VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY: BURLA

P.O: Engineering College Burla (Siddhi Vihar), Dist: Sambalpur
Odisha– 768018, India
Website : www.vssut.ac.in, E-mail: registrar@vssut.ac.in,Ph:(0663)2430573,Fax-2430592

Ref: No: VSSUT/PHY/ 447 **Date: 30/05/2016**

TENDER CALL NOTICE

Sealed Bids (properly stitched separately) in two separate covers **(Technical Bid and Price Bid)** are invited by the **"The Registrar, Veer Surendra Sai University of Technology, Odisha"** from the manufacturers/authorized distributors/ dealers for supply of Instrument, equipment, machineries etc. of reputed make (National/ International) for the Department of Physics, VSSUT Burla, Odisha. The list of equipments and their technical specifications are mentioned in the different annexure.

The Bidders may download the **Tender Documents** directly from the website available at **http://www.vssut.ac.in** and the Tender cost fee of **Rs 500/-** (Non-refundable) by way of separate Demand Draft drawn in favour of **"The Registrar, Veer Surendra Sai University of Technology, Burla" payable at SBI, Burla** should be enclosed along with the Bid. The Tender cost fee and the EMD amount should be submitted separately in separate demand drafts. In case of any bid clarification, responsibility lies with the bidders to collect the same from the website and the purchaser shall have no responsibility for any delay/ omission on part of the bidder.

TIME SCHEDULE:

a) Price of bidding document: **Rs.500/-** (Non-refundable)

b) Date of commencement of downloading bidding document 01.06.2016 at 11.00 AM

c) Last date and time for Receipt of bids 27.06.2016 up to 5.00PM

d) Time and date of opening of Tender & technical bid 01.07.2016 at 11.30 AM

e) PLACE OF OPENING OF TENDER AND ADDRESS FOR COMMUNICATION AND RECEIPT OF BID DOCUMENTS

THE REGISTRAR
VEER SURENDRA SAI UNIVERSITY OF TECHNLOGY, ODISHA
At- Burla, Po-Burla Engineering College, Dist-Sambalpur-768018,
Tel. No-0663-2430211 Fax No-0663–2430204

30/5/16

REGISTRAR
VSSUT Burla

General Terms and Conditions

GENERAL TERMS & CONDITIONS OF CONTRACT FOR SUPPLY, INSTALLATION AND DEMONSTRATION OF THE INSTRUMENTS, EQUIPMENTS REQUIRED FOR DEPARTMENT OF PHYSICS, VSSUT, BURLA, ODISHA.

1. Document Establishing Bidder's Eligibility & Qualification

The Bidders shall furnish as part of the Bid the following Documents establishing Bidder's eligibility and qualification to the Purchaser's satisfaction.

1.1 Manufacturer / Authorized Distributor / Dealer having valid license / certificates for the quoted item and the direct Importers holding valid Import License Manufacturer / Authorized Distributor / Dealer of the product are eligible to participate in the Bid.

1.2 Bidders should have **ISI or equivalent** certification for quoted instruments and equipment. However, the Purchaser shall have the right to consider the items where ISI or equivalent certification is not applicable.

1.3 The Bidder whether manufacturer/ distributor/ dealer must have experience of supply and installation of the quoted items in reputed Government Institutions / Public Undertakings / reputed Private Institutions within India during last preceding 3(Three) years reckoned from the date of bid opening and the details must be submitted along with documentary proof.

1.4 The Bidders shall have to produce document in support of their service associates **nearest to Sambalpur/Rourkela/ Bhubaneswar**, Odisha.

1.5 Bidder shall have to provide operational Training for **Equipments** to one Official at the Department of Physics, VSSUT, Burla.

1.6 The Bidder shall quote item of one reputed Brand/model with all accessories in complete to perform functionality of Equipment.

1.7 Manufacturer has to submit copy of Industry Registration of quoted products and Tax Registration Certificate issued from Competent authority. In case of Authorized Distributor / Dealer/Suppliers have to submit Manufacture authorization along with copy of above documents of Manufacture Industry.

2. Document Establishing Goods Eligibility

The instruments and equipment offered against the schedule of requirement of instruments, equipments should be in accordance with the stipulated specifications and of one reputed brand/model (**N.B: Variation in specification is allowed upto±5% in case of Equipments)**

2.1 The documentary evidence establishing the brand and the model may be in the form of literature, pamphlets, manuals, drawing, circuit diagram etc.

2.2 Detailed description of instruments and equipment with essential technical and performance characteristics may also be furnished.

2.3 The Bidders should clearly mention in their bid regarding the compatibility of the various equipment or the individual units.

2.4 The quantity shown in the bid can be increased or decreased to any extent depending upon the actual requirement.

2.5 The instruments and equipment should have testing certificate for its satisfactory functioning.

3. Technical Bid (COVER - A)

The following document should be submitted in cover-A.

3.1 Earnest Money Deposit

3.2 Technical details of the equipments as per **Annexure-V**

3.3 Copy of the manufacturing license/ import license/ Authorized Distributor/ Dealer certificates

3.4 Copy of the authorization from the Manufacturing Company in case of Authorized Distributor /Dealer. in **Annexure-III** along with Manufacturer Industry Registration and Tax Registration Certificate.

3.5 VAT/ST clearance certificate up to **date** where applicable.

3.6 Performance/ Market standing certificate establishing that the Bidders have executed supply of similar items as mentioned in Schedule of Requirement of instruments and equipment to

different Govt. Organizations/ Government PSUs / reputed Private Institutions.(proof of documents)

3.7 Copy of the IT PAN Card.

3.8 Detail name, address, telephone no. fax, e-mail of the firm and of the Director/ Managing Director/ Proprietor of the firm (As per **Annexure IV**)

3.9 Address, Telephone No., e-mail, Fax of the Branch Office/ Contact Person/ Liaisoning Office in Odisha. (As per **Annexure IV**)

3.10 Power of Attorney/ Authorization to a person for liaisoning and monitoring the business on behalf of the manufacturer / bidder but not entitled to raise the bills.

3.11 Document if any to establish the recognition of the manufacturing unit in respect of ISO or equivalent.

3.12 **The original bid document signed & sealed by authorized person in each page as a token of acceptance of all terms and conditions of the tender with original receipt.**

3.13 Documentary evidence establishing that the instruments & equipment and ancillary services to be supplied by the Bidders shall confirm to the Bidding Document

3.14 Any deviation in the specification of the item including standard accessories / optional accessories in complete for functionality of Equipments should be marked in **bold letters. (N.B: Variation in specification is allowed upto±5% in case of Machineries/Equipments)**

3.15 Details of foundation drawing for instruments and equipment, if any, should be provided.

3.16 The details of the service station / service associates nearest to Rourkela/Sambalpur/ Bhubaneswar shall have to be submitted to qualify in the technical bid.

3.17 Willingness to provide operational Training for equipments to one Official at Dept. of Physics, VSSUT, Burla.

4. **Price Bid (COVER – B)**

4.1 The hard copy of price bid giving the rates for various instruments & equipment and other items should be submitted along with sealed soft copy of **price bid in Excel format through CD/Pen drive** both in separate sealed cover here in after called **Cover B (Price Bid). Price Bid (Cover - B)** of the bidders who qualify in **Technical Bid (Cover – A)** will only be opened and will be communicated through **E-mail/Fax.**

4.2 The price of the each item shall be quoted as per the prescribed Price Schedule Format at **Annexure-I** along with price break up of custom duty, Excise Duty, CST, Packing, Forwarding and Handling charges, Insurance charges, ET, Freight up to destination including unloading, VAT, commissioning including testing and training with total price per item at **FOR** destination. The bidders are required to submit the individual price of each instrument(s) and equipment(s) as indicated in the schedule of requirements.

4.3 Each quoted item and all accessories should cover the warranty / guarantee for **2(two)** year from the date of commissioning **(Annexure-II)**.

4.4 The **Cover B** of the technically qualifying bidders shall be only opened at the Office of the **"The Registrar, Veer Surendra Sai University of Technology, Burla"** on the date and time to be communicated to them after technical evaluation of **Cover A by E-mail/Fax.**.

4.5 The cost of standard accessories shall be included in basic price and optional accessories shall have to be quoted separately.

4.6 The bidders are required to submit the list of the spare parts required for the equipments as well as the list of the dealers/ Distributors of the spare parts nearest to Sambalpur/Rourkela/Bhubaneswar, Odisha for its availability.

5 **BID CONDITIONS**

5.1 The bidders should verify the sites of existing laboratories of Department of Physics, VSSUT, Burla and the proposed lay out Plan indicating the location of each unit for necessary Technical Evaluation. The scope of Supply as mentioned in the schedule of requirements if not sufficient for full function of the Equipments should be intimated in writing with the technical bid.

5.2 The quoted rate shall not vary with the quantum of order placed or destination point.

5.3 A copy of the original bid conditions and the schedules should be signed by the bidder at the bottom of each page with the office seal duly affixed and returned along with the bid. Bid schedule should be duly filled in with an **index** and **page number** for the documents, enclosures & EMD etc. **Paging** must be done for all the documents submitted.

5.4 Bids should be type written or Computerized and every correction/ over writing in the bid should invariably be attested with signature of the bidder with date before submission of the bids to the authorities concerned. No revision of price upward or downward will be allowed once the bid is opened. However the purchaser shall have the right for considering the exchange rate of foreign currencies on verification of documents.

5.5 **Language of Bid**

The Bid prepared by the bidders and all correspondence and document relating to the bid exchanged by the Bidders and the *Purchaser*, shall be written in the English language. Supporting document and printed literature furnished by the Bidders may be written in another language provided they are accompanied by an accurate translation of the relevant passages in the English language in which case, for purposes of interpretation of the Bid, the English translation shall govern.

5.6 **Bid Price**

- The contract shall be for the full quantity as described above. Corrections, if any, shall be made by crossing out, initialling, dating and re-writing.
- All duties, taxes, and other levies payable on the raw materials and components, job contract shall be included in the total price.
- VAT in connection with the sale shall be shown separately.
- The rates quoted by the bidders shall be fixed for the duration of the contract and shall not be subject to adjustment on any account.
- The price shall be quoted in Indian Rupees only.

5.7 VAT/ST clearance

Copies of valid VAT clearance Certificates shall be furnished by the Bidders and the originals of the above certificates shall be produced to the purchaser before placement of notification of award if asked for by the Purchaser.

5.8 EMD

All bidders are required to submit EMD **not less than 2% of the quoted amount** in shape of **Demand draft** drawn in favour of **"The Registrar, Veer Surendra Sai University of Technology, Burla" payable at SBI, Burla** only. The EMD shall be in Indian Rupees.

NOTE: Non-submission of EMD or submission of less EMD than the desired one shall result in rejection of Bid.The EMD deposited against other Bids cannot be adjusted or considered for this Bid. No interest is payable on EMD.

5.9 **SUBMISSION OF BIDS**

Sealing and Marking of Bids

Bid should be submitted in two Bid system containing two parts as detailed below.

Sealed Cover-A: Technical Bid.

Sealed Cover-B: Price Bid (hardcopy & sealed soft copy in CD/pen drive)

Both the sealed envelopes should then be put in one outer cover and each cover should have the following indication:

i) Name of Dept.:_____

ii) Reference No of Bid _____

iii) Bid regarding _____

iv) Due date & time for submission of the Bid _____

v) Due date & time for opening of the Bid _____

vi) Name of the Firm _____

NOTE:

A. Bids submitted without following two Bid system procedures as mentioned above will be summarily rejected.

B. Please Note that **prices should not be indicated in the Technical Bid**. The Prequalification document including EMD as required in the Bid document should invariable be accompanied with the Technical Bid (**Cover A**).

The outer envelope shall indicate the name and address of the bidders to enable the bid to be returned unopened in case it is declared "**late**". If the cover containing the outer envelope is not sealed and marked as required, ***Purchaser*** will assume no responsibility for the bid's misplacement or premature opening.

The above procedure shall be adopted both for the Technical bid and price bid separately. Telex, cable, email or facsimile bids will be rejected.

5.10 **Deadline for Submission of Bids**

Bids must be received by the ***Purchaser*** at the address specified not later than the time and date specified in the Invitation of 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 up to the appointed time on the next working day.

The ***Purchaser*** may, at its discretion, extend this deadline for submission of bids by amending the bid document, in which case all previous rights and obligations of the purchasers and bidders will remain same till the extended date.

5.11 **Modification and Withdrawal of Bids**

No Modification and Withdrawal of Bids is allowed between the interval of time of submission and the last date and time of the bids.

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 bidders on the bid form.

5.12 **BID OPENING**

5.13 The ***Purchaser*** will open all bids, in the presence of bidder's representatives who choose to attend at **11.30 AM on dated 01.07.2016** at the Office of the **"The Registrar, Veer Surendra Sai University of Technology, Burla".**

5.14 The bidder's representatives who are present shall sign a register 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.

5.15 The bidder's names, and the presence or absence of the requisite EMD 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 bids, which shall be returned unopened to the bidders.

5.16 **Acceptance of the Bid**

- Bidders submitting bids would be considered who have considered and accepted all terms and conditions. No enquiries, verbal or written, shall be entertained in respect of acceptance or rejection of the bid.
- Genuine equipment and instrument etc. should be supplied. Bidders should indicate the source of supply i.e. name and address of the manufacturers from whom the items are to be sourced.
    - Supply of equipment means – Installation and Commissioning (except civil works), Demonstration as well as Training at site. **No separate charges will be paid on this account.**

5.17 **Rejection of the Bid**

The Bid document shall be out-rightly rejected under following stipulation and no correspondence will be entertained whatsoever.

- If the Bidders has not furnished the required **Tender paper cost** and **EMD** or EMD exemption certificate from competent authority.
- If the Bidders has not submitted the Price as per the prescribed format **Annexure-I**
- **Manufacturing Authorization Annexure-III and in case of Authorized Distributor / Dealer/Suppliers have to submit Manufacture authorization along with copy of above documents of Manufacture Industry.**

- If the bid is not supplemented with breakup of standard accessories / Optional accessories & cost of AMC separately for three years after completion of warranty period **(In case of major machinery only).**
- Photo copy of the up-to-date valid manufacturing license/ import license (if it is imported) /dealership certificate/Distributor certificate of the product along with Tax registration Certificate of Manufacturer issued from competent authority.
- If the bidders, whether manufacturer or authorized distributor/ dealer have not supplied the required quantity for qualification as per the eligibility criteria and not submitted the performance statement at **Annexure-IV with supporting documents.**
- If the quoted product of the bidders not confirms to technical specification with complete accessories for functional Equipment and standard of workmanship required by the Purchaser.
- If the bidder has not furnished technical details of the equipments with **one make & model** as per **Annexure-V.**
- **If bidder will quote items of more than one make/model.**
- If the bidder has not furnished detailed mandatory drawings, **catalogue**/, Foundation drawings & schedule of supply of items, if required.
- If the bidders have not agreed to give **bid validity**.
- If Bidder is not willing to provide operational Training for Equipments to one Official at Department of Physics, VSSUT, Burla.

5.18 **Purchaser's Right to Accept any Bid and to Reject any Bid**

The Purchaser reserves the right to accept or reject any bid and to annul the bidding process and reject all the bids without assigning any reason thereof at any time prior to award of Contract, without thereby incurring any liability to the affected Bidders or Bidders on the grounds of such action of the purchaser. In case no bidder qualifies as per qualifying criteria and standards, purchaser may at his discretion relax qualification criteria for award of contract.

5.19 **Evaluation and Comparison of Bids**

The comparison shall be of FOR destination price basis including the price of all costs wherever applicable as well as duties and taxes (**but excluding VAT**) paid or payable on

Instruments & equipments incorporated or to be incorporated in the items including the warrantee/guarantee period from the date of installation.

- The Purchaser's evaluation of a bid will take into account, in addition to the bid price and the price of incidental services.
- The purpose of bid evaluation is to determine substantially responsive bid with the lowest evaluated cost, but not necessarily the lowest submitted price, which should be recommended for award.
- Evaluation of bids should be made strictly in terms of the provisions in the bid document to ensure compliance with the commercial and technical aspects.
- The past performance of the suppliers will be taken into account while evaluating the bids.
- Cost of the inland transportation, insurance and other costs within the Purchaser's Country incidental to delivery of the goods to their final destination;
- Delivery schedule offered in the bid;
- Deviations in payment schedule from that specified in the General Terms & Conditions of Contract;
- The availability in the Purchaser's country of spare parts and after-sales services for the goods offered in the bid;
- The projected operating and maintenance costs during the life of the equipment/ goods.
- The performance and productivity of the equipment/ goods offered;
- The quality and adaptability of the equipment/ goods offered.
- Any other point as deemed proper to be incorporated by the evaluation committee.
- **Alternative options of offer shall not be allowed**.
- Each Bidder shall submit only one quotation with one make & model.
- The quotation would be evaluated separately for each item
- Sales Tax in connection with sale of goods shall not be taken into account in evaluation.
- Negotiation shall be made with the lowest evaluated bidder.
- Lowest evaluated price shall be taken in to consideration, but not the lowest quoted price.
- Willingness to provide operational Training to one Official at Dept. of Physics, VSSUT, Burla.

6.0 Supply Conditions

6.1 Delivery of Goods

The delivery of goods shall be made by the supplier to the Consignee in accordance to the order placed as shall be detailed in the Schedule of requirements & technical specifications.

6.2 Instruments & Equipments Demonstration cum Inspection

Purchaser reserves the right to ask for demonstration cum inspection of the instruments & equipment where ever applicable.

6.3 Inspection/ Test/Training

The supplier shall get each equipment inspected in manufacturer's works and submit a test certificate (New & Unused) and also guarantee/warranty certificate that the equipment confirms to laid down specifications.

The supplier shall invite the purchaser for pre-dispatch inspection. The Purchaser or his representative shall have the right to inspect/ examine/ test the goods in conformity with the contract awarded/supply order during the production or before dispatch from the manufacturer's premises. Such inspection and clearance will not prejudice the right of the consignee to inspect and test the equipment on receipt at destination.

The inspection/examination/ test may be conducted in the premises of the Supplier or at the goods final destination or at the premises of the consignee, as will be decided by the Purchaser.

The purchaser's right to inspect/ examine/test & where necessary to reject the instruments & equipment after the arrival of the goods at the final destination, shall in no way be limited or waived by the reason of the goods having been inspected and tested by the manufacturer previously. In case of rejection of the goods at the final destination after inspection and test as stipulated above and in case any inspected/ tested goods fail to confirm to the specification/ working condition, the purchaser may reject them and the supplier shall replace/ repair the same free of cost.

6.4 **Warrantee Period (comprehensive)**

The Bidders must quote for a minimum period of **2 (Two) years** of comprehensive **warranty** from the date of completion of the satisfactory commissioning as per (**Annexure-II**). This also includes all accessories related to instruments & equipment quoted for.

6.5 **Up time Warrantee**

The Bidders should provide uptime guarantee of 95%.

6.6 **Downtime Penalty Clause**

During the warranty period, desired uptime of 95% of 365 days (24 hours) if downtime exceeds 5%, penalty in the form of extended warranty, double the number of days or more will be applied for which the equipment goes out of service.

In no case the machineries should remain in non-working condition for more than 30 days beyond which a penalty of 0.2% of machine cost will be charged per day.

6.7 **Payment Terms**

No advance payment will be made by the Purchaser to the supplier for performance of the contract. 100% of the contract price shall be paid within 30 (thirty) days after satisfactory supply, installation, demonstration, Commissioning & training and stock entry of bills of the goods within due date of delivery.

6.8 **Transportation**

The Supplier shall be required to meet all transport and storage expenses until commissioning of the instrument(s) / equipment covered in the contract.

6.9 **Taxes and Duties**

The Supplier shall be entirely responsible for payment of all Taxes, Duties etc. incurred until delivery of the contract goods to the Consignee subject to recovery afterwards in the bill as claimed in the Bid offer.

VAT as applicable is payable, to the suppliers of the State of Odisha if claimed in the Bid offer.

VAT/ CST will be paid to the Suppliers of the outside State other than Odisha, if claimed in the Bid offer. Any revision of VAT/ CST shall automatically be taken into account.

Entry Tax, if paid by the Supplier, at the local (destination head) Corporation/ Municipality/ NAC are allowed once only on production of money receipt for such payment, if claimed in the Bid offer. Any other statutory levy imposed by the Govt. of India/ Govt. of Odisha from time to time will be considered extra on demand with adequate proof thereof The service tax and the work contract tax shall be levied (Wherever applicable). Income Tax as applicable shall be deducted at source.

6.10 **Incidental Services**

The Supplier shall be required to provide any or all of the following services: (The cost should be included in the quoted Price)

- Furnishing of detailed literature/pamphlets/ circuit diagram/ operation & maintenance manual / drawings (as applicable) for each appropriate unit of supplied goods.
- Furnishing of tools required for assembly and / or maintenance of the supplied goods.
- Performance or supervision of on-site assembly and the supplied goods.
- 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/ guarantee obligations under the contract.
- **Training of the Purchaser's personnel at Department of Physics, VSSUT, Burla in assembly, start up, operation, maintenance and/ or repair of the supplied goods is Mandatory** .A maintenance contract for the goods supplied, if required by the user beyond the warranty period shall be on mutually agreed upon terms between the user and supplier. The cost of such maintenance contract shall not be included in the Bid cost.

6.11 **Period of Validity of Bids**

- The bid rates should be kept open/ valid for a period of **180** days from the date the Bids are opened.
- A bid valid for a shorter period i.e less than **180** days shall be rejected, as nonresponsive.
- In absence of any indication of the date of validity in the bid, it will be presumed that the offer will remain valid for the minimum period i.e. **180** days as prescribed above.

- In exceptional circumstances the purchaser may solicit the bidders consent for extension of the period of validity. If agreed upon, the bid security so deposited shall also be suitably extended.

6.12 **Commissioning Period**

Maximum commissioning period is **30 days** from the date of supply OR **120 days from the date of issue of Purchase Order** failing which the purchaser will have the right to impose penalty for the delay period @ **0.5% per week of the contract value of item/items excluding taxes from the bill amount subject to maximum of 10%.** However Registrar has right to extend the delivery period/commissioning period in special cases.

6.13 **Penalty against Non Supply**

In case of non supply of Stores within the due date i.e. within the date of delivery the EMD deposited by the bidder shall be forfeited.

6.14 **Rejected items**

No payment shall be made for rejected supplied items. Rejected items must be removed by the bidders within two weeks of the date of rejection at their own cost and replace immediately. In case these are not removed these will be auctioned by the purchaser (at the risk and responsibility of the suppliers) without any further notice.

6.15 **Annual Maintenance Contract**

The Cost of Annual maintenance contract for next 3 years after warranty period shall be submitted as per the **Annexure at I(b)** . The after sales service during and after the warranty / guarantee period should be available from companies own engineers.

6.16 Jurisdiction of the Court

The Purchaser and the Supplier shall agree that the competent Court at Sambalpur shall have the jurisdiction to try and decide anything between the parties and they may approach the Competent Court at Sambalpur if required at any time.

30/5/16

REGISTRAR
VSSUT, Burla

ANNEXURE-I (a)

PRICE SCHEDULE (ITEM WISE) PRICE SCHEDULE (ITEM WISE)

Item Serial No	Item Description	Country of origin with make & model	Quantity & Unit						Unit price (a+b+c+d+e)	VAT (f)	Total Price (a+b+c+d+e+f)
				Exware house/ Ex-showroom/ Off-the-shelf (a)	Excise duty/Costum duty, if any (b)	Packing & Forwarding (c)	Inland transportation, insurance and other local costs incidental to delivery (d)	CST/ Entry tax, if any (e)			

ANNEXURE-I (b)

PRICE SCHEDULE (ITEM WISE) - B
PRICE SCHEDULE FOR ANNUAL MAINTANCE CONTRACT AFTER COMPLETION OF WARRANTY PERIOD.

Sl.No	Brief description of Goods Total annual	Quantity in nos.				Annual Maintenance Contract cost 3 years i.e. 3x (4a+4b+4c)	
1	2	3	4			5	
			1st yr.	2nd yr.	3rd yr.		
			(a)	(b)	(c)		

** After Completion of warranty period

Note:-

1. In case of discrepancy between unit price and total prices, THE UNIT PRICE shall prevail.
2. The cost of Annual Maintenance Contract (AMC) which includes preventive maintenance including testing & calibration as per technical/ service/ operational manual, labour and spares, after satisfactory completion of warranty period may be quoted for next 3 years on yearly basis for complete equipment and turnkey (if any).
3. The cost of AMC may be quoted along with taxes applicable on the date of bid opening. The taxes to be paid extra, to be specifically stated. In absence of any such stipulation the price will be taken inclusive of such taxes and no claim for the same will be entertained later.
4. Cost of AMC will not be added for Ranking/Evaluation purpose. However, the cost of AMC for lowest evaluated bidder is subject to negotiation.
5. The payment of AMC will be made as per payment terms of the bid document.
6. The uptime warranty and down time penalty shall be as per the bid document.
7. All software update should be provided free of cost during AMC period.
8. The stipulations in Technical Specification will supersede above provisions.
9. The supplier shall keep sufficient stock of spares require during Annual comprehensive Maintenance Contract period. In case the spares are required to be imported, it would be the responsibility of the supplier to import and get them custom cleared and pay all necessary duties.

Place:
Date:

Signature of Bidder
Business Address
Seal of the Bidder

ANNEXURE - II

WARRANTY MAINTENANCE CONTRACT AGREEMENT.

THIS AGREEMENT made the.....day of ....., 20___ between the **"The Registrar, Veer Surendra Sai University of Technology, Burla"** (hereinafter "the Purchaser") of the one part and M/s..... (here in after called "the Supplier") of the other part:

WHEREAS the Purchaser invited bids for certain Goods & ancillary services viz, supply and commissioning of the instruments & equipment at Bhubaneswar including Comprehensive Warranty Maintenance Services and has accepted a bid by the Supplier for the instruments & equipment specified below at the Consignee site including Comprehensive Warranty maintenance Services for a period of 2 (Two) year from the date of installation & commissioning of the instruments & equipment as per award of Contract No..... dated

Name of the Equipment & machineries Qty

(To be filled in as per details of goods in the award of Contract)

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. Maintenance Services shall consist of Preventive and Corrective maintenance of equipment specified above & will include repair and replacement of parts free of cost.
2. Preventive maintenance, monthly once, which includes:
2.1 Check-up to ensure that device connection is proper, cabling is at proper condition etc.
2.2 Cleaning of the above instruments & equipments and checking the System Performance.
3. The Supplier is to furnish the tentative schedule of the preventive maintenance of Warranty Maintenance Contract (WMC) to be carried out.
4 The parts replaced must be new parts or equivalent in performance to new parts.
5. The Supplier will also provide the same maintenance service in case of the movement of equipment from the place of original installation to a different place or location, if the equipment is shifted by the Purchaser to another place or location at the cost and risk of the purchaser.
6. Any complaint informed through telephone must be acknowledged with a Complaint No. by the Supplier which will be noted by Consignee. All further contact with the Supplier on such complaint will be initiated through that Complaint No. Once rectification done, that No. will be cancelled by both parties. A register is to be maintained by the Supplier where complaints are to be noted along with Complaint No.
7. The maintenance shall normally be done at the earliest.
8. The Service Engineer of the Supplier will be allowed to handle the respective plant & machineries only in presence of the officer in charge at the Consignee site.

9. The Supplier should ensure that maintenance job is not hampered/delayed due to paucity of spares/inadequate manpower etc.

10. The Supplier should submit the services call report, to the Consignee for each and every service call without fail.

11. The Supplier evaluation data format for the WMC of Consignee systems may be filled up for necessary action.

12. All formats after filled up should be signed at the end of each page by the Supplier.

13. After completion of the work/repair/maintenance, the Purchaser shall issue a certificate of completion to the supplier to that effect.

Signature	Signature
For the Purchaser	For the Supplier
Name:	Name:
Designation:	Designation:
Address:	Address:
Telephone No:	Telephone No:

ANNEXURE-III

MANUFACTURES' AUTHORISATION FORM

No._____/ Date _____/

To

The Registrar,
VSSUT Odisha
Burla, Sambalpur.

Dear Sir, Bid No._____

We _____ who are established and reputable manufacturers of _____ having factories at _____ (Address of Factory) do thereby authorize M/s._____ (Name and address of Agent) to submit a bid and sign the contract with you against the above bid.

* No company or firm or individual other than M/s._____ are authorized to bid and conclude the contract in regard to this business against this specific invitation for bid.

We hereby extend our full guaranty and warranty as per general conditions of contract for the goods and services offered by the above firm against this bid.

Yours faithfully,
(Signature for and on behalf 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 original by the Bidders in its bid.

- This para should be deleted for simple items where manufacturers sell the product through different stockiest.
- The Supplier/Managing Director of the Company (if the supplier is a Company) or the Power of Attorney Holder having specific power to sign the contract can only sign the contract/execute the agreement.

ANNEXURE-IV

DETAILS OF THE BIDDERS

Bid Reference No.

Name and address of the Bidder:

01 Name of the bidder
- a) Full postal address
- b) Full address of the premises
- c) Telegraphic address
- d) Telephone number
- e) Fax number
- f) E mail:
- g) PAN No
- h) TIN No

02 Total annual turn-over (value in Rupees)

03 Quality control arrangement details

04 Test certificate held
- a) Type test
- b) BIS/ISO certification
- c) Any other

05 Details of staff
- a) Technical
- b) Skilled
- c) Unskilled

06 Branch Office/ Contact Person/ Liaisoning Office in Odisha.
- a) Address
- b) Telephone No.
- c) e-mail,
- d) Fax

Signature and seal of the Bidder

ANNEXURE-V

Technical details of the Equipments to be supplied by the bidder

Bid Sl No. of the item	Tender specification	Bidders Specification with make and model no (Enclose manufactures catalogue / brochure for each item)	Deviation if any With university specification

Signature and seal of the Bidder

VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY: BURLA

P.O: Engineering College Burla (Siddhi Vihar), Dist: Sambalpur
Odisha– 768018, India

Ref: VSSUT/PHY/ 447/2016 Date: 30.05.2016

TENDER CALL NOTICE

Sealed tenders are invited from original manufacturers/authorized dealers for the supply of instruments/equipments for the **Dept. of Physics**", VSSUT, Burla, Sambalpur, Odisha. The tenders shall reach the office of the undersigned through **Speed/Registered** post only **on or before 27.06.2016 up to 5.00PM**.

For more details, please visit our university website www.vssut.ac.in. The authority the reserve right to accept or reject all the tenders without assigning any reason thereof.

30/5/16
REGISTRAR

No. VSSUT/PHY/ 448(5) /2016 Date:

Copy to:-

1. M/s Display Lines, 219, Saheed Nagar, Bhubaneswar – 751007 with request to publish the above advertisement in one issue of the "all Odisha daily edition of The Samaja" and "All India edition of The Times of India" at the I & PR approved/lowest rate. The bill may be sent in triplicate along with a copy of the paper in which the publication is made.
2. University Notice Board of VSSUT, Burl a.
3. Dean F & P, with a request to upload the notice & documents in the university website.
4. PA to Registrar for information & record. This is issued based on University Committee for Perspective Planning (UCPP), Letter No: VSSUT/F&P – 113/1288/ 2016 Dated: 04.03.2016 and subsequent approval of Hon'ble Vice-Chancellor
5. PA to Vice – Chancellor for kind information to Hon'ble Vice – Chancellor.

30/5/16
REGISTRAR

The list of equipments with detailed Specifications

Sl. No	Description	Quantity	Remarks
1.	To determine 'g' by bar Pendulum Bar Pendulum: Brass 100 Cm with 19holes, Knife edges, wall bracket, Telescope with Stand	2 Nos.	
2.	Thermal conductivity by Lee's apparatus: Lees & Charlton Conductivity App. (Complete with Brass Disc, Brass Chamber, Glass Disc, Cardboard disc, Bakelite disc & stand, 2 thermometers, Steam Boiler, Rubber Tubing. Coil of 10 meters)	2 Nos.	
3.	Determination of Young's modulus by Searle's method Searles Apparatus with Retort stand Complete Set including sample wire	2 Nos.	
4.	Determination of Rigidity modulus by Barton's method: ***Bartons Apparatus Vertical Pattern. 100cms long With 3 scales***	2 Nos.	
5.	Laws of transverse vibration of strings: Complete setup consisting of the following parts: ***a) Sonometer b) Weight Set*** ***c)* Tuning Fork Set (256-512 Hz). *d)* Rubber Pad**	2 Nos.	
6.	Determination of surface tension of water using capillary rise with travelling microscope Travelling Microscope Stand Capillary tubes Index rod	3 Nos.	
7.	Measurement of magnetic field and superposition of magnetic fields **Power supply** DC 0-16V, 5 Amp Voltage : 0-16V DC continuously variable & stabilized Voltage display : 3½ digit LED Ripple : Less than 25mV Overload : Current limiting protection Current : 5 A continuously variable, 10 Current display : 3½ digit LED **Digital gauss meter with axial probe** Range : 200 Gauss & 2 k Gauss Resolution : 0.1Gauss at 0 - 200 Gauss Offset : By Potentiometer to set ZERO Display : 3½ Digit LED Input Voltage : 220 V, ± 5 %, 50 Hz AC Axial Hall Probe : InAs **Laboratory jack 200x200mm** **Induction Coil Set** Coil N=165, L=75mm, dia=32mm Coil N=220, L=100mm, dia=32mm Coil N=275, L=125mm, dia=32mm	2 Nos.	

	Coil N=165, L=75mm, dia=40mm Coil N=220, L=100mm, dia=40mm		
8.	Determination of Ballistic constant of a Ballistic Galvanometer : Complete set with Ballistic Galvanometer, Lamp & Scale Arrangement, Decade Resistance Box, single dial in step of 1 ohms & 100ohms, Electronic Leclanche Cell, Plug Key, Taping Key & Reversing Key, IC regulated power supply	2 Nos.	
9.	To study the Characteristics of a series RC Circuit Power supply , bread board , R &C components. To Study & plot graphs for RC circuit as Low Pass & High Pass Filters. Circuit diagram for Low Pass and High Pass Filter Printed, Three Resistances, 3 capacitors are placed inside .	4 Nos.	
10	To study the a series LCR circuit and determine its (a) Resonant Frequency, (b) Quality factor:Series/parallel Resonance circuit. Complete with audio oscillator:the setup consists of a demonstration board with three values of resistance, three values of capacitance & three values of inductance, provided with terminals for connections. One ac voltmeter & one ac milliammeter are provided on the front panel for measuring the input voltage range and the current.with stand alone audio oscillator of frequency range 20hz to 200khz.	2 Nos.	
11	To determine a low Resistance by Carey Foster's Bridge: Complete set with : A) Meter bridge (Carey foster type). One meter long, 3/4" wide copper strips. Spring type jockey sliding on a metal rod B) Fractional resistance box (0.1 TO 10 ohms). Mangnin Coils. C) Battery Eliminator 2 to 12 volts (2 amps capacity) D) Galvanometer 30-0-30. With stand. MO 65 type. E) Rheostat 10" tube length, F) Plug key . One Way. G) Two Equal Resistances (Resistancecoil 1 ohm) H) Connection Wire. 100gms.	2 Nos.	
12	Frequency of AC mains using Sonometer: Complete set with Tunning Fork: Set of 8., Slotted weights set, Step down transformer, Electro magnet, U shape Magnet, Screw gauge & Retort stand with Clamp.	2 Nos.	
13	Michelson's Interferometer: Laser Based with He-Ne Laser **MICHELSON INTERFEROMETER** Base dimension : 290x212x168mm (LxWxH) Distance (M2 & BS) : 100mm. Beam splitter : 50 x 38 x7mm (LxWxT) Compensating plate : 50 x 38 x 7mm (LxWxT) Mirrors M1 and M2 : 30 mm dia, thickness 10mm. R:T : 50 : 50 Flatness of beam splitter - $\lambda/8$ Least count : 0.01mm (coarse adjustment) Least count : 0.0001mm (fine adjustment)	1 No.	

	HE-NE Laser Wavelength : 632.8nm Working current : 4mA ~ 6mA Output power : > 2mW Working time : > 8 hrs. Working voltage : 220V AC, 50Hz Input power : <2 W Dimension(LxBxH) : 300x62x82mm Laboratory Jack & Microscope Objective		
14	Familiarization with Schuster 's focussing; determination of angle of prism (using spectrometer): Complete set up with Spectrometer-6" dia; reading 30seconds. And with Calcite Prism, Sodium Light Assembly & Reading Lens.	1 No.	
15	To determine Dispersive Power of the material of a given Prism using Mercury Light, Complete set (Spectrometer-6" dia; reading 30seconds. Prism, Mercury Light Assembly & Reading Lens.)	1 No.	
16	To determine wavelength of sodium light using Newton's Rings Apparatus Newton's Ring Apparatus, Sodium Light Source assembly, Spherometer & Double convex lens.	2 Nos.	
17	To determine wavelength of sodium light using Newton's Rings Apparatus (All the components including sodium lamp, microscope, power supply & optics are housed in single piece compact body)**(stand alone setup)**. **Newton's ring apparatus** Dimension : 390 x 480 x 170mm approx. Micrometer : 0.01 mm least count Eyepiece : Ramsden 10X Objective : 3X **Spherometer& Plano convex lens with plane glass plate** ypes : 3 legs Vertical scale : 6mmx6mm (WxT) Micrometer : Dia. 40mm, Brass Lower disc : Dia. 60mm Range : 10-0-10mm Least count : 0.01mm Dia. : 61.5mm, Glass Focal length : 200mm	2 Nos.	
18	To determine Wavelength of Sodium light using plane diffraction Grating (using spectrometer) : Complete set up with Spectrometer-6" dia; reading 30seconds. Diffraction Grating: Hilger & Watts type, 15000line per inch/6000 lines per cm. Sodium Light Assembly, Prism & Reading Lens.	2 Nos.	
19	Verification of Brewster's law using spectrometer Complete set up with Spectrometer-6" dia; reading 30seconds., Incandescent bulb with house on stand,	2 Nos.	

	Polaroid , Spirit level, Prism& Reading Lens.		
20	**To determine the Boltzmann constant using V-I characteristics of PN diode:** p-n junction setup : **Selector Switch : V-I and V-T experiment, Bias & Junction** **Selector Switch at V-I position/Junction :** Voltmeter Display : 3½ digit, 7segment LED, auto polarity Voltage Range : 0.000-1.999V Current Display : 3½ digit, 7segment LED Current Range : 0-20mA **Selector Switch at V-T position/Junction :-** Voltage Display : 3½ digit, 7segment LED Voltage Range : 0.000-1.999V Temperature Display : 3½ digit, 7segment LED Temperature Range : 273K to 353K Oven : Heater pin 4 & 5. Temperature pin 1 & 2 Oven Connector : 5 Pin, DIN type Diode & Transistor : 4mm safety socket Input Voltage : 220V, 50Hz AC **OVEN WITH TEMPERATURE SENSOR** Heating Element : 35 ohm Oven Connector : 5 Pin, DIN type Ambient Temperature : 353K Temperature Sensor : Pt100 Output Pin : Heater pin 4 & 5. Temperature pin 1 & 2 Junction transistor-Transistor : NPN ,Type : BC109 Connector : 4mm Plug-in Socket	2 Nos.	
21	To determine Planck's constant using Photoelectric effect: The setup consists of: a) Power Supply unit with 2 DIGITAL METERS b) Photocell unit C) Light Source Unit. D) Filter Set. Consisting of 4 different color plastic fillters of approx. 2" x 1" size	2 Nos.	
22a	Transistor Characteristics Apparatus: Kit with DC Ammeter, Two DC Voltmeter, Two silicon(NPN & PNP) Transistor & Two Germanium (NPN & PNP) Transistor & 4 dual range digital meter.	2 Nos.	
22b	Transistor Characteristics Apparatus: with on board 4 Analog Meters for Independent CB,CC CE Study. . Instrument comprises of Two DC Regulated Power Supplies 0-10V DC/150mA (Changeover to 1V also provided) & 0-1VDC/150mA, 4 acrylic Analog meters for voltage & current measurement , one PNP & one NPN Transistor mounted on the panel, Base of Transistor is provided with or without resistance through a switch.	2 Nos.	
23a	Photo Diode Characteristics Apparatus: Complete set up with Photo Voltaic Cell, Light dependent Resistor, Light Emitting Diode, Photo Diode, Opto Copier, Photo Transistor & Variac 0-230V, 50 Hz at 2 Amp.	1 No.	

23b'	Photo Diode Characteristics Apparatus: Istrument comprises of DC Regulated Power Supply 0-3 VDC/ 150mA, two round meters for voltage & current measurement, Photo diode mounted on the panel, connections of Supplies & Photodiode brought out at 4mm Sockets	2 Nos.	
24a	Zener diode char. apparatus Kit (Digital meters) with DC Regulated Power Supply 0-15VDC 150mA with DC Micro ammeter, Two DC Voltmeter, a Germanium semiconductor diode mounted the panel & 2 dual range digital meter.	1 No.	
24b	Zener diode char. apparatus Instrument comprises of, two round meters for voltage & current measurement, Zener Diodes mounted behind the panel, connections of Supplies, Meters & Zener Diode brought out at 4mm Sockets	2 Nos.	
25	Verification of networks theorems (Thevenin, Norton. Max power): The Kit is used for studying the following theorms: a) Thevnin theorem b) Norton theorem c) Maximum Power transfer theorem d) Superposition Theorem. **The kit consists of :** a) One builtin variable power supply 0 to 10V DC b) One builtin fix voltage power supply 5V DC c) One DC Voltmeter to measure voltage in the circuit d) One DC Milliammeter to measure current in the circuit e) One fully variable Load resistance. f) Various other fixed load resistances. g) Connecting leads All the major connection are brought out on terminals so that the students can make the connections themselves.	2 Nos.	
26	Common collector (emitter follower) transistor amplifier: with sine wave signal Generator of 1KHz, Study of Common Emitter(CE), Common Base(CB) & Common Collector(CC) transistor amplifier circuit and and evolution of its input & Output resistance, gain, current, gain and Power gain With CRO 30MHz & AC Millivoltmeter.	1 No.	
27	Study of Lissajous figures using Digital storage oscilloscope and function generators with sine wave generator Sine wave generator 50 MHz , Digital Storage Oscilloscope, 2 Channel, 7Inch LCD Display, Math Function-+,-,X//,FFT ,Input Impedance-1 MΩ, USB & Software.	1 No.	
28	The following magnetic properties of ferromagnetic samples can be studied Coercivity (b) Saturation magnetization	1 No.	

	(c) Retentivity (d) The number of phases present **usingHysteresis loop tracer:** Complete in all respect including long solenoid, Ic regulated power supply with panel meter directly calibrated in gauss, sample holder with pick up coil and set of samples, hard steel, soft steel and nickel (all in wire form) except CRO. **DC Power supply** 0-30V, 20 A DC regulated Power Supply with coarse and fine continuously adjustable knob for current and voltage. **Electromagnet Unit-** Coils : 250 turns Current : 10Amp (Max.) Wire : 18SWG, Cu. Connection : 4mm safety socket. U Core : 150x130mm(LxH), 40x40mm cross Pole piece : Length=80mm, Point Pin : Length=90mm, Core material : Ferromagnetic. U-Core, Pole piece with hole(pair) Samples-Ni,Bi,Al		
29	Study of MOSFET ,UJT characteristics: Complete with builtin power supply, patch chords, Instrument comprises of 2 DC Regulated Power Supplies 0-15 V , DC/150mA & 0-25 VDC/150mA, three acrylic meters for voltage & current measurement, one UJT 2N2646 mounted behind the panel & Connections of Supplies, Meters & UJT brought out at 4mm Sockets. Set of 4 inter connectable & 6 single point patch Cords are required.	2 Nos.	
30	Study of,UJT characteristics: Complete with builtin power supply, patch chords. Instrument comprises of 2 DC Regulated Power Supplies 0-15 V , DC/150mA & 0-25 VDC/150mA, three acrylic meters for voltage & current measurement, one UJT 2N2646 mounted behind the panel & Connections of Supplies, Meters & UJT brought out at 4mm Sockets. Set of 4 inter connectable & 6 single point patch Cords are required.	2 Nos.	
31	MOSFET Characteristics Apparatus: Instrument comprises of 2 DC Regulated Power Supplies 0-15VDC/ 150mA & 0-25 VDC/150mA, three acrylic meters for voltage & current measurement, one MOSFET no.TRF 840 mounted behind the panel, connections of Supplies, Meters & MOSFET.	2 Nos.	
32	Curie temperature of magnetic materials: with Low voltage A.C Supply for Monel Metal Transformer, Heater, Digital AC Voltmeter, Thermometer & Stirrer.	2 Nos.	
33	LED & LASER DIODE CHARCTERISTICS APPARATUS. The unit consists of : a) Power Supply unit consisting of highly regulated 5 volt power supply, provided with 2 DIGITAL METERS The power supply is equipped with high quality 10 turn potentiometer which enables the user to adjust the applied voltage with high accuracy of upto 0.01 volts.b) Digital Lux Meter to read intensity of Laser diode / LED at various voltages. c) Black Box to Mount Laser Diode / LED at fixed	2 Nos.	

	distance from Lux meter d) Laser Diode With Chord & Connector e) LED's With Chord & Connector – 4 Nos. f) Manual.		
34	To determine the wavelength of the laser using Grating. With Optical Bench Set up, Diffraction Grating, Diode laser with power supply, Optical Screen, Optical Slit, Lens Holder, & Double Convex Lens. Diode laser with holder Wave Length : 650mm Output Power : <5mW Output Mode : Continuous Input Voltage : 3V Optical bench Set of 13 objects It consists of 13 Objects : Single slit, double slit, multiple slit 3, multiple slit multiple slit 5,single tapered slit, fine grating, 4 holes, circular opaque spot, gray filter, mesh, coarse grating & grid pattern. Frame Size : 50mm x 50mm Prism- Disc : 75mm diameter Rod : 10mm diameter	1 No.	
35	Solar cell characteristics Apparatus : consists of 3 parts: a) Power Supply unit - provided with 2 digital meters for taking the readings of the resultant voltage and current and also provided with a bank of resistance acting as load. The Main unit has provision for connecting all the components in the circuit (b) Solar Cell Mounted in Wooden Box (c) Light Source. with five different area choppers, Table Lamp & Solar Cell.	2 Nos.	
36	Study of Hartley & Colpitt's oscillator: without CRO. Instrument comprises of 12V DC Regulated Power Supply, Circuit diagram Prined & components mounted on front panel.	2 Nos.	
37	Milikan oil drop experiment setup: having on system Voltmeter for Input & Out put Volatge , inner Blue Input Voltage : AC 220V, 50Hz Output Power : 5W. Plate Voltage : 0~500V DC Plate Distance : 5±0.2mm. Total Magnification : 30X Linear field of vision : =3mm. Scale division : 2±0.01mm. Objective lens : 100 lines/mm. Operating temperature : -10~40°C. Relative Humidity : Not less than 85% (at 40°C) Dimensions : 320mmx220mmx190mm.. Atomizer- Glass& Throat double pipe sprayer	1 No.	
38	Hall effect in metals (Compact & material should be Ferromagnetic should be Closed by suitable casing) **Constant Current Source-** Current : 0-20 mA DC Resolution : 10 micro ampere	1 No.	

	Power : 220V ± 10%, 50 Hz AC Display : 3½ digit LED Weight : 3 Kg approx. **Digital Gauss Meter-** Range : 200 Gauss & 2 k Gauss Resolution : 0.1Gauss at 0 - 200 Gauss Offset : By Potentiometer to set ZERO Input Voltage : 220 V, ± 5 %, 50 Hz AC Axial Hall Probe : InAs Display : 3½ Digit LED **Power Supply-** Voltage : 0-16V DC continuously variable & stabilized Voltage display : 3½ digit LED Ripple : Less than 25mV Overload : Current limiting protection Current : 5 A continuously variable, 10% Current display : 3½ digit LED **HALL EFFECT SETUP-** Coils : 400 turns. Coil Current : 4.5Amp (Max.) Connection : 4mm safety socket. U Core : 150x130mm(LxH), 40x40mm cross section. I Core : Length=150mm, 40x40mm cross section. Core material : Ferromagnetic. Base dimension : 360x180x33mm Weight : 8.8kg (Approx.) GE CRYSTAL PCB 3/12 Digital Multimeter		
39	Balmer Series and Rydberg constant kit Spectrum tube-hydrogen ; Spectrum tube, mercury; Holders for spectral tubes, 1 pair ; Cover tube for spectral tubes; Connecting cord, 50 KV, 1000 mm; Object holder, 535 cm ; Diffraction grating, 600 lines/mm ; High voltage supply unit, 0-10 kV ; Insulating support ; Tripod base -PASS- ; Barrel base -PASS- ; Support rod -PASS-, square, l 400 mm ; Right angle clamp –PASS; Stand tube ; Meter scale, demo, l = 1000 mm ; Cursors, 1 pair ; Measuring tape, l = 2 m ;	1 No.	
40	"e/m" APPARATUS. BAR MAGNET METHOD. (THOMPSON METHOD). Complete with 3" C.R.T., power supply to provide H.V. to operate the CRT & stablised D.C. voltage for deflection plates, three wooden stands, magnetometer, a pair of bar magnet.	1 No.	
41	Velocity of sound by resonant method A 1 litre measuring cylinder, metal tube with a diameter of about 2.5 cm, a ruler, a set of tuning forks, a retort stand, boss and clamp thermometer, a large rubber bung or a wood block.	2 Nos.	
42	e/m determination experiment(By Magnetron Valve Method): Complete set with Regulated power supply 0-10V for plate voltage, Digital Voltmeter, Digital Ammeter, Digital Milliameter & μ Solenoid.	2 Nos.	
43	Mass susceptibility of paramagnetic	1 No.	

	substance by Quinkes's method Electromagnet: 7.5KG at 10mm air gap, Digital Gauss meter with Hall Probe: Range-0-2 KG & 0-20 KG, Resolution: 1G at 0-2 KG range, Hall Probe Stand & Constant current source 0-4 Amp,Power Supply, Travelling Microscope, Digital balance, Quincke's tube with stand, FeCl3 sample		
44	Two Probe Method for Resistivity Measurement	1 No.	
45	Measurement of differential wavelength of the Na doublet using Fabry-Perot interferometer	1 No.	
46	To determine the coefficient of viscosity of a liquid by rotating viscometer	1 No.	
47	Dielectric constant of solid (wax) by Lecher Wire	1 No.	
48	Numerical Aperture of an Optical Fibre The kit is supplied with the following: 1) He-Ne Laser With Adaptor – 1mW 2) Laser Power Meter 2) Optical Fibre Bench-1 No 3) 9 Micron Single Mode Fiber 4) 62.5micron Glass Fiber 5) Precision XYZ mount – 1 No. 6) Precision XZ mount – 1 Nos. 7) XZ Mount – 1 Nos. 8) Fixed mounts – 3 Nos. 9) Pinhole detector – 1 No. 10) Fiber Coupler Holder 11) Display Screen 12)Splicing Machine set 13)ST-ST Matting Sleeve 14) Fiber Holder with horizontal & Vertical Positiong	1 No.	
49	Study of multivibrator – Astable Study of multivibrator – Bistable Study of multivibrator – Monostable	2 Nos.	
50	Study of solid state power supply	2 Nos.	
51			
52			
53	Study of hybrid parameter of Transistors with RMS Milivoltmeter with 1KHz Oscillator	2 Nos.	
54	Study of an integrated circuit regulator	2 Nos.	
55	Study of Opamp Applications 741-03	3 Nos.	
56	Study of multivibrator – Monostable & Astable using Timer IC	2 Nos.	
57	Study of transistor amplifier (RC coupled) cum feedback amplifier	2 Nos.	

	Including Function generator and true RMS AC milivoltmeter		
58	Estimation of energy band gap of a semiconductor using a diode DC regulated power supply and	1 No.	
59	Conductivity Measurement by – Four Probe Method	1 No.	
60	ESR Spectroscopy	1 No.	
61	Determination of Planck's constant by total Radiation Method **Light source** : Halogen tungsten lamp 12V/35W. **Colour Filters** : 635nm, 570nm, 540nm, 500nm & 460nm. **Accelerating Voltage** : Regulated Voltage Power Supply Output : ±15 V continuously variable through multi-turn pot Display : 3 ½ digit 7-segment LED Accuracy :± 0.2% **Current Detecting Unit** : Digital Nano ammeter It is high stability low current measuring instrument Range : 1000 μA, 100 μA, 10 μA & 1μA with 100 % over ranging facility Resolution : 1nA at 1 μA range Display : 3 ½ digit 7-segment LED Accuracy : μ0.2%p **Power Requirement** :220V ± 10%, 50Hz. **Optical Bench** : The light source can be moved along it to adjust the distance between light source and phototube. Scale length is 400 mm. A drawtube is provided to install colour filters, a focus lense is fixed in the back end.	1 No.	
62	Determination of 'e' by Millikan's oil drop experiment	1 No.	
63	Polarimeter Experiment kit	1 No.	
64	Frank-Hertz experiment kit	1 No.	
65	Curie Temperature of Magnetic Materials (Dia Para Ferromagnetism)	1 No.	
66	Find the Young's modulus for the given metal using composite piezoelectric oscillator technique	1 No.	
67	Modulation and demodulation with built in carrier frequency (solid)	2 Nos.	
68	Modulation and demodulation with IC regulated power supply and AC frequency generator	2 Nos.	
69	Programming using into 8085 microprocessor	2 Nos.	
70	DSO 50 MHz , Digital Storage Oscilloscope, 2	1 No.	

	Channel, 7Inch LCD Display, Math Function-+,-,X//,FFT ,Input Impedance-1 MΩ, USB & Software.		
71	LCR meter |Z|, L, C, R testing • Testing source frequency: DC, or 4 Hz to 8MHz.• Measuring time: 1 ms • Accuracy guaranteed range from 1 m-ohm• Continuous testing under varying conditions. Included ⍰ Power cord ×1,⍰ Instruction manual ×1,⍰ LCR application disc (Communications user manual) ×1,⍰ 4-Terminal Probe (DC to 8 MHz) L2000 X 1.	1 No.	
72	High temperature Furnace Outer body powder coated CRC sheet angles, Double walled SS covered insulated door; Insulation 5 stage, heating done trough 6Nos Mosi controlled by PT-PT-.RH thermocouple Max temp 1700 C, Working temp 1600 C, Chamber size 4X4X 9 , load 5 KW	1 No.	
73	Magnetic Stirrer with Hotplate & energy regulator: Capacity 2Ltr, Variable speed up to 1200RPM.	1 No.	
74	Sonicator: Ultrasonic Generator: SMPS based Electronic, Frequency: 30 ±3KHz.Transducer PZT Crystals(Morgan Matrac U.K.).Timer : 0-15 minutes timer, Tank Capacity : 1.5Ltr.Temperature Control: Cut-off thermostat, accuracy: ±3°C Preset at 60°C.	1 No.	
75	Travelling Microscope 3 way motion	2 Nos.	
76	Weighing balance	1 No.	
77	Regulated power supply	2 Nos.	
78	Function generator	2 Nos.	
79	Constant Current power supply Bipolar	1 No.	