCC clause 13)** The incidental services also include:

8.1 Furnishing of 01 set of detailed operations & maintenance manual.

#### **9. Warranty (GCC Clause 15)**

9.1 Warranty as per GCC Clause 15

#### **10. Payment (GCC Clause 16)**

10.1 80% payment shall be made by the Purchaser against delivery & inspection in good condition at site and balance 20% after successful, installation, commissioning and acceptance of the package to the entire satisfaction of the Purchaser and on production of unconditional performance bank guarantee as specified in Clause 2.1 of SCC.

10.2 Agency commission, if any shall be paid after satisfactory installation & commissioning of the goods at the destination at the exchange rate prevailing on the date of negotiation of LC documents, subject to DGS&D registration of the party for restricted items.

#### **11. Penalty Clause (GCC Clause 23)**

11.1 For delays: GCC Clause 23.1 -- The applicable rate is 1% per week and the maximum deduction is 10% of the contract price.

#### **12. Resolution of Disputes (Clause 28):** Add as GCC Clause 27.3 the following:

12.1 The dispute resolution mechanism to be applied pursuant to GCC Clause 27 shall be as follows:

(i). In case of Dispute or difference arising between the Purchaser and a domestic supplier relating to any matter arising out of or connected with this agreement, such disputes or difference shall be settled in accordance with the Indian Arbitration & Conciliation Act, 1996, the rules there under and any statutory modifications or re-enactments thereof shall apply to the arbitration proceedings. The dispute shall be referred to the Director General, Council of Scientific & Industrial Research and if he is unable or unwilling to act, to the sole arbitration of some other person appointed by him willing to act as such Arbitrator. The award of the arbitrator so appointed shall be final, conclusive and binding on all parties to this order.

(ii). In the case of a dispute between the purchaser and a Foreign Supplier, the dispute shall be settled by arbitration in accordance with provision of sub-clause (a) above. But if this is not acceptable to the supplier then the dispute shall be settled in accordance with provisions of UNCITRAL (United Nations Commission on International Trade Law) Arbitration Rules.

(iii). The venue of the arbitration shall be the place from where the order is issued.

#### **13. Applicable Law (GCC Clause 29)** Add as Clause 29.1 of the GCC the following:

13.1 The place of jurisdiction would be Jorhat, Assam, INDIA.

#### **14. Notices (GCC Clause 30)**

14.1 For the purpose of all notices, the following shall be the address of the Purchaser and Supplier.

(i). **Purchaser:** The Director,  
North East Institute of Scientific and Technology,  
Jorhat – 785 006, Assam

(ii). **Supplier:** (To be filled in by the supplier)

.....  
.....  
.....

**15. Progress of Supply**

15.1 Supplier shall regularly intimate progress of supply, in writing, to the Purchaser as under:

- (i). Quantity dispatched/delivered to consignees and date;
- (ii). Quantity accepted/rejected by inspecting agency and date;
- (iii). Quantity where incidental services have been satisfactorily completed with date;
- (iv). Quantity where rectification/repair/replacement effected/completed on receipt of any communication from consignee/Purchaser with date;
- (v). Date of completion of entire Contract including incidental services, if any; and
- (vi). Date of receipt of entire payments under the Contract (In case of stage-wise inspection, details required may also be specified).

**16. Right to Use Defective Goods**

16.1 If after delivery, acceptance and installation and within the guarantee and warranty period, the operation or use of the goods proves to be unsatisfactory, the Purchaser shall have the right to continue to operate or use such goods until rectifications of defects, errors or omissions by repair or by partial or complete replacement is made without interfering with the Purchaser's operation.

**17. Supplier Integrity**

17.1 The Supplier is responsible for and obliged to conduct all contracted activities in accordance with the Contract using state of the art methods and economic principles and exercising all means available to achieve the performance specified in the contract.

**18. Training**

18.1 The Supplier is required to train the designated Purchaser's technical and end user personnel to enable them to effectively operate the total equipment.

**Bidder Information Form**

[The Bidder shall fill in this Form in accordance with the instructions below. No alterations to its format shall be permitted and no substitutions shall be accepted. This should be done of the letterhead of the firm]

Date: [insert date (as day, month and year) of Bid Submission]

Tender No.: [insert number from Invitation for Bids]

Page 1 of .... Pages

1	Bidder's Legal Name [insert Bidder's legal name]
2	In case Joint Vendor, legal name of each party: [insert legal name of each party in JV]
3	Bidder's actual or intended Country of Registration: [insert actual or intended Country of Registration]
4	Bidder's Year of Registration: [insert Bidder's year of registration]
5	Bidder's Legal Address in Country of Registration: [insert Bidder's legal address in country of registration]
6	Bidder's Authorized Representative Information Name: [insert Authorized Representative's name] Address: [insert Authorized Representative's Address] Telephone / Fax numbers: [insert Authorized Representative's telephone / fax numbers] E-mail Address: [insert Authorized Representative's email address]
7	Attached are copies of original documents of: [check the box(es) of the attached original documents] Articles of Incorporation or Registration of firm named in 1, above, in accordance with ITB Sub-Clauses 4.1 and 4.2

Signature of Bidder..... Name ..... Business Address.....

## CHAPTER – V: BID FORM

**The Director,  
North-East Institute of Science And Technology,  
Jorhat – 785 006, (Assam)**

Sir,

Having examined the bidding document the receipt of which is hereby duly acknowledged, we the undersigned offer to supply and deliver \_\_\_\_\_(Description of Goods) in conformity with the said bidding documents for a sum or such other sums as may be ascertained from the bid.

We undertake that if our bid is accepted to deliver the goods in accordance with the delivery schedule specified.

If our bid is accepted we will obtain the guarantee of the bank as specified in SCC for the due performance of the contract, in the form prescribed by your goodself.

We agree to abide by this bid for requisite period of time after the date fixed for bid opening as per the instructions to the bidders and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

Until a formal contract is prepared and executed, this bid, together with your written acceptance thereof and your notification of award shall constitute a binding contract between us.

Commissioning and gratuities, if any, paid or to be paid by us to the agents relating to this bid, and to contract executions if we are awarded the contract, are listed below:

Name and address agent	Amount in Rupees	Purpose of Commission of agent
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(if none, state "none")

We understand that you are not bound to accept the lowest or any bid you may receive.

Dated this \_\_\_\_\_ day of \_\_\_\_\_ 20 \_\_\_\_\_

Signature \_\_\_\_\_  
In the capacity of \_\_\_\_\_

Duly authorized to sign the bid for and on behalf of \_\_\_\_\_

**CHAPTER – VI: BID SECURITY FORM / BANK GUARANTEE**

Whereas .....<sup>1</sup> (*hereinafter called “the Bidder”*) has submitted its bid dated ..... (*Date of submission of bid*) for the supply of ..... (*Name and/or description of the goods*) (Hereinafter called “the Bid”).

KNOW ALL PEOPLE by these presents that WE ..... (*Name of bank*) of ..... (*Name of country*), having our registered office at ..... (*Address of bank*) (Hereinafter called “the Bank”), are bound unto **Director, North-East Institute of Science And Technology, Jorhat, Assam** (Hereinafter called “the Purchaser”) in the sum of \_\_\_\_\_ for which payment well and truly to be made to the said Purchaser, the Bank binds itself, its successors, and assigns by these presents. Sealed with the Common Seal of the said Bank this \_\_\_\_ day of \_\_\_\_\_ 2010.

THE CONDITIONS of this obligation are:

1. If the Bidder withdraws its Bid during the period of bid validity specified by the Bidder on the Bid Form; or
2. If the Bidder, having been notified of the acceptance of its bid by the Purchaser during the period of bid validity:
  - (a) Fails or refuses to execute the Contract Form if required; or
  - (b) Fails or refuses to furnish the performance security, in accordance with the Instruction to Bidders.

We undertake to pay the Purchaser up to the above amount upon receipt of its first written demand, without the Purchaser having to substantiate its demand, provided that in its demand the Purchaser will note that the amount claimed by it is due to it, owing to the occurrence of one or both of the two conditions, specifying the occurred condition or conditions.

This guarantee will remain in force up to and including forty-five (45) days after the period of the bid validity, and any demand in respect thereof should reach the Bank not later than the above date.

(Signature with Seal of the Bank)  
(Complete Contact Details with Tel./Fax/email etc)

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<sup>1</sup> *Name of Bidder*

**CHAPTER – VII: MANUFACTURERS' AUTHORIZATION FORM**

No. \_\_\_\_\_

Dated \_\_\_\_\_

**The Director,**

**North-East Institute of Science And Technology,**

**Jorhat – 785 006, Assam**

Dear Sir:

We \_\_\_\_\_ who are established and reputable manufacturers of \_\_\_\_\_ having factories at *(address of factory)* do hereby certify that M/s \_\_\_\_\_ *(Name and address of Agent)* is our authorized dealer to quote against your tender enquiry.

We hereby extend our full guarantee and warranty as per Clause 15 of the General Conditions of Contract and Clause of the Special Conditions of Contract for the goods and services offered by the above firm.

Yours faithfully,

(Name)

(Name of manufacturers)

**Note:** This letter of authority should be on the **letterhead of the manufacturer** and should be signed by a person competent and having the power of attorney to bind the manufacturer. It should be included by the Bidder in its techno-commercial unpriced bid.

**CHAPTER – VIII: BIDDER’S PERFORMANCE STATEMENT FORM  
(For A Period of Last 3 Years)**

**Name of the Firm .....**

Order Placed by (full address of Purchaser )	Order No. and date	Description and quantity of ordered equipment	Value of Order	Date of Completion of delivery as per contact	Date of actual completion of delivery	Remarks indicating reasons for late delivery, if any	Has the equipment been installed satisfactorily ? (Attach a certificate from the purchaser/ Consignee)	Contact Person along with Tel. NO., Fax No. & e-mail addresses

Signature and Seal of the Manufacturer / Bidder .....

Place:

Date:

**CHAPTER IX: SERVICE SUPPORT DETAILS FORM**

Sl. No.	Nature of training imparted	List of similar type equipment served in the past 3 years.	Address, Telephone Nos. , Fax and e-mail address of the firm located in nearby Jorhat, Assam

Place:

Date:

Signature and Seal of the Manufacturer/Bidder.....

**CHAPTER – X: DEVIATION STATEMENT FORM (ITB, GCC, SCC)**

The following are the particulars of deviations (ITB, GCC, SCC Clauses) from the requirements of the tender document and specifications:

<b>CLAUSE</b>	<b>DEVIATION</b>	<b>REMARKS (INCLUDING JUSTIFICATION)</b>

Place:

Date

Signature and seal of the Manufacturer / Bidder

**NOTE:** Where there is no deviation, the statement should be returned duly signed with an endorsement indicating “No Deviations”.

**CHAPTER – XI: TECHNICAL COMPLIANCE STATEMENT FORM**

An item-by-item commentary on the Purchaser's Technical Specifications demonstrating substantial responsiveness of the goods and services to those specifications or a statement of deviations and exceptions to the provisions of the Technical Specifications.

ITEM NAME			
S.No.	Tender Specifications	Bidder's Specifications	Remarks/Deviation If any

*(Technical literature/brochures/manuals should be attached along with this format)*

**Please note:**

1. Compliance/Deviation statement comparing the specifications of the quoted model to the required specifications. This statement should also give the page number(s) of the technical literature where the relevant specification is mentioned.
2. Bids must have supporting documents (technical literature or copies of relevant pages from the service manual or factory test data) for all the points noted above, failure regarding which may result in rejection of bid.

**CHAPTER – XII: PERFORMANCE SECURITY FORM / PERFORMANCE BANK GUARANTEE**

**The Director,**

**North-East Institute of Science And Technology,  
Jorhat – 785 006, Assam, India**

**WHEREAS** ..... (Name of Supplier)

Hereinafter called "the Supplier" has undertaken, in pursuance of Contract No..... dated,..... 200... to supply.....(Description of Goods and Services) hereinafter called "the Contract".

**AND WHEREAS** it has been stipulated by you in the said Contract that the Supplier shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with the Supplier's performance obligations in accordance with the Contract.

**AND WHEREAS** we have agreed to give the Supplier a Guarantee:

**THEREFORE WE** hereby affirm that we are Guarantors and responsible to you, on behalf of the Supplier, up to a total of ..... (Amount of the Guarantee in Words and Figures) and we undertake to pay you, upon your first written demand declaring the Supplier to be in default under the Contract and without cavil or argument, any sum or sums within the limit of ..... (Amount of Guarantee) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

This guarantee is valid until the .....day of.....200.....

Signature and Seal of Guarantors

(Complete Address/Contact Details with Tel./Fax/email etc)

Date

### CHAPTER - XIII: QUALIFICATION REQUIREMENTS

1. The Bidder should be a firm of reputation having sufficient expertise and experience in the subject tender with sound warranty / service support capability and authorization from manufacturers of all major items. The firm should also have the capability & networking facility to take total responsibility on turnkey basis in execution of the contract in 58 Science Colleges situated in 8 (Eight) States in the N-E Region.
2. The annual turnover of the bidder during any of the last three financial years should be Rs. 2.00 Crores approximately.
3. The bidder should have executed at least one of similar instruments / apparatus order valuing Rs. 1(One) Corer approximately successfully during the preceding three financial years. The details should be incorporated in the performance statement form along with documentary evidence (supported by P O copies).
4. Details of service support facilities (State wise office address, contact person and contact number) to be provided during the warranty period should be submitted in the Service Support Details Form. The bidder or the their principal should have proper service network throughout most of the 8 States in N E region so that prompt after sales support can be provided in the remote areas also.
5. That the Bidder will assume total responsibility in supply, installation and for the fault-free operation and maintenance during warranty period.
6. Bidders who do not meet the criteria given above are subject to be disqualified, if they have made untrue or false representation in the forms, statements and attachments submitted in proof of the qualification requirements or have a record of poor performance, not properly completing the contract, inordinate delays in completion or financial failure, etc.
7. Any additional bid participation criteria / eligibility conditions etc. mentioned in the Technical Specifications sheet will also form part of the Qualification Requirements along with those mentioned in this chapter.

**CHAPTER – XIV**

**INTEGRITY PACT**

**Between**

Council of Scientific & Industrial Research (CSIR) hereinafter referred to as “The Principal”.

And .....herein referred to as “The Bidder/ Contractor.”

Preamble The Principal intends to award, under laid down organizational procedures, contract/s for .....The Principal values full compliance with all relevant laws of the land, rules, regulations, economic use of resources and of fairness/ transparency in its relations with its Bidder(s) and/or Contractor(s).

In order to achieve these goals, the Principal will appoint an Independent External Monitor (IEM), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

**Section 1 – Commitments of the Principal**

(1) The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:

a. No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.

b. The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential/additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.

c. The Principal will exclude from the process all known prejudiced persons.

(2) If the Principal obtains information on the conduct of any of its employees which is a criminal offence under the IPC/PC Act, or if there be a substantive suspicion in this regard, the Principal will inform the Chief Vigilance Officer and in addition can initiate disciplinary action.

**Section 2 – Commitments of the Bidder(s)/Contractor(s)**

(1) The Bidder(s)/Contractor(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.

a. The Bidder(s)/Contractor(s) will not, directly or through any other Person or firm, offer, promise or give to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.

b. The Bidder(s)/Contractor(s) will not enter with other Bidders into any Undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.

c. The Bidder(s)/Contractor(s) will not commit any offence under the relevant IPC/PC Act; further the Bidder(s)/Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

d. The Bidder(s)/Contractor(s) of foreign origin shall disclose the name and address of the Agents/representatives in India, if any. Similarly the Bidder(s)/Contractors(s) of Indian Nationality shall furnish the name and address of the foreign principals, if any. Further details as mentioned in the "Guidelines on Indian Agents of Foreign Suppliers" shall be disclosed by the Bidder(s)/Contractor(s). Further, as mentioned in the Guidelines all the payments made to the Indian agent/representative have to be in Indian Rupees only. Copy of the "Guidelines on Indian Agents of Foreign Suppliers" is annexed and marked as Annexure.

e. The Bidder(s)/Contractor(s) will, when presenting his bid, disclose any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.

(2) The Bidder(s)/Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

### Section 3 – Disqualification from tender process and exclusion from future contracts.

If the Bidder(s)/Contractor(s), before award or during execution has committed a transgression through a violation of Section 2, above or in any other form such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/Contractor(s) from the tender process or take action as per the procedure mentioned in the "Guidelines on Banning of business dealings". Copy of the "Guidelines on Banning of business dealings" is annexed and marked as Annex -"B".

### Section 4 – Compensation for Damages

(1) If the Principal has disqualified the Bidder(s) from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent to Earnest Money Deposit/ Bid Security.

(2) If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to Section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages of the contract value or the amount equivalent to Performance Bank Guarantee.

### Section 5 – Previous transgression

(1) The Bidder declares that no previous transgressions occurred in the last 3 Years with any other Company in any country conforming to the anti corruption approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.

(2) If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or action can be taken as per the procedure mentioned in "Guidelines on Banning of business dealings."

### Section 6 – Equal treatment of all Bidders / Contractors/ Subcontractors.

(1) The Bidder(s)/Contractor(s) undertake(s) to demand from all Subcontractors a commitment in conformity with this Integrity Pact, and to submit it to the Principal before contract signing.

(2) The Principal will enter into agreements with identical conditions as this one with all Bidders, Contractors and Subcontractors.

(3) The Principal will disqualify from the tender process all bidders who do not sign this Pact or violate its provisions.

#### Section 7 – Criminal charges against violating Bidders / Contractors/ Subcontractors.

(1) The Principal appoints competent and credible Independent External Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.

(2) The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the JS(A), CSIR.

(3) The Bidder(s)/Contractor(s) accepts that the Monitor has the right to access without restriction to all Project documentation of the Principal including that provided by the Contractor. The Contractor will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The same is applicable to Subcontractors. The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/Contractor(s)/Subcontractor(s) with confidentiality.

(4) The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.

(5) As soon as the Monitor notices, or believes to notice, a violation of this agreement, he will so inform the Management of the Principal and request the Management to discontinue or take corrective action, or to take other relevant action. The monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.

(6) The Monitor will submit a written report to the JS(A), CSIR within 8 to 10 weeks from the date of reference or intimation to him by the Principal and should the occasion arise, submit proposals for correcting problematic situations.

(7) Monitor shall be entitled to compensation on the same terms as being extended to/provided to Independent Directors on the CSIR.

(8) If the Monitor has reported to the JS(A), CSIR, a substantiated suspicion of an offence under relevant IPC/PC Act, and the JS(A), CSIR has not, within the reasonable time taken visible action to proceed against such offence or reported it to the Chief Vigilance Officer, the Monitor may also transmit this information directly to the Central Vigilance Commissioner.

(9) The word 'Monitor' would include both singular and plural.

#### Section 9 – Pact Duration

This Pact begins when both parties have legally signed it. It expires for the Contractor 10 months after the last payment under the contract, and for all other Bidders 6 months after the contract has been awarded.

If any claim is made/lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged/determined by JS(A), CSIR.

Section 10 – Other provisions

(1) This agreement is subject to Indian Law. Place of performance and Jurisdiction is the Registered Office of the Principal, i.e. New Delhi

(2) Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.

(3) If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.

(4) Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

(For & On behalf of the Principal)      (For & On behalf of Bidder/Contractor)

(Office Seal)                      (Office Seal)

Place.....

Date.....

Witness 1:

(Name & Address): \_\_\_\_\_

Witness 2:

(Name & Address): \_\_\_\_\_

**CHAPTER – XV: TECHNICAL SPECIFICATIONS**

**TENDER DOCUMENT**

***Ref. No. 1(PEQ)/435/10-11/PUR***

**Sub: Supply & Installation of Instruments / apparatus on turnkey basis to be installed in 58 Nos. of Science Colleges in 8 (Eight) States in North East Region.**

**N B: Last date & Time for Submission: 10.05.2011 (17.00 HRS)**

**Date/Time for Opening of Tech. Bids: 11.05.2011 (10.30 HRS)**

**N.B:-**

- 1. The Quantities of the equipment are provisional / indicative only; these may be increased or decreased at the time of placement of order.**
- 2. The supply of the equipment is to be made on turn-key basis and hence overall lowest bid will be the basis for evaluation.**
- 3. All the equipment should have 5 (five) years warranty except for the consumable attached to the equipment.**

## DETAIL SPECIFICATION

NO. 1(PEQ)/435/10-11/PUR

Sl. No.	Equipment Specification	Qty
1	<p><b>1 KVA On-Line Uninterrupted Power Supply with 1 Hour battery backup</b>  Microprocessor based/ IGBT/ latest reliable technology  No break static and maintenance bypass  LED/LCD status display  Ripple free charger  Input 110V to 280V  Output: 220V <math>\pm</math> 2%, 50 Hz <math>\pm</math>0.5Hz  Alarm: Audible mains failure, load on battery, UPS fault  Input single phase main supply  Automatic and manual battery test  Low ripple current discharge system  Sealed, Lead-Acid Maintenance Free Batteries  60 minutes back-up, EXIDE / AMRON type battery  concealed battery shelves/ cabinet  Ambient up to 45 °C , humidity &lt;95%, noise level &lt;55dB  ISO 9001:2008 certified for design, manufacturing of UPS</p>	4 Nos.
2	<p><b>3 KVA On-Line Uninterrupted Power Supply with 1 Hour battery backup</b>  Microprocessor based/ IGBT/ latest reliable technology  No break static and maintenance bypass  LED/LCD status display  Ripple free charger  Input 110V to 280V  Output: 220V <math>\pm</math> 2%, 50 Hz <math>\pm</math>0.5Hz  Alarm: Audible mains failure, load on battery, UPS fault  Input single phase main supply  Automatic and manual battery test  Low ripple current discharge system  Sealed, Lead-Acid Maintenance Free Batteries  60 minutes back-up, EXIDE / AMRON type battery  concealed battery shelves/ cabinet  Ambient upto 45 °C , humidity &lt;95%, noise level &lt;55dB  ISO 9001:2008 certified for design, manufacturing of UPS</p>	14 Nos.
3	<p><b>Anderson bridge</b>  Anderson Bridge circuit with arms values.  Potentiometer for varying one arm.  Three different value inductances  Potentiometer with calibrated dial  Five capacitors selected by a band switch.  Audio Amplifier with its IC regulated Power Supply.  One KHz Sine Wave Oscillator with its IC regulated Power Supply.  Speaker inclusive.</p>	11 Nos.
4	<p><b>AUTOCLAVE (VERTICAL)</b>  Capacity: 40 ltrs, Fully automated PID Controlled.  Pressure up to 22 PSI operable setting at 15 PSI,  Temperature up to 121- 135 °C, Temperature indicator  Sturdy double wall body made of Stainless Steel 304, 16 gauge sheet with boiler and air insulator, Lid with radial locking system, Joint less gaskets, Water level indicator, Pressure gauge, Air/Steam release cock, Two safety valve automatic cut-off when the autoclave is dry.  Power: 220 V 50 Hz</p>	21 Nos.

## No. 1(PEQ)/435/10-11/PUR

5	<b>Automatic Knife Sharpener</b> Sharpening period: 60 minute with timer Knife holder: For microtome knives up to 185 mm Automatic Change Over / Reversal Robust and Ergonomic Design With spare honing plate, Knife inspection block, Hone glass compound and redressing pad, Coarse and fine micro abrasive.	3 Nos.
6	<b>Bacteriological Incubator</b> Double walled with inner chamber and storage shelves of stainless steel and outer wall of M.S. sheet epoxy powder coated with glass wool insulation. Triple walled back of the unit fitted with air circulation fans Door operated illumination lamp inside the chamber Temperature range : 5 <sup>o</sup> C to 60 <sup>o</sup> C ± 1 <sup>o</sup> C, (CFC Free) Microprocessor Based Digital Temperature Indicator-Cum Controller Power: 220/230 Volts A.C. Supply Capacity: 60 ltrs. Approx	19 Nos.
7	<b>Ballistic galvanometer with lamp scale arrangement</b> Ballistic Galvanometer Cast aluminum Lamp and Scale Lamp with heavy iron adjustable stand fitted with 8 volt electric bulb through built in transformer Scale 50 cm. Fixed resistance 10K 0.25W Decade Resistance Box, Single dial in steps of 1 ohm, total 10 ohm Decade Resistance Box, Single dial in steps of 100 ohm, total 1K ohm Cell eliminator (Leclanche Cell 1V5). Way Plug key, Tapping key, Reversing key	16 Nos.
8	<b>Bench Top pH/ Conductivity/ TDS/ Salinity/ Temp/ Ion/ ORP/ Resistivity Meter</b> pH Range (-)2.00 to 18.00 pH Accuracy ± 0.002 pH Conductivity Range 0 to 400 mS Accuracy ±1 % TDS Range 0.050 ppm to 400 ppm Accuracy ±1 % Salinity Range 0.0 to 60.0 ppt Accuracy ±1 % Temperature Range 0.0 to 100.0 °C Accuracy ±0.3 °C ION Concentration 0.001 to 19999 ppm (±2000 mV) Accuracy 0.5 % (monovalent) ; 1 % (divalent) ORP Range ±1800.0 mV Accuracy ±0.2 mV Resistivity Range 2.0 Ohm to 20.0 MOhm Accuracy ±1 % Power 220 VAC	25 Nos.
9	<b>BINOCULAR (Nature watching)</b> Wide approx 64 <sup>o</sup> apparent angular field view Multilayer-coated lenses, Waterproof and fog-free with O-ring seals and nitrogen gas High-eye point design, Polarising filter with tripod adaptor Magnification (X): 18 or above; Objective diameter (mm): 70 approx Angular field of view( Real /Degree): 4.0 approx Field of View at 1,000m(m): 70 approx Exit Pupil (mm):4.0 approx Relative Brightness:15 approx; Close Focusing Distance(m):80 approx	12 Nos.

## NO. 1(PEQ)/435/10-11/PUR

10	<b>Binocular Research Microscope</b> Objectives: PLN (PLN-PH) Series 4 X 10X 40X (Spring)100X (Spring and oil) (Achromatic and anti fungus treated) Eyepiece: WHN10X, FN 22 mm, (anti-fungus treated) Illumination: Koehler illuminator 6 V 30 W halogen bulb Mechanical Stage: 188 (W) X 134 (D) mm ( For holding two slides) Stage movement (XY direction) Quadruple revolving nosepiece Abbe condenser N.A. 1.25 (oil immersion), with built-in daylight filter and Aperture iris diaphragm There should be provision to upgrade the microscope to Trinocular, Dark Field, Phase Contrast, Microscope Image Projection System Certification: ISO14001/ FM553994/ MD540624/ cULus/ CE/ RoHS	71 Nos.
11	<b>Bio-Safety Cabinet</b> Type: Class II, A-2 type Cabinet: Bench top, 5 ft With UV light and service fixture kit Cabinet florescent light Stainless Steel interior with HEPA filter or Ultra low air penetration filter Energy saving with ECM-DC motor, Motor life 40,000 hr or more Recirculation: 70% approx and exhaust: 30% approx Heat level: below 75 BTU per hr LCD display for filter life and air flow Hydraulic lift base stand Power: 220 V 50Hz	1 No.
12	<b>BOD Incubator</b> Double walled with inner chamber and storage shelves of stainless steel and outer wall of M.S. sheet epoxy powder coated with glass wool insulation. Triple walled back of the unit fitted with two air circulation fans Full view inner glass door Door operated illumination lamp inside the chamber Temperature range : 5 <sup>o</sup> C to 70 <sup>o</sup> C ± 0.5 <sup>o</sup> C, (CFC Free) Microprocessor Based Digital Temperature Indicator-Cum Controller with an accuracy of ± 0.5 <sup>o</sup> C Power: 220/230 Volts A.C. Supply Capacity: 110 ltrs. approx Power Stabilizer: With suitable Automatic Voltage stabilizer with high and low voltage cutoff, Step up and step down facility	16 Nos.
13	<b>CCD Spectrometer</b> Design : Constant Deviation Spectrometer Prism type : Pellin Broca Wavelength range : 280-1200 nm approx Video capture : 640X480 pixel or better Still image capture : 1280X960 pixel or better Frame rate : 30 f/ps approx Resolution of spectrometer : 0.09 nm/pixel [D-lines] or better Compatibility : USB Collimating lens [Achromatic] f-number : f/7.5 approx Focusing lens [Achromatic] f-number : f/1.5 approx	1 No.

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14	<b>Centrifuge (General Purpose)</b> Max Speed: 10,000 RPM (approx) LCD display of speed & time 1-99 minutes digital timer Maintenance free brushless drive motor, pre-selection of run parameter like RPM, Run Time, Motorized lid locks, imbalance identification and auto cut-off 6 x 15 ml Angle Rotor Head with Metal carriers & standard tubes. Power Stabilizer: With suitable Automatic Voltage stabilizer with high and low voltage cutoff, Step up and step down facility	26 Nos.
15	<b>Characteristics of semiconductor diodes, Si, Ge, Zener and LED</b> <b>Complete setup for the following experiments:</b> To study the forward and reverse characteristics of Ge, Si diodes and LEDs To Study of Zener diode characteristics  0-10V D.C. at 10mA, continuously variable regulated Power Supply with low ripple Ge, Si Diodes, Zener Diode and LED D.C. Voltmeter range 1V and 10V D.C. Microammeter ranges 50 mA and 10mA Power: 220V $\pm$ 10% at 50Hz Patch cords, terminal sockets, operating Instructions	21 Nos.
16	<b>COD DIGESTION APPARATUS</b> Microprocessor based Automatic control unit, PID digital temperature indicator-cum-controller, in-built digital timer with buzzer, Temperature: Ambient to 170°C $\pm$ 1 °C. Cycle time: 30 min Heated unit: Solid state block, for 15 samples or above Must supply with adequate nos. of the following: Glass reaction vessels, Air condensers, Digestion rack, etc Bottle Top Dispenser capacity: 2 to 10ml/5 to 20ml/ 10 to 50ml Power: 220/230 V, 50Hz.	2 Nos.
17	<b>Chromatography Column (Flash)</b> Simple absorption column for rapid preparative separations. Thread connector for grease-free connection Pressure-tight condition with internal threaded connector and Nylon bushing, O-Ring compression seal with glass stem on reservoir and flow adapter. Coated Column and reservoir. Column with Porosity B (70–100 micron) fritted disc. Column 50 mm, Effective Length 40 cm or above, Capacity 0.5 Liters or above, with disc, reservoir 500 ml, Flow control adapter, Bushing, Nylon, w/O-Ring	2 Nos.
18	<b>Complete setup for determination of wavelength of unknown radiation by using Fresnel Biprism</b> Fresnel Biprism: 01 Number Sodium vapour lamp (monochromatic): 01 Number Slit: 01 Number Micrometer eye-piece: 01 Number Convex lens of suitable focal length: 01 Number Optical bench with four stand: 01 Number Plumb line: 01 Number Index rod: 01 Number	18 Nos.

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19	<p><b>Complete setup to determine the wavelength of spectral lines by diffraction through plane transmission grating</b></p> <p>Spectrometer: 01 Number  Prism: 01 Number  Plane diffraction grating: 01 Number  Spirit level: 01 Number  Sodium vapour Lamp: 01 Number  Helium Lamp: 01 Number  Neon Lamp: 01 Number</p>	8 Nos.
20	<p><b>DEEP FREEZER</b></p> <p>Type: Upright  Capacity 100 litres or above  Temperature: -25 deg C or better  Microprocessor programmable with keypad and control panel.  Construction: New Ultra thin Vacuum Insulation NANO GEL Panel &amp; Tollesbury Technology system to reduce temperature recovery time after door opening.  Body: 304L grade SS interior and epoxy powder coated exterior  Freezer should have 3 adjustable compartment  Freezers should have heated air vent and front panel air filter.  Heavy duty lockable castors and lockable outer doors and lids are required.  Freezer must have battery back-up and 4 PIN security lock for unauthorized tampering.  Audible and visible alarms for temperature, power failure, system failure, battery low etc.  CFC-FREE, HCFC-FREE non flammable refrigerants  System must be energy efficient  Certification: ISO 9001 and IEC 61010 Electrical safety CE &amp; UL  Power: 220V, 50Hz  Accessories:  Compactable Automatic Voltage stabilizer with high and low voltage cutoff, Step up and step down facility</p>	5 Nos.
21	<p><b>Desktop Computer</b></p> <p>Processor: i3 or i5, <math>\geq 4</math> MB Cache, <math>\geq 3.2</math> GHz speed.  RAM : <math>\geq 4</math> GB  Chipset : Intel  Max RAM Expandability : Up to 16GB or better  HDD : <math>\geq 320</math> GB  Operating System : Windows 7 Home Premium  Monitor : TFT 15"  Input Device : Keyboard and optical mouse  Optical Drive : 16x DVD+/-RW Drive  Software: Microsoft Office (Home &amp; Office) 2010 Licensed version &amp; Antivirus (1 Year License)  With 600 VA UPS (Offline)</p>	1 No.

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22	<p><b>Detector Based Apparatus for Diffraction Experiments</b></p> <p>Complete setup for the following experiments:          Diffraction of light by single slit: To determine the width of single slit from the study of Fraunhofer Diffraction pattern.          Diffraction of light by double slit: A micrometer controlled pinhole photodetector is used to scan the diffracted beam and to determine the slit width.          Diffraction of light by fine wire: To measure the diameter of thin wire from diffraction pattern.          Diffraction of light by cross wire: To demonstrate diffraction due to cross wire.          Diffraction of light by wire mesh.          Diffraction of light by circular aperture (Pinhole): To measure the diameter of circular aperture using diffraction.</p> <p>Components:</p> <ul style="list-style-type: none"> <li>• Optical rail</li> <li>• Diode laser with power supply</li> <li>• Kinematic laser mount with rail carriage</li> <li>• Micrometer driven XY translation stage with rail carriage</li> <li>• Pinhole photo detector with measurement unit</li> <li>• Cell mount with rail carriage</li> <li>• Box with diffraction cells</li> </ul> <p>Research quality Optics made of N-BK 7 optical glass          All components should be made from corrosion free laboratory grade materials.</p>	2 Nos.
23	<p><b>Determination of “J” by Callendar And Barne’s Method</b></p> <p>Callendar and Barne’s apparatus          Constant level bath with stand          Battery Eliminator, 2-12V D.C. in steps/variable at 4A, IC regulated and short circuit protected          D.C. Ammeter (0-3A) and D.C. Voltmeter (0-15V): 65mm round dial, mounted on bakelite stand          Thermometers 100°C (Two numbers)          Beaker, rubber tubing etc.</p> <p><b>Accessories</b></p> <ol style="list-style-type: none"> <li>1. Digital Stop Clock : range of 999.9 seconds with resolution of 0.1 seconds</li> <li>2. Physical Balance with weight box</li> </ol> <p>Specifications:          Capacity: 250 gm          Resolution: 0.2 mg</p>	9 Nos.

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24	<p><b>Differential Scanning Calorimeter</b>  Type: Disc-type heat flux design  High signal resolution, with low-mass aluminum furnace, alumina coated  45-position auto-sampler  Automated liquid nitrogen cooling up to -180 °C (approx)  Temperature Range (-)180 to 450°C Accuracy <math>\pm 0.1</math> °C  Heating Rate 0.1 to 100 °C/min  Cooling Rate 0.1 to 100 °C/min  Calorimetric Data Accuracy/ Precision <math>\pm 2\%</math>  Dynamic Range Resolution <math>\pm 175</math> mW 0.02 uW  With Digital mass flow control, Auto-sampler, Portable Cooling Device,  Software for Thermal Analysis  Compliance: ISO 9001,CE , WEEE certification  With Compactable Computer and Laser Jet Printer</p> <p><b>Computer</b>  Processor: i5 or i3, <math>\geq 4</math> MB Cache, <math>\geq 3.2</math> GHz speed.  RAM : <math>\geq 4</math> GB  Chipset : Intel  Max RAM Expandability : Up to 16GB or better  HDD : <math>\geq 320</math> GB  Operating System : Windows 7Home Premium  Monitor : TFT 15”  Input Device : Keyboard and optical mouse  Optical Drive : 16x DVD+/-RW Drive  Software : Microsoft Office (Home &amp; Office) 2010 Licensed version &amp; Antivirus  (1 Year License)</p> <p><b>Laser Jet Printer</b>  Print speed black: Up to 14 ppm  Print quality: Up to 600 x 600 dpi (1200 dpi effective output)  Duty cycle: Up to 5000 pages p.m.  Standard memory: 2MB  Processor speed: 256 MHz  Paper sizes support: A4, A5, A6, B5, postcards, envelopes  Connectivity: Hi-Speed USB 2.0 port  Power: 220/230 V, 50Hz.</p>	2 Nos.
25	<p><b>Digital Abbe Refractometer</b>  Measurement range:  Refractive index 1.3000-1.7000nD  Brix 0-95%  Minimum Scale  Refractive Index (nD): 0.001, Brix 0.5%  Measurement accuracy: Refractive index (nD) <math>\pm 0.0002</math>, Brix 0.1%  Measurement Temperature: 0 - 60°C  Light Source: LED (approx to wavelength of D Line)  With suitable Interface  Power supply 220V AC, 50/60Hz</p>	4 Nos.

## NO. 1(PEQ)/435/10-11/PUR

26	<b>DIGITAL AC MILLIVOLT METER (Dual Channel)</b> AC Voltage : 70 $\mu$ V to 300V(Auto/Manual Mode) dBV : -80dBV to 50dBV dBm : -77dBm to 52dBm VOLTAGE : 3mV to 30V (Five steps) FREQUENCY RANGE : 5Hz to 2MHz, Accuracy: $\pm 1.5$ to $\pm 5\%$ INPUT IMPEDANCE : 10M $\Omega$ INPUT CAPACITANCE : 30pF Display: Digital 4 Digits Under / Over Voltage Indication Computer interface POWER 220V, 50Hz. Input Test leads : 2 Nos. with manual	9 Nos.
27	<b>Digital Camera</b> Pixels: 10 Mega Pixels or higher Optical Zoom 20x or higher Lens Carl Zeiss type or equivalent F Number: From 2.8 - 5.2 Focal Length : From 5 - 100mm Internal Memory: Approx. 10MB External Memory Stick : 2GB Display: LCD, Battery : Lithium Ion (minimum 2 Hour back up), USB Hi-Speed	27 Nos.
28	<b>Digital Colony Counter</b> Display: Digital/ LED 4 digit Counting plate with illuminated standard wolffugel ruling 100 mm diameter lens Maximum colony Count: up to 9999 Power: 220 V 50Hz	6 Nos.
29	<b>Digital Gaussmeter</b> Ranges: 0-200G, 0-2KG, 0-20KG and 0-40KG Resolution: 0.1 G on the 200 G range Accuracy : $\pm 0.5\%$ Display : 3½ digit, LED with auto polarity and overflow Transducer : Hall Probe Interchangeable With Excellent Linearity and Stability Indicator for direction of magnetic field	4 Nos.
30	<b>Digital Haemoglobinometer</b> Measuring range: 0-25.6 g/dL (0-256 g/L, 0-15.9 mmol/L) Measuring time: approx 10 seconds Accuracy: Correlation of 0.99 when compared to the reference method (ICSH method). Calibration: The system should be calibrated against the ICSH reference method for hemoglobin. Method: Absorbance measurement of whole blood at Hb/HbO <sub>2</sub> isobestic point. Sample material: capillary, venous or arterial blood. Sample volume: 10 $\mu$ L Analyzer: Dual wavelength for Hb measurement and turbidity compensation Quality control: Built-in self test, 3 level of liquid control available, Interfaces for printer and PC) Working temperature: 10-40°C 20 Nos. of cuvette (Consumable)	12 Nos.

## NO. 1(PEQ)/435/10-11/PUR

31	<b>Digital IC trainer kit</b> + 5V D.C. at 1Amp, IC Regulated Power Supply Eight, two position toggle switches for binary logic input Eight, LED logic indicators with transistor drivers 3 digit Seven Segment Displays with decoder driver Clock: 1 Hz, 1 kHz and 1 MHz. Single pulse from mono pulser IC Bases :- 16 Pin DIP/ZIF : 3 Nos. 28 Pin DIP/ZIF : 1 Nos.	4 Nos.
32	<b>Digital Lux Meter</b> Range: 0 to 50000 Lux in 3 ranges of 0.000-1999 Lux, 2000-19999 Lux, 20000-50000 Lux Range setting: Manually Resolution: 0-1999 Lux 1 Lux, 2000-19999 Lux 10 Lux, 20000-50000 Lux 100 Lux Accuracy: $\pm 5\%$ Sensor: Silicon Photodiode Sensor sensitivity: 100 scotopic LUX With Battery & manual	7 Nos.
33	<b>Digital Melting point Apparatus</b> Display: Digital Resolution : $0.1^{\circ}$ C Temperature : Ambient to $350^{\circ}$ C Accuracy: $\pm 0.3^{\circ}$ C Power : 220 V 50 Hz Microprocessor based controller Memory stores at least 2 readings even after failure of electricity Special illumination & lens for viewing of melting point USB Printer port	25 Nos.
34	<b>Digital Multimeter 6 ½ Digit</b> Display: Vacuum Fluorescent Display (VFD) Measurement Capabilities: DCV/ACV, DCI/ACI, W2W/W4W, Frequency/Period, Diode Test/Continuity, dB/dBm True-rms AC Voltage and Current Measurement, up to 300KHz DCV Measurement Accuracy up to 0.01% / 0.0045%, Built-in mX+b, %, dB, dBm Mathematics Calculation Function, MAX / MIN / AVER / STD Statistics DC Voltage: Range – 100mV ~ 1000V; Resolution – 0.1 $\mu$ V DC Current: Range: 10mA ~ 3A; Resolution – 10nA AC Voltage: Range – 100mV ~ 750 V; Resolution – 0.1 $\mu$ V AC Current: Range – 1A ~ 3A; Resolution - 1 $\mu$ A Resistance: Range: 300 $\Omega$ to 30M $\Omega$ Frequency: 5Hz ~ 1.1MHz Maximum reading: 119,999,9 (fast) Power supply: 220V $\pm$ 10, 50 Hz With Test leads (1 pair Black and Red), Power cord, user manual, terminal Kelvin clips (4 nos.), SMD component clip, USB cable	16 Nos.

## NO. 1(PEQ)/435/10-11/PUR

35	<b>Digital pH meter</b> Range 0 to 14.00 pH Resolution 0.01 pH Accuracy $\pm 0.01$ pH Display: Digital Power: 220V $\pm 10\%$ AC, 50Hz With Combination pH Electrode, Buffer Tablets, Operation Manual, Electrode Stand	17 Nos.
36	<b>Digital Planimeter</b> Roller type with computing function and AC Adapter Resolution 0.015sq in/0.1 sq cm Digital Display, 8 digit figures, 10 symbols (Batt E, SCALE, MEMO, HOLD, cm <sup>2</sup> , m <sup>2</sup> , km <sup>2</sup> , in <sup>2</sup> , ft <sup>2</sup> , acre.) Converting Function: Unit and scale value Accumulated Measuring value: Maximum 10m <sup>2</sup> (scale 1:1) Measuring Range <ul style="list-style-type: none"> <li>• Maximum vertical width: more than 30cm</li> <li>• Horizontal roller rotant length: 300cm</li> </ul> Accuracy : $\pm 0.2\%$ ; Built in rechargeable batteries back up 30 hrs	10 Nos.
37	<b>Digital SLR Camera</b> Type: Digital, single-lens reflex Effective Pixels: Approx. 15 megapixels Zoom Lens: 18-60 MM F 3.5 – 5.5 (approx) Image type: JPEG, RAW White Balance: Auto, daylight, shade, cloudy, light, flash, custom Viewfinder: Coverage 95%, Eyepoint: Approx. 19mm, Autofocus Electronically-controlled Shutter, Dust deletion feature Built in Flash; Still and movie shooting Display: LCD Interface: Hi-Speed USB, audio / video output Rechargeable Lithium Ion battery with adapter	1 No.
38	<b>DIGITAL STORAGE OSCILLOSCOPE</b> Bandwidth: 200MHz approx Number of Channel: Dual Memory: 4K/ channel Input Coupling: DC, AC, GND Input Impedance: 1M ohms Trigger Type: Edge, TV, Pulse Time base Range: 1ns/div - 50s/div Storage: 10 Waveforms, 10 setups Interface: USB, RS232 Digital Display; Power: 220V 50Hz	2 Nos.
39	<b>Digital Theodolite</b> Objective aperture: 45mm or better Telescope magnification: 30x or higher Minimum focus: 0.8 to 0.9m from telescope center Angle accuracy: 2" or better Display resolutions: 1" or better Control panel: Both faces Sensitivity of levels: 25" or better Dual-axis compensator: $\pm 3'$ ( $\pm 55$ mg) Interface: Computer interface Batteries: alkaline with approx. 75 hours continuous operation With stand and Compactable Laptop Computer and software for analysis	2 Nos.

## NO. 1(PEQ)/435/10-11/PUR

40	<b>Digital Video Camera</b> Optical Zoom: 20x or better Lens Carl Zeiss type or equivalent Display: LCD Touch Screen Internal Storage: 120GB Hard Disk Drive Video Codec: MPEG-AVC-PS; Audio Format: Dolby Digital Rechargeable Lithium Ion battery (more than 4 Hour back up) with adapter Face Detection, Smile Shutter, Autofocus, HDMI and USB Terminal	2 Nos.
41	<b>Diode Laser</b> Metallic case Laser diode with collimating optics with anti-reflection coating Automatic Power Controller Laser module: 25mm diameter, 50mm length Wavelength: 530 nm approx Optical Power: 10 mW approx Operating Voltage: 3 V approx Spot Runs Range: 500 m for Spot Size: < 6.5 mm Life: minimum 3000 hrs Beam Divergence: Parallel (80 <sup>0</sup> ), Perpendicular (330 <sup>0</sup> )	2 Nos.
42	<b>Dissolved oxygen meter</b> Range Dissolved Oxygen 0.0 to 20.0 mg/L; 0.0 to 100% saturation Temperature 0.0 to 50.0°C Resolution: DO 0.1 mg/L; 0.1 % saturation, Temperature 0.1 °C Temp compensation automatic; Data storage facility, Water-resistant design	11 Nos.
43	<b>Double Door Refrigerator</b> Cap: 240 ltr or higher , Frost free, CFC Free With suitable Automatic Voltage stabilizer with high and low voltage cutoff, Step up and step down facility	29 Nos.
44	<b>e/m apparatus bar Magnet Method (Thomson's method)</b> Cathode Ray Tube: Cathode : Unipotential oxide, . Heater Voltage : 6.3 Volts AC or DC, Focusing and Deflection Method : Electrostatic, Phosphor Fluorescence High Voltage Power supply for C.R.T. and D.C. Volts for deflection of Electron Beam. Voltmeter to Read Voltage, Wooden stands (3 Nos.), Magnetometer, Bar Magnets and Centimeter Scale	21 Nos.
45	<b>ECG Machine</b> <ul style="list-style-type: none"> <li>• Simultaneous 12 lead ECG acquisition or better</li> <li>• Real time display of ECG waveforms with signal quality indication for each lead</li> <li>• Display Channels : 3, 6, 6+6;</li> <li>• Display: LCD/TFT Display of 640x480 pixel or higher resolution</li> <li>• Printout format: Automatic mode and Manual mode</li> <li>• Storage memory: ≥ 50 ECGs with easy transfer by optional modem and data card</li> <li>• Interpretation facility of the amplitudes, durations and morphologies of ECG waveforms and associated rhythm</li> <li>• Alphanumeric Keypad</li> <li>• Battery capacity of at least 30 ECGs or 30 minutes of continuous rhythm recording on single charge</li> <li>• USB Support</li> </ul> Accessories: <ul style="list-style-type: none"> <li>• ECG Machine 12 Leads with Interpretation, Patient Cable, Chest Electrodes (set of six), Limb Electrodes(set of four) with Thermal Paper minimum for 100 reading.</li> <li>• Power: 220-240VAC, 50Hz</li> <li>• Should be FDA, CE, UL or BIS approved product</li> </ul>	1 No.

## NO. 1(PAQ)/435/10-11/PUR

46	<b>EGG INCUBATOR</b> <ul style="list-style-type: none"> <li>• Microprocessor Based, PID Digital Temperature Indicator-cum-controller</li> <li>• Double walled with outer chamber made of M.S. Sheet epoxy powder coated and Inner chamber made up of SS - 304 grade steel</li> <li>• High grade glass wool insulation</li> <li>• Capacity: 50 eggs</li> <li>• Temperature range: ambient to 70°C , accuracy of <math>\pm 0.5^{\circ}\text{C}</math></li> <li>• Humidity Controller</li> <li>• Manual tilting device, Incubator door with glass window</li> <li>• Air ventilation, air circulation</li> <li>• Power: 220 volts A.C., 50 Hz</li> <li>• Door gasket: Neoprene rubber</li> </ul>	7 Nos.
47	<b>Electronic balance</b> Digital display. Vibration adapter Chemical resistance housing Capacity 300g or above Readability 0.001 g Repeatability 0.001 g Linearity $\pm 0.002\text{g}$ Stabilization time $\leq 3 \text{ sec.}$ Calibration: Automatic Should comply with ISO/GLP with auto validation and compatible to printer	41 Nos.
48	<b>Flame photometer</b> Microprocessor based, single channel, with Na and K filter and air compressor Simultaneous analysis of Na, K, Li, Ca and Ba sample Automatic ignition, Automatic gas shut off in case of a power failure, LPG & Oil-free dry air RANGE (Approx): Sodium (Na) : 1-100 ppm; Potassium (K) : 1-100 ppm; Lithium (Li) :1-100 ppm; Calcium (Ca) : 15-100 ppm; Barium (Ba) : 50-1000 ppm LINEARITY: 2% or better DETECTOR: Photodiode; Printer interface, data storage facility	12 Nos.
49	<b>Fume Exhaust Hood</b> Size: 4 x 2 x 2 ft approx; Design Structure: Aerodynamic, Floor mounted Preferable Design Basis: As per EUROPEAN NORMS EN 14175 or ASHRAE 110/1995. Airflow Type: Auto Bypass Type Construction (Exterior): Powder coated durable, heavy duty CRCA sheets Construction (Interior): Chemical & Heat Resistant, Fire Retardant, Smooth Finish Front side: Sliding door toughed glass Worktop: Chemical resistant, high scratch and wear resistant granite of minimum 18 mm thickness. Splash and spillage proof with Sink, Water tap and drain arrangement Baffle arrangement: minimum 300mm above the work-table Lighting: Fluorescent light with vapour-proof fitting Power sockets, inlet nozzles, flow control valve, leveling screws Under-bench storage shelves with doors Air balancing 100% exhaust Face velocity of 80 to 120 ft/min. as per ANSI at safe working height Exhaust Blower: 1400 CFM or more, driven by motor of reputed make (CROMPTON / KIRLOSKER Type)	4 Nos.

## NO. 1(PEQ)/435/10-11/PUR

50	<b>Function generator (2 MHz)</b> Frequency Range: 0.01Hz to 2MHz in 8 decade ranges. Frequency Indication: $\pm 1\% \pm 1$ digit. Output Waveforms: Sinusoidal, Triangle, Square, Ramp, Pulse, TTL (Sync) & Maximum Output Voltage Into 50 ohm : 10 V p-p Open Circuit: 20V p-p output. Amplitude Indication: Digital display (Vp-p) $\pm 5\%$ .; Two step attenuators of 20dB & 40dB.	22 Nos.
51	<b>Function generator (20 MHz)</b> Frequency Range: 0.002Hz to 20MHz Operational Modes: Continuous, Triggered or Gated. Output Waveform: Sine, Square, Triangle and Sweep, Pulse, CMOS, TTL, FSK, AM, FM. VCG-Voltage / Impedance: Up to 100:1 frequency / 2K ohms approx TRIGGER AND GATE: Approx. (-) $90^\circ$ to + $90^\circ$ Adjustable FREQUENCY PRECISION: up to $\pm 5\%$ of full range AMPLITUDE PRECISION: $\pm 0.1$ dB to $\pm 3.0$ dB in 3 overlapping steps PULSE GENERATOR Pulse Output : Variable amplitude pulse and simultaneous fixed amplitude (TTL, TTL, ECL, ECL pulses and TTL sync pulse). Power: 220V, 50Hz	9 Nos.
52	<b>Geiger-Mueller counter (Complete System)</b> G.M. Input (From G.M.Counter): Polarity : Negative, Amplitude : 250 mV (min) approx Resolving Time: 6 micro sec (approx) HV Output: Variable HV using ten turn pot up to a maximum of 1500 volts at 1 mA. Line and load regulation better than 0.05%. Ripple less than 20mV. Display: Digital indicating data counts, Elapsed Time and HV Counts Capacity: 99999 counts; Preset time: 0-9999 sec. Data Storage: 1000 readings approx Command Buttons: START, STOP, PROG, STORE, INC & DEC Programmability G.M. Pulse Output PCB Edge Connector G.M. Socket Power: 220 V 50Hz End Window G.M. Detector For Alpha, Beta & Gamma Counting Gas filled: Ne + Hal End Window: mica 2.0 mg/cm sq. density or better Gamma Sensitivity: 18 cps / mR/hr or better Stand for End Window GM Detector Sliding bench Radioactive Source kit (Gamma & Beta Source) Aluminum Absorber Set (with different thickness) Lead / Copper Absorber Set (with different thickness) Data Communication software & printer interface	7 Nos.
53	<b>General Physical Balance</b> Capacity: 250 Gms approx Brass beam; Case: Wooden polished case with divided doors. Sensitivity: 1mg. Knife-edges and Bearings: Agate Pans : stainless steel, diameter $\geq 70$ mm; Grams & Carats- 02 sets	16 Nos.

## NO. 1(PEQ)/435/10-11/PUR

54	<b>Global Positioning System</b> Navigation features: Waypoints/icons: 2000 approx Routes: 200 approx Tracks: 10,000 points, 200 saved tracks (approx) Display type: Digital With Automatic routing, Electronic compass, Built in Memory – more than 800 MB, Preloaded topographic map, Barometer, altimeter, Area calculation Battery life : 16 hrs or more Interface: High speed USB	23 Nos.
55	<b>Goniometer based apparatus for diffraction experiments</b> <b>Complete setup for the following experiments:</b> Diffraction of light by single slit. Diffraction of light by double slit. Diffraction of light by fine wire. Diffraction of light by cross wire. Diffraction of light by wire mesh. Diffraction of light by circular aperture (Pinhole). Diffraction of light by holographic grating. To determine the wavelength of laser light using transmission grating. To determine the number of lines in a transmission grating. To measure prism angles, refraction angle etc Components required: Optical rail Goniometer 1 arc min resolution, precision adjustable slit for Laser beam, rail carriage 10X Telescopic arm Collimator with rail carriage Slit: 525nm pure green High bright LED with variable power supply LED capsule mount with rail carriage Cell mount with rail carriage Diffraction cells Research quality Optics made of N-BK 7 optical glass All components should be made from corrosion free laboratory grade materials.	7 Nos.
56	<b>Heating Mantle</b> Capacity: 3000ml approx Thermal Insulation: Ceramic Fibre or equivalent Energy controller: Built-in power regulator with Ventilation slots Temperature: Up to 250 °C Case construction: Chemical resistant polypropylene housing with SS grounding Power: 220-230 V 50Hz	12 Nos.
57	<b>Helium Neon Lasers</b> Laser tube, a high-voltage power supply, thick Aluminum box powder coated Sealed glass tube containing helium and neon gas Optical power : 2/5/10/12 mW Polarization : Random/Linear Operating wavelength : approx 633 nm (RED) Beam diameter : approx 0.8 mm Beam divergence : ≤1m rad Mode : TEM <sub>00</sub> Output power stability : ± 2.5% approx Power: 220V AC, 50Hz ; Life: Minimum 15,000 Hrs	2 Nos.

## NO. 1(P EQ)/435/10-11/PUR

58	<b>High Precision Weighing Balance</b>  Digital display. Vibration adapter Chemical resistance housing Capacity: 200g or above Readability : 0.0001 g Repeatability: $\pm 0.0001$ g Linearity: $\pm 0.0002$ g Stabilization time: < 3 sec. Calibration: Automatic Should comply with ISO/GLP with auto validation and compatible with printer.	36 Nos.
59	<b>High temperature oil bath</b>  Capacity: 3 ltr or above Operating temp. range: Ambient to 250 °C, Accuracy of $\pm 1.0$ °C Microprocessor based PID Digital temperature controller cum indicator Double walled: Inside stainless steel, outside mild steel (epoxy coated) Stirrer, diffuser shelves, aluminum cover	1 No.
60	<b>Horizontal electrophoresis System (Mini)</b>  Basic Unit (UV-Transmittable Resin) Dimensions (l x b x h) cm: 20x10x10 (approx) Gel Size: 10x7 cm approx No. of Samples 8 Buffer: approx 300 ml. Platinum electrode, assembly removable (2 Nos.), lid (1 No.), Gel running tray 10x7 cm (1 No.), 5x7 cm (2 Nos.), 8 well comb 1.5 mm (2 Nos.), 3 well preparative comb 3.0 mm (1 No.), Gel casting tray, connecting cord (2 Nos.) Cooling Unit, Gel Scoop for 10 x 7 cm Gels - UV Transparent, Spare electrodes 2 nos., Leveling table for gel casting 15 x 15 cm Developing chamber light proof small, and instruction manual Power Unit: With timer and Digital Display Input AC Volt 220V $\pm$ 10, Output DC Volt 0-500 V, Maximum output 0-500mA, Power Outlet: 2 UV Trans-illuminator : For maximum Gel Size (cm) 10x7, No. of Samples: 8 (approx)	12 Nos.
61	<b>Hot Air Oven</b>  Inner Chamber: Stainless steel (SS-304) Size 455mm(W)x 605 mm(H) x 455 mm (D) (approx.) Outer Chamber: Steel with epoxy coated No. of Shelves: 3 (adjustable) stainless steel Timer: 5 to 120 minutes Temperature: Ambient to 250° C $\pm$ 1° C Temperature control Knob: Graduated in centigrade Digital indicator cum controller With Air Circulating Fan Switch to select high or low rates of heating. ON / Off switch with pilot lamp indicator. Operable at 220 V 50 Hz AC	37 Nos.

## NO. 1(PEQ)/435/10-11/PUR

62	<p><b>Hysteresis Loop Tracer with oscilloscope</b></p> <p>For the Study of coercivity, Saturation magnetization, Retentivity, Hysteresis loss of ferromagnetic substance  IC Regulated Power Supply: <math>\pm 12V</math> D.C. at 100mA  A.C. Power Supply: 10 to 120V at 1.5Amp.  Digital display with indicator, Platform with Solenoid, pick up coil on acrylic fixture for appropriate magnetic field of hysteresis loop, Helical potentiometers (2 nos.) for Area Ratio and Demagnetisation.  Band switches for Flux Density (B) and Magnet Field, Amphenol connectors for solenoid and Pick-up-coil, Potentiometers (3 nos.) for continuous phase, H Balance and DC Balance  Three 4 mm terminals for Hysteresis Loop measurements.  Samples of commercial Nickle, Soft Iron and Hard steel.  Power 220V <math>\pm 10\%</math> at 50Hz  Patch cords stackable 4mm spring loaded plug length 0.5 metre, terminal/sockets, operating manual</p> <p><b>Oscilloscope 30MHz, 2 Channel, 4 Trace</b></p> <p>Vertical Deflection  Deflection Coefficient: 1mV/div to 10V/div, 5mV/div to 10V/div in 1-2-5 sequence  Accuracy: x1- <math>\pm 3\%</math>, x5 - <math>\pm 5\%</math>  Variable: 1/2.5 times uncaliberated  Bandwith  x1 – DC to 30 MHz, AC 10 Hz to 30MHz  x5 – DC to 7MHz, AC 10 Hz to 7MHz  Rise time: Approx 10 ns  Display: DUAL (ALT/CHOP), Algebraic, INVT &amp; X-Y  Time Base  Sweep: 20 Calibrated steps, 0.1<math>\mu</math>s/div to 0.2s/div, x5 Magnification, Accuracy: <math>\pm 3\%</math>  TRIGGER SYSTEM: AUTO, NORM, TV-V, TV-H, INT(CH1 or CH2)/CH2/LINE/EXT, Positive or Negative, AC coupling  Component Tester to allows VI characteristics of a Device Under Test  Cathode Ray Tube with 140mm rectangular screen  Power: 220V AC <math>\pm 10\%</math>, 50Hz  With instruction manual</p>	23 Nos.
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## NO. 1(PEQ)/435/10-11/PUR

63	<p><b>Inverted Tissue Culture Trinocular Research Microscope and Image analysis Software &amp; Computer</b>  Trinocular bright field and Phase contrast  Optical system: Universal Infinity-corrected  Focus: Vertical nosepiece movement, coaxial coarse and fine focus with tension adjustment mechanism  Quadruple Revolving nosepiece  Mechanical stage: With XY movement  Illumination system: 6V 30W halogen lamp  Condenser: Detachable ultra-long working distance condenser (N.A. 0.3, W.D. 72mm)  Contrast slider: Pre-centered phase-contrast 4X, 10X/20X/40X empty slot  Observation tube: Inclined Trinocular  Eyepiece: WHB 10X-H (F.N. 20)  Objectives: Bright field: PLCN 4X (NA 0.10, WD 18.5), PLCN 10X (NA 0.25, WD 10.6), LUCPLFLN 20X (NA 0.45, WD 7.0), LUCPLFLN 40X (NA 0.60, WD 3); Phase Contrast: 4x, 10x, 20x and 40x  Terasaki Holder, Petri dish Holder, Slide Glass Holder should be available.  Certification: ISO14001/ FM553994/ MD540624/ cULus/ CE/ RoHS</p> <p><b>Desktop Computer compactable with the above microscope</b>  Processor: i5 or i3, <math>\geq 4</math> MB Cache, <math>\geq 3.2</math> GHz speed.  RAM : <math>\geq 4</math> GB  Chipset : Intel  Max RAM Expandability : Up to 16GB or better  HDD : <math>\geq 320</math> GB  Operating System : Windows 7Home Premium  Monitor : TFT 15"  Input Device : Keyboard and optical mouse  Optical Drive : 16x DVD+/-RW Drive  Software : Microsoft Office (Home &amp; Office) 2010 Licensed version &amp; Antivirus (1 Year License)</p> <p><b>UPS : 1 KVA (Offline)</b></p>	3 Nos.
64	<p><b>JUNCTION DIODE RECTIFIER &amp; FILTER CHARACTERISTICS</b>  Complete setup for the following experiments:  Study of Junction Diode Rectifier output and ripple content for different resistive loads for Half wave, Full wave (Centre Tap), Full wave (Bridge) and Voltage Doubler Circuit  Study of filter and load regulation characteristics for half wave and full wave rectifier having different resistive loads and filters of capacitor filter, Capacitor filter with capacitor value doubled, Inductor filter, Capacitor input L section filter and capacitor input P section filter  Components:  Mains transformer, secondary centre tap 100-0-100V at 100 mA  DC Milliammeter, 65mm rectangular dial to read 0-100 mA  DC Voltmeter, 65mm rectangular dial to read 0-300 V  A.C. Millivoltmeter: 0-300 volts AC covered in 11 ranges  Four Silicon Junction Diodes  Filter choke  Power: 220V 50Hz</p>	4 Nos.

## NO. 1(PEQ)/435/10-11/PUR

65	<p><b>Kjeldahl block digestion systems</b>  Construction material: Epoxy coated stainless steel structure  Number of samples: 6 samples in 300 ml tubes with 42 mm dia  Set temperature and Countdown: visual display, microprocessor based  Power supply: 220 V / 50-60 Hz  Temperature range: from ambient to 400°C or above  Stability of the heating block temperature: <math>\pm 0.5^{\circ}\text{C}</math>  Homogeneity of the heating block temperature: <math>\pm 0.5^{\circ}\text{C}</math>  Precision of the heating block temperature: <math>\pm 0.5^{\circ}\text{C}</math>  Digestion time range: from 11 to 999 minutes or in continuous  Time selection: 1 minute  Digestion tubes and fume hood support system In compliance with GLP, the data referring to the tests being run can be sent to a printer or PC for storage.</p>	2 Nos.
66	<p><b>Kjeldahl Digestion Apparatus</b>  Body: Epoxy-coated stainless steel  Type: Benchtop  Number of samples: Two or more  Sample quantity: 5 grams or above  Inlet and outlet water connections  Temperature range: from ambient to 400°C or above  600-watt heaters with individual control knobs with variable input  Fume manifold fitted with Teflon nipples  With 500 ml Kjeldahl flasks  Compactable with any distillation unit</p>	4 Nos.
67	<p><b>Kjeldahl Distillation Apparatus</b>  Body: Epoxy-coated stainless steel  Type: Benchtop  Number of samples: Two or more  Sample quantity: 5 grams or above  Distillation rate 5 to 20 ml / minute  Temperature range: from ambient to 400°C or above  600-watt heaters with individual control knobs with variable input from 20-100% capacity  Distillation manifold equipped with seamless stainless steel tubes and cooling water temperature gauge and remote control flow valve  Inlet and outlet water connections  connecting bulbs and delivery tubes  With 500 ml Kjeldahl flasks  Compactable with any digestion unit</p>	10 Nos.
68	<p><b>Laminar Air Flow (Horizontal)</b>  Made of IS 304 grade SS  Working Area : 3W x 2D x 2H ft (approx)  Particle Retention : 0.3 Micron &amp; Above  Noise Level : 65 decibel or better  Front door 5 mm (approx) thick Polycarbonate  U V lamp and service fixture kit  Fluorescent tubes (80fc)with diffusers  HEPA Filter:  Media : Ultra clean glass fiber paper; Retention: 0.3 Micron or better  PRE Filter:  Media: Synthetic, non-woven polyester fibers; Retention: 5 Micron &amp; above  Blower Assembly: DIDW type blower system, 1400-RPM (Approx) motor  Operable at 230V/50Hz</p>	20 Nos.

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69	<p><b>LOGIC TRAINING BOARD</b>          Complete setup for the following experiments:          To study OR/NOR, AND/NAND, NOT/BUFFER Function          To study Simple function of several variables.          To study Distributive Law, Commutative Law, Associative Law and De Morgan's Theorem.          Components:          + 5V D.C. at 500mA, IC Regulated Power Supply          3-input NAND gates, NOR gate followed by an inverter (2 nos. each)          NOT gates followed by another NOT gate to give BUFFER outputs (2 nos.)          Switches for logic selection, LEDs for visual indication, Power: 220V 50Hz</p>	20 Nos.
70	<p><b>Magnetic stirrer with Hot Plate</b>          Bodies sturdy, powder coated, aluminum cast construction, chemical resistant non corrosive work surface          Microprocessor based digital indicator cum controller          Capacity: 3 liters or above          Stirrer Speed: up to 1800 RPM          Magnetic Stirrers (3 numbers of different size)          Temperature: Ambient to 250<sup>o</sup>C or above          Memory of last user program</p>	41 Nos.
71	<p><b>Melde's experiment by using electrically maintained tuning fork</b>          Electrically maintained tuning fork          Stand with pulley          Light weight pan          Battery Eliminator :Range 2 to 12V D.C. at 2Amp          Half metre scale          Physical Balance with weight box          Capacity: 250 gm          Resolution: 0.2 m</p>	10 Nos.
72	<p><b>Michelson interferometer</b>          Complete setup for the following experiments:          To set-up Michelson interferometer out of individual components &amp; observe fringes.          Standardization of meter (To find the proportionality constant of the lever system) To measure various electrical or mechanical transducers with 325nm accuracy.          Determination of wavelength of monochromatic light.          Measurement of refractive index of transparent materials.          To find the thickness of transparent materials.          To study the change of refractive index of air with change in pressure and determine the refractive index of air.</p> <p>Components:          Optical breadboard          Diode laser with wavelength of Red and Green with power supply          Kinematic laser mount          Beam splitter with mount          Front coated mirror          Pedestal air pump/ compressor          Mirror mount with precision translation stage          Mirror mount with translation stage          Optics and mechanics should be of research quality, corrosion free materials.</p>	4 Nos.

## NO. 1(PEQ)/435/10-11/PUR

73	<b>Micro Centrifuge</b> Maximum Speed: Approx 14,000 RPM adjustable Maximum Capacity: Approx 15 x 1.5/2.0 mL Temperature Range: (-)5 °C to 40 °C (non-condensing) Run Time: 0 - 30 min., Continuous Run or Pulse Mode Drive Maintenance-free brushless induction Accel/Decel Rates: $\leq$ 18 sec. accel / 19 sec. decel (approx) Less Noise Level Display: Digital Certifications: CSA and CE	9 Nos.												
74	<b>Micro pipette (Set)</b> Consisting of 0.5 - 5, 5 - 50, 10 - 100 and 100 - 1000 micro liter capacity With respective microtips 100 nos. each Super blowout for low volume pipettes Fully autoclavable Advance Volume Gearing (AVG) system. Double Action pipetting hat with rotating upper head. Fine adjustment ruler	25 Nos.												
75	<b>Microprocessor based pH meter</b> Programmable, Memory back-up, calibration up to 3 Points Measure pH, EMF, Temperature with Printer Interface <table border="1" data-bbox="298 909 1122 1010"> <thead> <tr> <th></th> <th>pH</th> <th>EMF in mV</th> <th>Temp. in °C</th> </tr> </thead> <tbody> <tr> <td>Range (Approx)</td> <td>0 to 14</td> <td><math>\pm</math> 2000.0</td> <td>0 to 100</td> </tr> <tr> <td>Accuracy</td> <td><math>\pm</math> 0.001</td> <td><math>\pm</math> 0.1</td> <td><math>\pm</math> 0.2</td> </tr> </tbody> </table> Temperature compensation: 0 to 100°C Auto / Manual Readability: $\pm$ 0.1 count		pH	EMF in mV	Temp. in °C	Range (Approx)	0 to 14	$\pm$ 2000.0	0 to 100	Accuracy	$\pm$ 0.001	$\pm$ 0.1	$\pm$ 0.2	30 Nos.
	pH	EMF in mV	Temp. in °C											
Range (Approx)	0 to 14	$\pm$ 2000.0	0 to 100											
Accuracy	$\pm$ 0.001	$\pm$ 0.1	$\pm$ 0.2											
76	<b>Microscope with Pointer</b> Magnification: 100x - 1000x complete with: Pointer H-5X eye Pieces Hard anti-reflection coated colour coded Parfocal Achromatic objectives 10x, 40x & 100x (spring, oil imm.) Attachable graduated mechanical stage with convenient adjustment for manipulation of slides & plano-concave mirror in adjustable fork mount Sub-stage Abbe Condenser (N.A. 1.25) fitted with an iris diaphragm & blue filter Certification: ISO14001/ FM553994/ MD540624/ cULus/ CE/ RoHS	5 Nos.												
77	<b>Microwave Oven</b> Capacity 35Ltr or above Cavity Type: Ceramic Enamel or equivalent Type of Wave: 3-D Shower Wave LED Display	10 Nos.												
78	<b>Mini Gel Documentation System</b> Lens: 0.95F 25mm or better Gel size: 15 x 12 cm (approx) Imaging Technology: CMOS Electronic shutter: approx 2 - 140 Milliseconds Gamma: Linear and non-linear ADC: Normal and invert Spectral range: 400 – 1000 nm, double slope With PC interface card and software for acquisition and analysis	2 Nos.												

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79	<p><b>Monochromator</b>  Design: Czerny-Turner (multiport)  Grating Size 1200 line/mm (approx)  Focal Length of Collimating and focusing mirror: 250 mm approx  Wavelength Range: 180 to 24000 nm (approx)  Type Automated dual-grating versions, four ports: two inputs and two outputs  Four different input/output geometries: 180° Straight Line , 90° Right Angle, 90° Left Angle - with folding mirror on the entrance side and 360° – with no folding mirrors.  Features Nitrogen Purge (optional feature), Fiber Optic  Wavelength Resolution: 0.1500 nm  Reciprocal Linear Dispersion: 4.00 nm/mm  Interface: IEEE-488 &amp; RS-233 for computer and printer  With CCD and operational and analysis software</p>	1 No.
80	<p><b>Monocular Microscope</b>  Magnification: 100X – 1500X  Eyepieces 10x and 15x (huygenian)  Objectives: 10x, 40x Spring, 100x Spring/oil immersion hard anti-reflection coated colour coded Parfocal in quadruple nosepiece  Stage: Plain Stage plus mechanical slide holder with Stage movement XY direction  Condenser: Abbe 1.25 NA with iris diaphragm&amp; plano-concave mirror in adjustable fork mount  Certification: ISO14001/ FM553994/ MD540624/ cULus/ CE/ RoHS</p>	290Nos.
81	<p><b>MUFFLE FURNACE</b>  Outer casting made of double walled thick PCRC sheet with thick perforated sheet on the bottom portion, powder coated with stove enamel.  Ceramic fibre wool insulation, Heating elements (KANTHAL - A1 wire coil), high grade refractory cement backed AT high temperature  Safety thermal fuse, Viewing cap on the door. Microprocessor based digital PID temperature indicator cum controller up to 1200°C with two indicator lamps, One thermocouple, silver thermal fuse, power 220/230 V AC  Size: 100 x 100 x 225 approx  Rating: 1.5 K.W.  Working Temperature : up to 1000° C</p>	11 Nos.
82	<p><b>Newton's Rings Apparatus</b>  <b>Complete setup for the following experiments:</b></p> <ul style="list-style-type: none"> <li>• To determine the wavelength of monochromatic source.</li> <li>• To determine the radius of curvature of plano convex lens by measuring the size of Newton's rings and analyzing the result.</li> <li>• To find the refractive index of a liquid by measuring size of the newton's ring and analyzing results</li> <li>• Compare the two methods for measuring radius of curvature described above and decide which is better.</li> </ul> <p><b>Components required:</b></p> <ul style="list-style-type: none"> <li>• Diode laser with suitable filter for wavelength of 650nm (Red) or 532nm (Green) as light source and power supply</li> <li>• Kinematic laser mount</li> <li>• Optical rail</li> <li>• Microscope with two axis micrometer &amp; rail carriage</li> <li>• Lens set</li> <li>• Optical flat</li> </ul> <p>All materials should be corrosion resistance and high grade  Research quality Optics made of N-BK 7 optical glass</p>	23 Nos.

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83	<p><b>OP-AMP</b>  Complete setup for the following experiments:  Measurement of quiescent supply current of OP-AMP, open loop voltage gain under closed loop condition, output resistance, differential input resistance, unity gain bandwidth, rated output, slewing rate, full power response, input offset voltage, input bias currents and offset current, common mode rejection ratio, common mode input resistance  To null the offset voltage of an OP-AMP  Components:  ± 12V D.C. at 100mA, IC regulated Power Supply.  OP-AMP IC-741, DPM 20 V, 20 mA  Power: 220V 50Hz</p>	8 Nos.
84	<p><b>Oscilloscope 30MHz, 2 Channel, 4 Trace</b>  Vertical Deflection  Deflection Coefficient: 1mV/div to 10V/div, 5mV/div to 10V/div in 1-2-5 sequence  Accuracy: x1- ±3%, x5 - ±5%  Variable: 1/2.5 times uncalibrated  Bandwith  x1 – DC to 30 MHz, AC 10 Hz to 30MHz  x5 – DC to 7MHz, AC 10 Hz to 7MHz  Rise time: Approx 10 ns  Display: DUAL (ALT/CHOP), Algebraic, INVT &amp; X-Y  Time Base  Sweep: 20 Calibrated steps, 0.1µs/div to 0.2s/div, x5 Magnification, Accuracy: ±3%  TRIGGER SYSTEM: AUTO, NORM,TV-V, TV-H, INT(CH1 or CH2)/CH2/LINE/EXT, Positive or Negative, AC coupling  Component Tester to allows VI characteristics of a Device Under Test  Cathode Ray Tube with 140mm rectangular screen  Power: 220V AC ±10%, 50Hz  With instruction manual</p>	30 Nos.
85	<p><b>Over Head Projector</b>  Projector Over Head: Folding transmission type  Brightness : Min. 2000 lumens or higher  Lamp power: 24 V /250 W halogen long life, Dual lamp provision  Transparency size: 30X30cm approx  Projection lens: Single element type or higher, F-254mm or better  Condenser System: Fresnel lens (standard) or equivalent  Reflector: Metal reflector  Stage Aperture, Focusing: Metal, Rack &amp; Pinion, Cooling System  Projection distance: Effective 1 to 3 meters approx  Lamp safety regulator: Knob for variable intensity control  Power : 220-230VAC, 50Hz  With Projection screen: 150 x 150 cm or above and stand</p>	17 Nos.
86	<p><b>PARAFFIN EMBEDDING BATH</b>  Double walled, Stainless Steel (SS 304), Outer Coated with epoxy powder with Special grade glass wool insulation  Drying chamber at the bottom, Cups with nickel plated with polished handle  6 Copper Cups ,1 large and 8 tubes  Capacity 6 Ltrs or above  Temperature: Ambient to 60°C ± 2°C  Temperature control by a Hydraulic type thermostat  Power: 220V/ 50Hz</p>	8 Nos.

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87	<p><b>PARAFFIN EMBEDDING BATH WITH VACUUM PUMP</b>  Paraffin Embedding Bath  Double walled, Stainless Steel (SS 304), Outer Coated with epoxy powder with Special grade glass wool insulation  Drying chamber at the bottom of the cups and tube, Cups with nickel plated with polished handle  6 Copper Cups including 1 large and 8 tubes  Capacity: 6 Ltrs or above  Temperature: Ambient to 60°C ± 2°C  Temperature control by a Hydraulic type thermostat  Power: 220V/ 50Hz  Vacuum Pump (Compactable with the Paraffin Embedded Bath)  High rotational speed  Inbuilt cooling for Pump's motor, with anti-suck back arrangement and thermal overload safety device  Power 220 V 50 Hz  STAGE: DOUBLE  Air Displacement: 50 ltrs/min approx  Motor Capacity: 0.5 H.P.; Ultimate Vacuum: 0.001 mbar approx  Accessories: Digital Vacuum indicator with transducer and Air filter at exhaust.</p>	1 No.
88	<p><b>Photoelectric colorimeter</b>  Lamp life: approx. 10,000 hours  Power: 220V AC  Filter: Optical filter (420nm,470nm,530nm,620nm,660nm) 5pc or above  Photometric Range: 0-110%T; Absorbance: 0-1.999Abs  Display: Digital  with Square and Round cuvette; Analog output cable, Power cord and Operation manual</p>	24 Nos.
89	<p><b>Pipette Controllers</b>  Display: Digital  Volume range: 1 to 100 mL approx  Quick and quiet pump fill, Autoclavable  Speed: continuous, adjustable speed  Filter: 0.45 µm approx  Power: rechargeable battery (Li) with adaptor  UV-resistant plastic housing</p>	2 Nos.
90	<p><b>Planck's Constant Apparatus</b>  Complete setup for the following experiments:  Determination of Planck's Constant and Work Function of Materials by Photoelectric Effect  Photo Sensitive Device: Vacuum photo tube.  Light source : Halogen tungsten lamp 12V/35W.  Colour Filters : 635nm, 570nm, 540nm, 500nm &amp; 460nm.  Accelerating Voltage : Regulated Voltage Power Supply  Output: ±15V continuously variable through multi-turn pot; Accuracy: ±0.2%  Display: Digital  Current Detecting Unit: Digital Nanoammeter of high stability low current measuring instrument.  Range: 1000 mA, 100 mA, 10 mA &amp; 1mA with 100 % over ranging facility  Resolution: 1nA at 1mA range; Accuracy: ±0.2%  Display: Digital  Power Requirement: 220V ± 10%, 50Hz.  Optical Bench: Scale length 400mm.  A tube should be provided to install colour filter and a focus lens</p>	27 Nos.

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91	<b>Platinum resistance thermometer</b> Made of either borosilicate glass (Pyrex) or fused silica glass (quartz) of approx 2 cm diameter, High Purity platinum wire, 25 to 100W Temperature range: 30°C to 350°C or better Calibration 0.1°C standardized, Resistance approximately 2.5 ohms	6 Nos.
92	<b>Polarimeter Half Shade (Student Type)</b> Shadow System: Half Scale Range: 0-360° Angular, Graduation Vernier: 0.5° Angular Scale Range: 0-30° ISS, Graduation Vernier: 0.1° ISS Resolution 0.1° , Light Sources Sodium Lamp, Sample Cell length 200 mm Power 220 volt AC, 50Hz	31Nos.
93	<b>Precision rotary microtome (Spencer Type)</b> Front locator feed indicator with CAM DRIVE SYSTEM Feed setting: 1 – 50 microns in steps of 1micron each Automatic safety device Ball and flange type object holder Cutting angle 30 degrees (adjustable) With knife of special alloy steel 120 mm long, Object clamp, block holders, honing stone, lubrication oil	26 Nos.
94	<b>Projection Microscope</b> Eyepiece: Strain Free Plan Achromatic Anti Microbial treated, 10 X Objective : Strain Free Plan Achromatic Anti Microbial treated, 10X, 40X (spring loaded) and 100X (spring loaded) Condenser: High quality powerful Strain Free, Anti Microbial treated glass condenser Nose piece: Triple revolving nose piece. Mechanical Stage, Lamp Assembly Head/Screen: Grain less Optical true approx 150 mm outer circular dome, 360° rotatable Stand: Rigid, body fixed	4 Nos.
95	<b>Refrigerated High Speed Centrifuge</b> Speed : 0 – 20,000 RPM (approx) Capacity: 100ml (approx) with multiple tubes Cooling: CFC free, temperature range: -20 to +40°C Maintenance free brushless drive motor, pre-selection of run parameter like RPM, Run Time, Motorized lid locks, imbalance identification and auto cut-off LCD display of speed & time 1-99 minutes digital timer Power Supply: 220 V 50 Hz AC Rotor: Angular rotor with standard tubes Essential accessories: Angle rotor for maximum capacity: (a) 15ml, (b)60ml, (c) 100ml (approx) with suitable tubes and adaptors – 1 set of each of the capacity  <b>Power Stabilizer</b> With suitable Automatic Voltage stabilizer with high and low voltage cutoff, Step up and step down facility	11 Nos.

## NO. 1(P EQ)/435/10-11/PUR

96	<p><b>Rotary evaporator with Vacuum Pump</b>  <b>Rotary evaporator</b>  Rotation speed: 20-280 rpm approx  Flask size: 50–2000 ml  Temperature range: 20-180°C (approx) Accuracy: <math>\pm 2^{\circ}\text{C}</math>, controllable and digital display  Heating bath: Corrosion resistance high grade stainless steel pan  Glass assembly:  Vertical condenser of schott borosilicate glass, approx 1500cm<sup>2</sup> cooling surface area, inclusive of 1 ltr evaporation flask and 1 ltr receiving flask.  Sealing system, vapour duct, vacuum gasket, clip for easy fixing and removal of vapour duct, set adapter seal complete  <b>Accessories:</b></p> <ol style="list-style-type: none"> <li>1. Seal KD34 (4 Nos. per unit): 16 Nos.</li> <li>2. Vapour duct: 04 nos.</li> <li>3. Adapter Seal: 04 nos.</li> <li>4. Stop Cock: 04 nos.</li> <li>5. Vacuum hose 16/6mm: 04 nos.</li> <li>6. Hose, Silicone 9/6: 04 nos.</li> </ol> <p><b>Vacuum Pump with Manometer with needle valve:</b>  PTFE diaphragm pump with final vacuum <math>\leq 10\text{m bar}</math>;  Volume flow rate 1.8 m<sup>3</sup>/hr approx  2/2 vacuum connection  Operating voltage: 230V/50Hz  Rotational speed: 1500 rpm approx  Less Noise level  Pump motor: VDC motor brushless</p>	9 Nos.
97	<p><b>ROTARY FLASK SHAKER</b>  For Flasks size: 25ml to 1000ml  Compact bench type  With heavy duty motor of variable speed and speed regulator knob, RPM meter, digital timer.  Body made of 304 SS and platform fitted with adjustable rubber disc / SS clamps (lotus type)  Platform size 45cm x 45cm (approx)  Capacity (number of flasks): 25ml (36) to 1000ml (4) (approx)  CE, ISO &amp; GMP CERTIFIED</p>	12 Nos.
98	<p><b>Shaker Incubator</b>  Motion: Dual Action Orbital  Speed: 30-250 rpm (approx)  Platform Size 16 x 16 inch (approx)  Temperature Range: ambient to 65°C <math>\pm 0.5^{\circ}\text{C}</math>  Digital PID Control  Forced air circulation  Flask size: 50 ml, 100 ml, 250 ml, 500 ml  Power: 220V, 50Hz</p>	4 Nos.
99	<p><b>Sodium vapor lamp (Low pressure)</b>  35/40W, 220V  with power supply  metal box  stand and variable slit width</p>	5 Nos.

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100	<b>Soxhlet extraction system</b> Capacity: 5 ltr approx; Flask size: 5 ltr approx Complete with Allihn Condenser, Interchangeable Joint, Made of Borosilicate Glass	4 Nos.
101	<b>Spectrometer</b> 6" diameter circle reading 30 seconds Rack and pinion focusing arrangement Telescope arm and prism table Vernier scale 10 inch reading up to 1 min, stainless steel high grade Prism, Spirit Level, Reading lens	25Nos.
102	<b>Spirometer with oximetry option</b> FVC, VC with breathing pattern plus MVV tests with real time curves Inbuilt thermal printer, Digital turbine flow meter bi-directional Reusable turbine, High accuracy, Long term stability, Easy to clean or sterilize Rechargeable battery plus mains power, Semiconductor temperature sensor (0-45° C) <b>Parameters:</b> FVC, FEV1, FEV1/FVC%, FEV6, FEV1/FEV6%, PEF, FEF25%, FEF50%, FEF75%, FEF25-75%, FET, Vext, FIVC, FIV1, FIV1/FIVC%, PIF, VC, IVC, IC, ERV, FEV1/VC%, VT, VE, Rf, ti, te, ti/t-tot, VT/ti, MVV Flow range: ± 16 Ls Volume accuracy: ± 3% or 50 mL or better Flow accuracy: ± 5% or 200 mL/s or better Dynamic resistance: <0.5 cmH <sub>2</sub> O/L/s or better Display: Graphical, Mouthpieces: 30 mm external diameter Upgradeable software for connecting to PC. Connectivity: USB, Bluetooth and RS232 ISO, FDA, ATS standards <b>Oximeter</b> SpO <sub>2</sub> range:0-99% SpO <sub>2</sub> accuracy: ± 2% or better between 70-99% SpO <sub>2</sub> Pulse Rate range: 30-250 BPM (approx) Pulse Rate accuracy: ± 2 BPM or 2% or better	1 No.
103	<b>STEFAN'S CONSTANT</b> Complete setup for the following experiment: To measure Stefan's constant by the black copper radiation plates. Components: Two black copper radiation plates with heater element in between. Three thermometers Built in power supply AC Voltmeter AC Ammeter Heating element should transfer entire heat energy to the discs without loss	11Nos.
104	<b>Stereo Dissecting Microscope</b> Magnification range: 0.8x - 4x Zoom ratio: 5:1, FN 22 (approx), integrated binocular tube, working distance > 100mm, with adjustable upper and lower limit zoom stopper Eyepiece : SWF 10x (Antifungal treated Wide field Eyepieces) Objective: 2X (Auxiliary lens, NA 0.038-0.134, WD=38) (approx)/ 4X (Auxiliary lens, NA 0.008-0.027, WD=180-250) (approx) with a smooth magnification changer. Illumination: Halogen lamp 6V 10W/ 12 V 22W adjustable brightness Bottom fluorescent lamp Reflected 6V 10W / 12 V 22W. The Microscope should be upgradeable to Image Projection System. Certification: ISO14001/ FM553994/ MD540624/ cULus/ CE/ RoHS	7 No.

## NO. 1(P EQ)/435/10-11/PUR

105	<p><b>STUDY OF P-N JUNCTION</b></p> <p>Complete setup for the following experiments:</p> <ol style="list-style-type: none"> <li>1. Determination of reverse saturation current <math>I</math> and material constant <math>h</math></li> <li>2. Determination of Temperature Co-efficient of Junction voltage and Energy band-gap.</li> <li>3. Study of depletion capacitance and its variation with reverse bias.</li> </ol> <p>Components:</p> <p>3½ digit DPM for current / Temperature measurements.</p> <p>3½ digit DPM bias voltage / junction voltage measurement.</p> <p>Two fixed frequency oscillators (5KHz &amp; 20KHz) with the same output (200mV)</p> <p>Two parts to connect the diode – one for experiment 1 &amp; 2 and other for experiment-3.</p> <p>Fast temperature controlled oven with sensor</p> <p>Samples : Transistor BC-109 (Base-Emitter) – Si, Transistor AC-126 (Base-Emitter) – Ge, Diode IN-5408 – Si</p>	8 Nos.
106	<p><b>STUDY OF RESONANCE IN LCR CIRCUIT AND DAMPING EFFECT</b></p> <p>Complete setup for the following experiments:</p> <p>To plot the series resonance curve in LCR circuit (air core inductance, two decade condensers and circuit resistance) at fixed frequency by varying condenser (C). Observe damping by a metal (ferromagnetic) plate along with air core Inductance, find out new resonance curve by varying condenser (C)</p> <p>To plot the series resonance curve in LCR circuit by varying frequency. Observe damping by a metal plate along with air core Inductance, find out new resonance curve by varying frequency (f).</p> <p>To plot the parallel resonance curve in LCR circuit (air core Inductance, two decade condensers and circuit resistance) at fixed frequency by varying condenser (C). Observe damping by a metal (ferromagnetic) plate along with air core Inductance, find out new resonance curve by varying condenser (C).</p> <p>To plot the parallel resonance curve in LCR circuit by varying frequency. Observe damping by a metal plate along with air core Inductance, find out new resonance curve by varying frequency (f).</p> <p>To plot the series resonance curve in LCR circuit by varying frequency. Observe damping effect by using resistances.</p> <p>Components:</p> <p>Board with two decades in steps of 10pF &amp; 100pF total steps are 20 and total capacitance is 1100 pF.</p> <p>Audio frequency milliammeter having three steps of 1mA, 2mA and 5mA.</p> <p>Four resistances are provided for observing damping effect by resistances.</p> <p>Heavy duty air core inductance coil of 6" diameter with metal (ferromagnetic) plate</p> <p>With patch cords stackable 4mm spring loaded plug length ½ metre</p> <p>Accessories</p> <p>Audio Frequency Generator</p> <p>Frequency Range: 1 Hz to 110 KHz in decade steps.</p> <p>Frequency Accuracy: <math>\pm 1.5\%</math> or 2 cycles whichever is greater.</p> <p>Output Waveform: Sinusoidal.</p> <p>Power: 220V 50 Hz</p>	10 Nos.

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107	<p><b>Susceptibility Of Paramagnetic Solution By Quincke's Method</b></p> <p>Complete setup for the following experiment: Measurement of magnetic susceptibility of paramagnetic solution by Quincke's method. To find the ionic molecular susceptibility of the ion and magnetic moment of the ion in terms of Bohr magnetron.</p> <p>Components: Electromagnet: 'U' shaped soft iron yoke. Field intensity: 7.5 KG at 10mm air-gap which flat pole pieces Pole pieces : 50mm diameter approx Energising coils: 3.0 ohm resistance (Two Nos.) Constant current power supply:Current range: 0 - 4 Amp, LED Display Digital gauss meter with hall probe Range: 0.2KG &amp; 0-20KG, Accuracy : <math>\pm 0.5\%</math>. Travelling microscope Quincke's tube with stand Sample: <math>\text{FeCl}_3</math> Hall probe wooden stand and Plastic Box</p>	1No.
108	<p><b>Telescope (Higher End)</b></p> <p>Optical Design: Schmidt-Cassegrain Catadioptric Aperture: 260 to 280 mm (approx) Focal Length: 2600 to 2800 mm (approx) Primary Mirror: Fine Annealed Pyrex, Starbright Coatings Central Obstruction: 3.3 to 3.8 inch (approx) Corrector Plate: Crown Glass, A-R Coated Finderscope: 8 X 50 x (approx) Highest Useful Magnification: 600 to 670x (approx) Magnification: Standard Eyepiece: 50-70 x (approx) Light Gathering Power: 1100x and above Linear Field of View: 35 to 40ft Optical Tube Length: 22 inch <math>\pm 1</math> Power: 12 VDC (rechargeable battery with car battery adaptor) GPS: Approx 16 channel DC Servo motors with encoders, slew speeds, computerized hand control Operation Software with 35,000 + object database and suitable port</p>	11Nos.
109	<p><b>Thermo Hygrograph</b></p> <p>Temperature: (-)5 to 45°C <math>\pm 1^\circ \text{C}</math> Humidity: 0 -100% <math>\pm 5\%</math> Record Time: 7 Days <math>\pm 30</math> mm, 1 Days <math>\pm 5</math> min. Reaction Sensor: Bimetallic Coil, De-fatted Hair and Quartz Clock With Graph Papers (Weekly Chart), Graph Papers (Daily Chart) : For one year and user manual</p>	1No.
110	<p><b>To Determine The Mutual Inductances Of Two Coils</b></p> <p>Mutually coupled coils (S, P): 01 Number Ballistic Galvanometer: 01 number Low resistance (<math>r = 0.1</math> Ohm to 0.01 Ohm) Resistance Box (<math>R_1</math> and <math>R_2</math>) : 2 Numbers Plug type commutator: 02 Numbers Storage battery : 01 Number Plug Keys: 02 Numbers Connecting wire: 10 m</p>	1No.

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111	<p><b>Transistor Characteristics Apparatus</b>          Complete setup for the following experiments:          To study and plot the Transistor input and output Characteristics in Common Emitter, Base and Collector Mode.          Components:          0-10V D.C. at 200mA (2 nos.)          D.C. Ammeters with switch selectable ranges of 200 mA &amp; 10mA (2 nos.)          D.C. Voltmeters with switch selectable ranges of 1V and 10V (2 nos.)          Silicon (NPN &amp; PNP) transistors and Germanium (NPN &amp; PNP) transistors (2 nos. each)          Power: 220V 50Hz</p>	27 Nos.
112	<p><b>Travelling microscope</b>          Three axes measurement: Horizontal, vertical and right angled transverse motion, rack and pinion mechanism          Micrometer with resolution 10 micron or better          Ballslide mounted microscope for vertical movement on 15cm scale length          Objective: Achromatic FL 50 mm. (approx)          Eye piece: 10x with cross hair          Horizontal movement: 15cm coarse and fine movement: 25mm with LC10 micron.          Vertical movement: 15cm coarse and fine movement of 25mm with LC 10 micrometer.          Z direction movement : 25mm with 10 micrometer LC          Rotation: 360 Deg.</p>	30 Nos.
113	<p><b>Trinocular ore cum polarizing microscope</b>          EYEPIECES: Anti Microbial treated, 10×/20 focusing eyepiece with eye-guard, Crosshair reticule, and key for orientation          CONDENSERS: Abbe Condenser 0.85 (approx) and slot in condenser for contrast sliders          OBJECTIVES: Strain-Free Plan Achromatic Anti Microbial treated, 4×/0.10 NA, 18.0 mm W.D., 10×/0.25 NA, 12.0 mm W.D., 40×/0.65 NA (Spring), 0.36 mm W.D., 100×/0.75 NA (Spring)          STAGE WELL PLATES: Stage well for small/ large diameter samples          ILLUMINATION: Reflected light Illuminator Kit LED (RL-Axis, Slot, Polarizer &amp; Analyser)          Camera: Microphotography System compactable with the above microscope ≥10 mega pixels along with rechargeable battery, 1GB memory card with image analysis software          Certification: ISO14001/ FM553994/ MD540624/ cULus/ CE/ RoHS</p>	8 Nos.
114	<p><b>Trinocular Research Microscope</b>          Objectives: PLN (PLN-PH) Series 4 X 10X 40X (Spring)100X (Spring and oil) (Achromatic and anti fungus treated)          Head: Widefield tilting trinocular          Eyepiece: WHN10X, FN 22 mm, (anti-fungus treated)          Illumination: Koehler illuminator 6 V 30 W halogen bulb          Mechanical Stage: For holding two slides with Stage movement (XY direction)          Quadruple revolving nosepiece          Abbe condenser N.A. 1.25 (oil immersion), with built-in daylight filter and Aperture iris diaphragm          Multi-purpose CX-PCD condenser for bright field, phase contrast and dark field observation          There should be provision to upgrade the microscope with Microscope Image Projection System          Certification: ISO14001/ FM553994/ MD540624/ cULus/ CE/ RoHS</p>	13 Nos.

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115	<p><b>Trinocular Research Microscope With Digital Microphotography System &amp; Pro Image analysis Software &amp; Computer &amp; Printer</b>  <b>Trinocular Research Microscope</b>  Head: Widefield (FN 22) tilting trinocular  Eyepiece : SWH10x-H (widefield, FN 26.5 mm) paired eyepiece (anti fungus treated)  Objectives: PLN (PLN-PH) Series 10 X (NA 0.25), 20X (NA 0.4), 40X (NA 0.65)(Spring), 100X (NA 1.25) (Spring and oil) (Achromatic and anti fungus treated)  Mechanical Stage: For holding two slides with Stage movement (XY direction)  Nose Piece : Quadruple revolving nosepiece  Condenser : Abbe condenser N.A. 1.25 (oil immersion), with built-in daylight filter and Aperture iris diaphragm  CX-PCD condenser for bright field, phase contrast and dark field observation  Illumination: Koehler illuminator 6 V 30 W halogen bulb  Power supply 230V AC. 50Hz  High definition and high resolution Digital Camera with suitable adapter (0.5x to 1.0x projection magnification) with imaging software (cellSens) complete workflow from image capture to analysis  Certification: ISO14001/ FM553994/ MD540624/ cULus/ CE/ RoHS</p> <p><b>Desktop Computer compactable with the above microscope</b>  Processor: i5 or i3, <math>\geq</math> 4 MB Cache, <math>\geq</math> 3.2 GHz speed.  RAM: <math>\geq</math> 4 GB  Chipset: Intel  Max RAM Expandability: Up to 16GB or better  HDD: <math>\geq</math> 320 GB  Operating System : Windows 7Home Premium  Monitor: TFT 15"  Input Device: Keyboard and optical mouse  Optical Drive: 16x DVD+/-RW Drive  Software: Microsoft Office (Home &amp; Office) 2010 Licensed version &amp; Antivirus (1 Year License)</p> <p><b>UPS : 1 KVA (Offline)</b></p> <p><b>Ink Jet Printer (Colour)</b>  Print speed black : Up to 20 ppm  Print speed colour: Up to 16 ppm  Print quality black: Up to 600 dpi  Print quality colour (best): Up to 1200 dpi  Duty cycle (monthly, A4): Up to 1000 pages  Number of print cartridges: 2 [1 black, 1 Tri-color]  Connectivity: Hi-Speed USB</p>	34 Nos.
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## NO. 1(PAQ)/435/10-11/PUR

116	<p><b>Trinocular Stereo Zoom Microscope</b>  Zoom ratio: 1:10  Objective mounting: screw mount  Objectives: DFPLAPO 1x-4 (NA-0.1, WD 81mm), DFPL 2x-4 (NA-0.2, WD 33.5mm)  Eyepiece: Antifungal treated Wide field Eyepieces, WHSZ 15x-H (F.N. 16), WHSZ 30x-H (F.N. 7)  Tilting Trinocular tube, Convergence angle, Interpupillary distance adjustment: 50-75mm  SZX2-TR30/SZX2-TR30PT: 30 degree trinocular tube  Convergence angle, Tilting angle:30°, 2 steps optical path selectable (TR30 observation: straight port = 100:0, 50:50) (TR30PT observation: straight port = 100:0, 0:100)  Interpupillary distance adjustment: 52-76mm  Illumination: halogen lamp 6V 10W/ 12 V 22W adjustable brightness  Bottom fluorescent lamp Reflected 6V 10W / 12 V 22  With compactable digital camera along with rechargeable battery and battery charger  Certification: ISO14001/ FM553994/ MD540624/ cULus/ CE/ RoHS</p>	10 Nos.
117	<p><b>TURBIDITY METER</b>  Range: 0 - 200, 200 - 1000 NTU  Accuracy: 3% Full scale, Non linear  Repeatability: 2% Full Scale  Readability: 0.1(0 - 200 NTU), 1.0 (200 - 1000NTU)  LIGHT SOURCE: Tungsten Halogen Lamp  DETECTOR: Photodiode  Display: Digital  Memory : to retain both range, standard solution, last set value</p>	6 Nos.
118	<p><b>Two Probe Method for High resistivity measurement of Insulators</b>  Probes Arrangement: Two spring load contact probes, with pipe, teflon washers, stand, sample plate and RTD sensors  Digital Picoammeter  Maximum voltage: 1500V, Current: <math>100 \times 10^{-12}</math> A (max), Thickness of sample: 1mm  Resolution: 1pA to 100pA and 1nA to 100nA  Accuracy: <math>\pm 0.2\%</math>  Display: Digital  PID Controlled Oven:  Temperature Range : Ambient to 200°C  Resolution : 0.1°C  Short and Long Range Stability: <math>\pm 0.2^\circ\text{C}</math> and <math>\pm 0.5^\circ\text{C}</math>  Sensor : RTD (A class)  Display : Digital  High Voltage Power Supply  Input Voltage: 220V <math>\pm 10</math>, 50 Hz  Output Voltage: 0-1500V continuously adjustable  Current: 1mA  Display: Digital  Fully protected against overload and short circuit by current  The experimental set-up should be complete in all respect</p>	1 No.

## NO. 1(PAQ)/435/10-11/PUR

119	<p><b>TWO STAGE R-C COUPLED TRANSISTOR AMPLIFIER</b></p> <p>Complete setup for the following experiments:          Study of the overload characteristics of the amplifier.          Study of the frequency response of the individual as well as the cascade amplifier.          Calculate the output and input impedance of the individual stages as well as that of cascade amplifier.          Components:          12V D.C. IC regulated Power Supply internally connected.          Two PNP transistors.          Decade Audio Frequency Generator: 1 Hz to 110 KHz in decade steps.          A.C. Millivoltmeter : 0-300 volts AC covered in 11 ranges          Decade Resistance Box: 6 DIAL, 1 Ohm to 11,11,110</p>	7 Nos.
120	<p><b>Ultrasonicator</b></p> <p>Display: Large-screen LCD (Sample temperature display, actual frequency display, computerized tracking and automatic trouble warning)          Computer Controlled: Concentration, ultrasonic time and power          Operating frequency: 20-24 KHz, auto tracked frequency          Ultrasonic power: 150W adjustable          Variable breadth pole at random: <math>\Phi</math> 6          Chosen variable breadth pole: <math>\Phi</math> 2, <math>\Phi</math> 3, <math>\Phi</math> 8          Broken capacity: 10-100ml          Empty occupation ratio: 1-99%          Power: 220 V 50Hz</p>	4 Nos.
121	<p><b>UV-VIS Spectrophotometer (Double Beam) with PC, Lesser Jet Printer and UPS</b></p> <p>Wavelength Range: 190 to 1100 nm          Optical System: Double-beam          Spectral Bandwidth: <math>\leq</math> 2nm          Wavelength Accuracy: <math>\pm 0.1</math> nm; Wavelength Repeatability: <math>\pm 0.1</math> nm          Photometric Accuracy: At 1A- <math>\pm 0.004A</math>; At 2A: <math>\pm 0.004A</math> ; At 3A: <math>\pm 0.006A</math>          Stray Light: At 220nm(NaI), 340nm(<math>NaNO_2</math>) <math>&gt;3.5A</math>; At 198nm(KCl): <math>&gt;2.0A</math>          Lamp Source: Deuterium Lamp; Tungsten Lamp          Detector: Photodiodes; Display: LCD, VGA graphics          Interface: RS-232-C (computer); USB (printer) Storage: USB flash drive; non-volatile memory          Power Requirements: 220V, 50-60Hz</p> <p><b>Computer compactable with the above UV-VIS Spectrophotometer</b></p> <p>Processor: i5 or i3, <math>\geq</math> 4 MB Cache, <math>\geq</math> 2.93 GHz speed.          RAM : <math>\geq</math> 4 GB; Chipset : Intel          Max RAM Expandability : Up to 16GB or better; HDD : <math>\geq</math> 320 GB          Operating System: Windows 7Home Premium          Monitor: TFT 15"          Input Device: Keyboard and optical mouse; Optical Drive: 16x DVD+/-RW Drive          Software: Microsoft Office (Home &amp; Office) 2010 Licensed version &amp; Antivirus (1 Year License)</p> <p><b>Lesser Jet Printer</b></p> <p>Print speed black: Up to 14 ppm          Print quality: Up to 600 x 600 dpi (1200 dpi effective output)          Duty cycle: Up to 5000 pages p.m.          Standard memory: 2MB; Processor speed: 256 MHz          Paper sizes support: A4, A5, A6, B5, postcards, envelopes          Connectivity: Hi-Speed USB 2.0 port; Power: 220/230 V, 50Hz.</p> <p><b>UPS : 1 KVA (Offline)</b></p>	14 Nos.

## NO. 1(P EQ)/435/10-11/PUR

122	<p><b>UV-VIS Spectrophotometer (Single Beam) with PC, Lesser Jet Printer and UPS</b></p> <p>Wavelength Range: 190-1100nm  Optical System: Single Beam, Grating 1200-1400 lines/mm  Band Width: 1 nm  Wavelength Accuracy: <math>\pm 0.5</math> nm or better  Wavelength Repeatability: +0.1nm  Wavelength Setting: Automatic  Photometric Accuracy: <math>\pm 0.1</math> %T or better  Photometric Repeatability: +0.3 %T  Photometric Display Range: (-) 0.3 to 3.0A, 0 to 200%T, 0 to 9999 C or better  Stability: +0.002A/h @ 500nm  Stray Light: <math>\leq 0.3\%</math>T @220nm, 360nm or better  Data Output Port: USB  Printer Port: Adaptable  Display: Digital  Lamps: Deuterium Lamp &amp; Tungsten Halogen Lamp  Detector: Silicon Photodiode</p> <p><b>Computer compactable with the above UV-VIS Spectrophotometer</b></p> <p>Processor : i5 or i3, <math>\geq 4</math> MB Cache, <math>\geq 2.93</math> GHz speed.  RAM : <math>\geq 4</math> GB  Chipset: Intel  Max RAM Expandability: Up to 16GB or better  HDD: <math>\geq 320</math> GB  Operating System: Windows 7Home Premium  Monitor: TFT 15"  Input Device : Keyboard and optical mouse  Optical Drive: 16x DVD+/-RW Drive  Software: Microsoft Office (Home &amp; Office) 2010 Licensed version &amp; Antivirus (1 Year License)</p> <p><b>UPS : 1 KVA (Offline)</b></p> <p><b>Laser Jet Printer</b></p> <p>Print speed black: Up to 14 ppm  Print quality: Up to 600 x 600 dpi (1200 dpi effective output)  Duty cycle: Up to 5000 pages p.m.  Standard memory: 2MB  Processor speed: 256 MHz  Paper sizes support: A4, A5, A6, B5, postcards, envelopes  Connectivity: Hi-Speed USB 2.0 port  Power: 220/230 V, 50Hz.</p>	17 Nos.
123	<p><b>Vacuum Desiccator</b></p> <p>Transparent, lightweight, and unbreakable With stopcock, internal gasket, and perforated floor.  Diameter of perforated plate: approx 14-18 cm (preferably aluminum)  Autoclavable  3-way stopcock with self-lubricating PTFE plug  Strong Polypropylene body, Polycarbonate lid  Can hold 740 mm vacuum (20 mm Hg absolute) for 24 hours</p>	24 Nos.

## NO. 1(PAQ)/435/10-11/PUR

124	<b>Vacuum Pump</b> High rotational speed Inbuilt cooling for Pump's motor, with anti-suckback arrangement and thermal overload safety device Power 220 V 50 Hz STAGE: DOUBLE Air Displacement: 50 ltrs/min (approx) Motor Capacity: 0.5 H.P. (approx) Ultimate Vacuum: 0.001 mbar (approx) Accessories: Digital Vacuum indicator with transducer and Air filter at exhaust.	19 Nos.
125	<b>VACUUM TUBE VOLTMETER (VTVM)</b> DC / AC VOLTAGE: 0-1500 Volts DC / AC covered in 7 ranges with full scale deflections of 1.5, 5, 15, 50, 150, 500 & 1500 Volts RESISTANCE: 0-1000 M Ohms covered in 7 ranges with full scale deflections INPUT IMPEDANCE: DCV: 11 Meg (1Meg in probe). ACCURACY: DCV: $\pm 3\%$ of full scale. ACV: $\pm 5\%$ of full scale; OHMS: $\pm 3\%$ total scale length. AF-RF RESPONSE: $\pm 3\%$ : 30 Hz to 500 KHz.: $\pm 10\%$ : 15 Hz to 5 MHz. SENSITIVITY OF METER USED: 200 mA D.C.	16 Nos.
126	<b>Variable DC power supply</b> Three independent outputs voltage electrically isolated from each other. Input Voltage 230V AC, 50Hz Output Voltage: 0 to 32V, $\pm 13.5$ to $\pm 16.5$ V, 4.50 to 5.50V (all range are approximate). Output Ripple: minimum Overload and short circuit protection Display: LED/Digital; Meter Accuracy: $\pm 3$ counts	30 Nos.
127	<b>Vertical Electrophoresis System (Mini)</b> <b>Basic unit</b> (UV-Transmittable Resin) With spirit level, rubber gasket fixed, platinum electrode assembly removable (2Nos.), glass plates-notched & rectangular (2 sets), 7 well teflon comb 0.5 mm, 1.0 mm & 1.5 mm, Teflon spacers 0.5 mm, 1.0 mm, 1.5 mm (2 Nos. each), clamp and screws, leveling screws (3 Nos.), lid, connecting cord (2 Nos.) and instruction manual. Dimensions (l x b x h) cm: 16x20x15 (approx) Gel Size: 8x7 cm approx; No. of Samples: 7 Buffer: approx 300 ml. Power Unit: With timer and Digital Display Input AC Volt 220V $\pm 10$ , Output DC Volt 0-500 V, Maximum output 0-500mA, Power Outlet: 2 Suitable Transilluminator	14 Nos.
128	<b>Visible Spectrophotometer</b> Optical System Single beam, grating: 1200 lines/mm Wavelength Range: 320 - 1100nm (approx) Wavelength Accuracy: approx 0.5nm Wavelength Reproducibility: approx 0.2nm Photometric Range: 0 - 3A Photometric Reproducibility: 0.2-0.3%T Photometric Accuracy: $\pm 1\%$ T or better Spectral Bandwidth: 5nm Stray Light: $\leq 0.5\%$ T at 340nm or better Light Source: Tungsten halogen lamp Detector: Silicon photodiode Display: LCD	18 Nos.

## NO. 1(PEQ)/435/10-11/PUR

129	<b>Vortex mixer</b> Variable speed control; Modes: touch and continuous operation Cup head of three different sizes to accommodate corresponding tube size Speed: 0 to 3400 RPM (approx) CE Compliance	5 Nos.
130	<b>Water and soil analysis kit</b> pH: Range : 0 to 14pH, Resolution: 0.01pH, Accuracy: $\pm 0.01$ pH O.R.P./mV: Resolution: 0.01pH Conductivity: Resolution: 0.1 Micro mhos, Accuracy : $\pm 0.5\%$ FS Temperature: Range : 0° - 100°C , Resolution: 0.1°C T.D.S.: Resolution: 0.1ppm, Accuracy: $\pm 5\%$ FSD D.O.: Range: 0-20 ppm , Resolution: $\pm 0.3$ ppm Turbidity: Range: 0-1000 NTU/JTU, Resolution: 1 NTU/JTU	32 Nos.
131	<b>WATER BATH RECTANGULAR (DOUBLE WALLED)</b> Capacity: 8 liters (approx) Double walled Inner chamber made of Stainless Steel (SS-304 grade). Outer wall made of M.S. sheet epoxy powder coated. Glass wool insulation and stirrer Microprocessor Based PID Temperature (ambient to 100°C $\pm$ 0.5°C) Indicator cum Controller	39 Nos.
132	<b>Water Bath Shaker</b> Capacity: 6 liters or above Double walled Inner chamber made of Stainless Steel (SS-304 grade). Outer wall made of M.S. sheet epoxy powder coated. Glass wool insulation and oscillating tray on ball rollers Shaking speed range: 40 to 140 cycles per minute. Thermostatically controlled Temperature from ambient to 70 ° C $\pm$ 0.5 ° C. With Thermometer calibrated up to 100 ° C. To Hold approx 10 Nos. of 25 and 50 ml Conical Flask	5 Nos.
133	<b>Water distillation unit Glass-Double stage</b> With Borosilicate Boiler, Borosilicate Condenser & Quartz Heater, Water Softener, Horizontal Type Dist. Water Output Capacity: 4 ltr per hr (Approx) Electrical requirements: 220-250 Volts Single phase Pyrogen Free, pH neutral, Conductivity S/cm $< 1 \times 10^{-6}$ , Distillate Temp 65-75°C	32 Nos.
134	<b>Water Still (Table top model)</b> Double walled, all steel body made of SS 304 grade steel argon arc welded Insulation special glass wool. Capacity: 8 ltrs pr hour (approx), Single stage Power: 220 V 50 Hz	7 Nos.
135	<b>AUTOCLAVE (HORIZONTAL)</b> Capacity: 20 ltrs or above Sturdy double wall body made of Stainless Steel 304, Argon arcs welded, Automatic self closing device to prevent opening of the door while sterilizing Stainless steel steam generator unit, Replaceable heating element Water level indicator, Pressure Gauge, Safety valve and steam release cock. Pressure control switch. Pressure is adjustable from 10-20psi Separate valve for injecting the steam into the main chamber and releasing the steam after use Fully automated PID Controlled Load: 2KW	1 No.

**WARRANTY CERTIFICATE**

**We Warrant that everything to be supplied by us hereunder shall be brand new, free from all defects and faults in materials, workmanship and manufacture and shall be of the highest grade and quality and consistent with the established and generally accepted standards for material of the type ordered shall be in full conformity with the specification, drawing, or samples, and operate properly. We shall be fully responsible for its efficient operation. This Warranty shall survive inspection of any payment or and acceptance of the goods but shall expire after (except in respect of complaints of which the contractor has been notified prior to such date) 60 months after their successful installation, commissioning and acceptance by NEIST.**

The obligations under the Warranty expressed above shall include all costs relating to labor, spares, maintenance (preventive and unscheduled) and transport charges from site to the manufacturers work and back and free repair/adjustment or replacement at site or any parts of the equipment which under normal and proper use and maintenance proves defective in design, material or workmanship or fails to conform to the specifications previously given by the NEIST to the contractor.

Signature of the Tenderer

No. 1(PEQ)/435/10-11/PUR

**LIST OF COLLEGES**

Sl. No.	Name of the College
<b>ARUNACHAL PRADESH</b>	
1	Jawaharlal Nehru College, Pasighat, Arunachal Pradesh
2	Dera Natung Govt. College, Itanagar- 791113, Arunachal Pradesh
<b>ASSAM</b>	
3	Gurucharan College, Silchar- 788004, Assam
4	Cachar College, Silchar- 788001, Cachar, Assam
5	Karimganj College, Karimganj- 788710, Assam
6	Srikishan Sarda College, Hailakandi- 788151, Assam
7	Diphu Govt. College, Diphu, Assam
8	Dibrugarh H S Kanoi College, Dibrugarh- 786001, Assam
9	Duliajan College, Duliajan – 786602, Dibrugarh, Assam
10	Jagannath Barooah College, Barpatra Ali, Jorhat- 785 001, Assam
11	Dergaon Kamal Dowerah College, Dergaon- 785614, Golaghat, Assam
12	Lakhimpur Girls' College, Lakhimpur- 787031, Assam
13	North Lakhimpur College, Khelmati- 787031, North Lakhimpur, Assam
14	Dhemaji College, Dhemaji- 787057, Assam
15	Dibru College, Dibrugarh- 786003, Assam
16	Tinsukia College, Tinsukia- 786125, Assam
17	Sibsagar College, Joysagar- 785665, Assam
18	Debraj Roy College, Golaghat- 785621, Assam
19	Moran College, Moranhat- 785670, Assam
20	Science College Jorhat, Chenijan, Jorhat- 785010, Assam
21	Arya Vidyapeeth College, Guwahati- 781016, Assam
22	Goalpara College, Goalpara- 783101, Assam
23	Nowgong College, Nagaon- 782001, Assam
24	Dimoria College, Khetri- 782403, Kamrup, Assam
25	Morigaon College, Morigaon- 782105, Assam
26	Rangia College, Rangia- 781 354, Kamrup, Assam
27	Kokrajhar Govt. College, Kokrajhar- 783370, BTC, Assam
28	Pandu College, Pandu, Guwahati- 781012, Assam
29	Madhab Choudhury College, Barpeta- 781301, Assam
30	Darrang College, Tezpur- 784001, Assam
31	Dakshin Kamrup College, Mirza, Kamrup- 781125, Assam
32	Nalbari College, Nalbari- 781335, Assam
33	Bajali College, Pathsala, Barpeta-781325, Assam
34	Handique Girls' College, Guwahati-781001, Assam
35	Lokanayak Omeo Kumar Das College, Dhekiajuli, Sonitpur – 784110, Assam
36	Kaliabor College, Kuwaritol, Nagaon- 782137, Assam

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<b>MANIPUR</b>	
37	D M College of Science, Imphal, Manipur
38	Modern College, Porompat, Imphal East- 79 005
39	GP Women's College, Imphal, Manipur
40	Manipur College, Imphal, Manipur
<b>MEGHALAYA</b>	
41	St. Edmund's College, Shillong- 793003, Meghalaya
42	Synod College, Tegfan Building Jaiaw-Lumdiengjri, Shillong- 793 002, Meghalaya
43	Union Christian College, Umiam Khwan, Shillong- 793122, Meghalaya
44	Saint Mary's College, Shillong- 793003, Meghalaya
45	Shillong College, Laitumkhrach, Shillong- 793003, Meghalaya
46	St Anthony's College, Shillong- 793001, Meghalaya
<b>MIZORAM</b>	
47	Pachhunga University College, Aizawl, Mizoram
48	Government Kolasib College, Kolasib- 796081, Mizoram
49	Govt. Champhai College, Champhai- 796321, Mizoram
50	Lunglei Govt. College, Lunglei- 796701, Mizoram
<b>NAGALAND</b>	
51	Patkai Christian College, Chumukedima-Seithekema, B.P.O. Patkai- 797103, Dimapur, Nagaland
52	Kohima Science College, Jotsoma, Nagaland
53	Fazl Ali College, Mokokchung, Nagaland
<b>SIKKIM</b>	
54	Sikkim Government College, Tadong, Gangtok
<b>TRIPURA</b>	
55	Maharaja Bir Bikram College, College Tilla, P.O. Agartala College - 799004, Agartala, Tripura
56	Women's College, Agartala, Tripura (West)
57	Belonia College, Belonia, Tripura
58	Ramkrishna Mahavidyalaya Kailashahar, North Tripura

**N B:** The supply of 1 Set. as per Purchase Order is to be made in each of 58 Colleges as per list above.