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UMA CHARAN PATNAIK ENGINEERING SCHOOL, BERHAMPUR(Odisha)
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Letter No. 524 Date: 17/03/2022

NOTICE INVITING TENDER

Procurement of tools & equipments, machineries, furniture etc. for U.C.P. Engineering School will be procured under different schemes including State Plan fund, Development Fund and Other Government assisted fund/scheme.

For procurement of the above, sealed tenders (in two bid systems) are invited from reputed manufacturers(OEM) of National / International repute or from their authorized dealers/registered firms and valid GST Registration. The above Tender consists of 07 packages valued to Rs.100 lakh (Approx) as detailed below. The Tender document can be obtained from the office of the Principal, U.C.P. Engineering School, Berhampur-760010 on any working day from 10.00 AM to 5.00 PM on payment of Rs.500.00 (Non-refundable) as processing charge per Tender. The last date of sale of tender document is 08.04.2022 upto 2.00 PM and the tender received upto the 08.04.22 and time 5.00 PM and will be opened on 11.04.22 at 11.30 AM in presence of the tenderers or their authorized representatives who choose to be present at the time of opening of the tender. The tender papers can also be down loaded from the website of www.ucpesbam.in & www.dtetodisha.gov.in. In case of bidders who have submitted tenders by downloading from the above websites, are to enclose an additional Bank Draft / Demand Draft @ Rs.500/- per tender in favour of Principal U.C.P. Engineering School drawn at any nationalized bank along with other document, towards the cost of the processing charge, failing which the tender will be rejected.

The undersigned reserves the right to reject any or all the tenders without assigning any reason thereof.

Principal, U.C.P. Engineering School, Berhampur-760010



SUPPLY OF MACHINES AND EQUIPMENTS, COMPUTER HARDWARES & SOFTWARES, PERIPHERALS, TOOLS, FOR U.C.P. ENGINEERING SCHOOL, BERHAMPUR .

Bidding Document.

PACKAGE-1 TO 07.

SR NO	DEPARTMENT	PACKAGE NO
1	CIVIL ENGINEERING	PACKAGE -1
2	COMPUTER SCIENCE & INFORMATION TECHNOLOGY	PACKAGE-2
3	MECHANICAL	PACKAGE-3
4	ELECTRICAL	PACKAGE-4
5	ELECTRONICS	PACKAGE-5
6	CHEMICAL	PACKAGE-6
7	BIOTECHNOLOGY	PACKAGE-7

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GENERAL TERMS & CONDITIONS OF CONTRACT FOR PROCUREMENT OF COMPUTER HARDWARES & SOFTWARES, PERIPHERALS, TOOLS & EQUIPMENTS, ELECTRONICS GADGET, FURNITURES FOR U.C.P. ENGINEERING SCHOOL, BERHAMPUR .

1. Eligible Goods and Services

1.1 The Bidders shall quote the articles of reputed make, with their brand names/ISI specification as per the Bid technical specifications and may quote alternative EQUIVALENT standards in the Bid. The articles quoted should have adequate after sales service facilities.

2. Documents Establishing Bidder's Eligibility & Qualification

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

- a) That the Bidder, who is not a manufacturer / producer, has been duly authorized by the manufacturer/ producer to supply the goods.
- b) That the Bidder (in case of manufacturers) has financial, technical and production capacity necessary to perform the contract.
- c) That the Bidders (in case of Registered suppliers) has executed supply of such items as mentioned in Schedule of Requirement of Goods to different Govt. Organisations/Govt. PSUs.
- d) Copies of valid **GST and ITCC/Non-Assessment Certificates** shall be furnished by the Bidder 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. Any Bidder failing to submit the above documents the Bid of the firm may be rejected.

3. Documents Establishing Goods Eligibility.

3.1 The goods offered against the schedule of requirement of goods should be in accordance with the stipulated specifications.

3.2 The documentary evidence may be in the form of literature, pamphlets, manuals, drawing, circuit diagram etc. and shall furnish :

- a) Detailed description of goods with essential technical and performance characteristics.
- b) A list giving full particulars, including available source and current price of spare parts, special tools etc. necessary for proper and continuing function of the goods for **a period of two years** following the commencement of the use of the goods by the Purchaser.

3.3 The Supplier should clearly mention in their bid regarding the compatibility of the Computer Hardware & Software offered to the other Hardware/ Software and the specification on compatibility, information on Driver Software for peripherals and suitability of peripherals to the main system must be furnished.

4. **Bid Price**

- 4.1 The Bidder shall quote their lowest possible price and prices quoted by the Bidder shall be "fixed" during the Bidder's performance of the contract and not subject to any variation and/or escalation.
- 4.2 The contract price shall include the cost of the Goods including all taxes, Charges towards Packing, forwarding, handling, insurance, freight, incidental service, installation & commissioning of the goods and training to the consignee's personnel at site.
- 4.3 The Supplier shall give operational training to at least two faculty of each consignee on the equipment / Computer Hardware & Peripherals/Computer Software free of any extra cost to the purchaser. The training may be arranged in the purchaser's premises.
- 4.4 The Bidder shall furnish the breakup of cost as follows solely for the purpose of facilitating the comparison of Bids only. The price must be stated separately for each item.
 - a) Ex-Factory/ Ex-Warehouse/ Ex-Showroom/ off the sale price
 - b) Packing, Forwarding and Handling charges
 - c) Insurance charges
 - d) Freight up to destination Institution.
 - e) Erection, Assembly, commissioning, incidental service, including testing, training charges.
 - f) Tax component (i.e all taxes) payable by the Consignee.
 - g) Delivery cost at site (including Tax Component)

5. **Bid Security Deposit :**

- 5.1 All bids must be accompanied by the EMD@ 2% (two percent) of the tender value in shape of Demand Draft/Bank Guarantee only drawn in favour of Principal U C P Engineering School. payable at Berhampur.
- 5.2 The bid security is required to protect the Purchaser against the risk of Bidder's conduct which would warrant the security's forfeiture.
- 5.3 Unsuccessful bidders' EMD will be discharged or returned as promptly as possible but not later than sixty(60) days after the expiration of the period of bid validity prescribed by the Purchaser.
- 5.4 A Bid Security of 1% of the purchase order(after approval of bid by purchase committee for issue of purchase order to successful bidder by competent authority) shall be deposited by the supplier before execution of contract as acceptance to execute the order as per terms and condition. The EMD will be refunded after 1 year from the date of payment received by the supplier after installation/delivery of goods successfully.



5.5 The bid security may be forfeited if a Bidder withdraws its bid during the period of bid validity.

6. **Delivery of Goods**

6.1 The delivery of goods shall be made by the supplier in accordance to the order placed to the Consignee as shall be detailed in the Schedule of requirement of Goods.

7. **Inspection/ Test**

7.1 The Purchaser or his representative shall have the right to inspect/ examine/ test the goods in conformity with the contract awarded/supply order.

7.2 The inspection/examination/ test may be conducted at the goods final destination at the premises of the consignee.

7.3 The purchaser's right to inspect/ examine/test & where necessary to reject the goods 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, the purchaser has to give sufficient reasons justifying such rejection.

7.4 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.

8. **Payment Terms**

8.1 No advance payment is allowed by the Purchaser to the supplier for performance of the contract in question.

8.2 The standard payment terms(subject to recoveries, if any) upon submission of required documents shall be as follows :
Full 100% payment shall be made after installation, and commissioning and demonstration of satisfactory performance and imparting to the satisfaction of the consignee.

9. **Guarantee/Warranty**

9.1 The supplier shall supply the goods strictly as per the specification and time provided in the contract.

9.2 A. **Warranty maintenance Period for General Goods (except Computer Hardware & Peripherals)** shall remain valid for 24 months after Goods or any portion thereof as the case may be, have been delivered to the final destination indicated in the contract, or for 12 months after the Goods have been supplied/installed at the final destination indicated in the contract.

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B. **Warranty maintenance period for Computer Hardwares & Peripherals** shall remain valid for **36** months after the Goods or any portion thereof as the case may be, have been delivered to the final destination indicated in the Contract. A copy of the Warranty Agreement Form is enclosed.

9.3 The Purchaser shall promptly communicate to the Supplier in writing of any claims arising under this warranty.

9.4 Upon receipt of such communication in writing, the supplier shall, with all reasonable time, repair or replace the defective Goods or parts thereof, free of cost within the guarantee period.

9.5 If the Supplier, having been noticed, fails to rectify the defect(s) within a reasonable period, the purchaser may proceed to take such remedial measures to repair the defective goods in question and shall reimburse the amount for such repair from the supplier. In that event, the Supplier shall pay the amount within a period of two weeks from the date of demand.

11. **Insurance**

11.1 The Purchaser will not pay separately for transit Insurance. The supplier is completely responsible for delivery of goods in perfect condition and shall replace/ rectify the missing/ defective parts if any at his own cost.

11.2 The goods to be supplied under the Contract shall be fully insured against loss or damage incidental to manufacture or acquisition, transportation, storage & delivery of the goods from Warehouse/ Factory/ Ex-shop of the supplier to the delivery point.

12. **Transportation**

12.1 The Supplier shall be required to meet all transport and storage expenses until delivery of the Goods covered in the contract to the Consignee.

13. **Incidental Services**

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

- a) Furnishing of detailed literature/pamphlets/ circuit diagram/ operation & maintenance manual / drawings (as applicable) for each appropriate unit of supplied goods.
- b) Furnishing of tools required for assembly and / or maintenance of the supplied goods.
- c) Performance or supervision of on-site assembly and / or maintenance of the supplied goods.
- d) 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.
- e) Training of the Purchaser's personnel at the Supplier's plant and / or on site,

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in assembly, start up, operation, maintenance and/ or repair of the supplied goods.

- f) 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.

14. **Taxes and Duties.**

14.1 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.

15. **Period of Validity of Bids**

15.1 The bid shall remain valid for a period of minimum 360 days for acceptance, from the date of opening of bid.

15.2 A bid valid for a shorter period may be rejected, as non-responsive.

15.3 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 as prescribed above.

16. **Standards**

16.1 The Goods supplied under this Contract shall conform to the standards mentioned in the Technical Specifications and when no standard is mentioned, the Goods shall conform to the standards prescribed by the Bureau of Indian Standard (BIS).

17. **Sealing and Marking of Bids**

17.1 The bidders shall submit two bids i.e. Technical & Commercial bid separately in sealed cover. Both bids are sealed in duplicate and kept in single cover.

17.2 The inner and outer envelopes shall be :-

- a) **Addressed to the Purchaser at the following address :**
- b) Bear 'PROCUREMENT OF(as mentioned in the tender notice)
- 'DO NOT OPEN BEFORE'(the last date & time of opening as indicated in tender notice).

17.3 The inner envelope shall indicate the name and address of the Bidder to enable the bid to be returned unopened in case it is declared 'late'.

17.4 If the outer envelope is not sealed and marked as required, the Purchaser will be responsible for misplacement or otherwise of the Bid.

18. **Deadline for Submission of Bids.**

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- 18.1 Bids must be received by the Purchaser at the address specified not later than the date and time mentioned in the tender notice,
- 18.2 The Purchaser may, at its discretion, extend this deadline for the submission of bids.

19. **Late Bids**

- 19.1 Any bid received by the Purchaser after the date and time fixed for submission of bids will be rejected and / or returned unopened to the Bidder on that ground alone.

20. **Opening of Bids by Purchaser**

- 20.1 The Purchaser will open bids, in the presence of Bidder's duly authorized representatives who choose to attend, at the date & time of opening of the Bid mentioned in the tender Call Notice in the following location.
In the chamber of Principal, U.C.P. Engineering School, Berhampur-760010

The Bidders' duly authorized representatives who are present shall sign a register evidencing their attendance.

- 20.2 The name of the bidder/tenderer and the total amount of each bid along with important conditions like excise duty, sales tax, delivery terms, delivery period, special conditions and discounts, if any, shall be read out at the time of bid opening.

21. **Preliminary Examination**

- 21.1 The Purchaser will examine the bids to determine whether they are complete, whether any computational errors have been made, whether required securities have been furnished, whether the documents have been properly signed, and whether the bids are generally in order.

- 21.2 Arithmetical errors 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 the errors, its bid will be rejected. If there is a discrepancy between words and figures, the amount in words will prevail.

- 21.3 Prior to the detailed evaluation, the Purchaser will determine the substantial responsiveness of each bid to the Bidding Documents. For purposes of these Clauses a substantially responsive bid is one which conforms to all the terms and conditions of the Bidding Documents without material deviations. The Purchaser's determination of a bid's responsiveness is to be based on the contents of the bids itself without recourse to extrinsic evidence.

- 21.4 Bids received without certified copies of GST valid upto preceding year issued by competent authority may be treated as non-responsive and liable for rejection.



- 21.5 Bids received without the requisite Bid Security shall be treated as non-responsive and shall be rejected.
- 21.6 The Purchaser may waive any minor informality or non-conformity or irregularity in a bid which does not prejudice or affect the relative ranking of any Bidder.

22. Evaluation and Comparison of Bids

22.1 The comparison shall be of ex-factory/ ex-warehouse/ off-the shelf price of the goods offered from within the Purchaser's country, such price to include all costs as well as duties and taxes paid or payable on components and raw-material incorporated or to be incorporated in the goods, the CIF port-of-entry price of the goods offered from outside the Purchaser's Country.

22.2 The Purchaser's evaluation of a bid will take into account, in addition to the bid price and the price of incidental services, the following factors :-

- a) The purpose of tender evaluation is to determine substantially responsive tender with the lowest evaluated cost, but not necessarily the lowest submitted price, which should be recommended for award.
- b) Evaluation of tenders should be made strictly in terms of the provisions in the tender documents to ensure compliance with the commercial and technical aspects.
- c) The past performance of the suppliers will be taken into account while evaluating the tenders.
- d) Cost of the inland transportation, insurance and other costs as per Clause 4 within the Purchaser's Country incidental to delivery of the goods to their final destination;
- e) Delivery schedule offered in the bid;
- f) Deviations in payment schedule from that specified in the General Terms & Conditions of Contract;
- g) The cost of components, spare parts and service.
- h) The availability in the Purchaser's country of spare parts and after-sales services for the goods offered in the bid;
- i) The projected operating and maintenance costs during the life of the equipment/ goods.
- j) The performance and productivity of the equipment/ goods offered;
- k) The quality and adaptability of the equipment/ goods offered.

23. Award Criteria

23.1 The Purchaser will award the Contract to the successful Bidder whose bid has been determined as the lowest evaluated bid, provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily.

23.2 Quality, durability and adaptability of the equipment/ goods offered suiting to use in Training Practice shall continue to be the overriding factor for selecting

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any goods and determining the lowest evaluated bid.

23.3 The purchaser shall award the contract within the period of validity of tenders to the Bidder who meets the Tender condition in all aspects has the necessary technical and production capabilities and financial resources whose Bid is substantially responsive to the tender conditions and has offered the lowest evaluated cost.

24. **Purchaser's Right to Accept any Bid and to Reject any Bid**

24.1 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 Bidder or Bidders on the grounds of such action of the purchaser.

25. **Notification of Award**

25.1 Prior to the expiration of the period of validity of the Bid, the Purchaser will notify the successful Bidder in writing by registered letter or by Fax/Email, to be confirmed in writing that his bid has been accepted.

25.2 The notification of award will constitute the formation of the Contract.

25.3 Upon the successful Bidder's , the Purchaser will promptly notify each unsuccessful Bidder and will discharge its bid security.

26. **Signing of Contract**

26.1 At the same time as the Purchaser notifies the successful Bidder that his bid has been accepted, the Purchaser will send the Bidder the Contract Form provided in the bidding documents, incorporating all terms and conditions of the agreements between the parties. Successful bidder may be called by the purchaser for amicable negotiation if required.

27. **Resolution of Disputes by Arbitration**

a) The Purchaser and the Supplier should try to resolve the disputes , if any, arising out of the contract, amicably between them, failing which the same shall be referred to the, Principal, U.C.P. Engineering School, Berhampur-760010 for adjudication as the sole Arbitrator under the provisions of the Arbitration and Conciliation Act, 1996 whose decision will be final and binding on all the parties to the dispute.

28. **Jurisdiction of the Court.**

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

Principal U.C.P. Engineering School, Berhampur

Annexure-III

WARRANTY MAINTENANCE CONTRACT AGREEMENT.

THIS AGREEMENT made the.....day of, 20.... between the Principal, U.C.P. Engineering School, Berhampur (hereinafter "the Purchaser") of the one part and M/s.....(hereinafter called "the Supplier") of the other part:

WHEREAS the Purchaser invited bids for certain Goods & ancillary services viz, supply, installation & commissioning of the equipment at Consignee site including Warranty Maintenance Services and has accepted a bid by the Supplier for the supply, installation & commissioning of the equipment specified below at the Consignee site including Warranty Maintenance Services for a period of 3 years/1 year from the date of installation & commissioning of the equipment as per award of Contract No..... dated

Name of the Equipment/Software

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 equipment & checking the System Performance.
3. The Supplier is to furnish the tentative schedule of the preventive maintenance (as mentioned in item 1) of Warranty Maintenance Contract (WMC) to be carried out.
4. The parts replaced must be new parts or equivalent in performance to new parts.

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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 canceled by both parties. A register is to be maintained by the Supplier where complaints are to be noted along with Complaint No.
7. Shoes should be removed before entering into the Computer room or the place at which the equipment has been installed.
8. The maintenance shall normally be done during working hours of the customer i.e from 10 AM to 5 PM. However, in case of emergency, maintenance may have to be done beyond office hours and even on holidays. Prior arrangement through proper communication should be worked out in all such cases by the Supplier & the Consignee.
9. The Service Engineer of the Supplier will be allowed to handle the respective equipment only in presence of the officer in charge at the Consignee site.
10. The Supplier should ensure that maintenance job is not hampered/delayed due to paucity of spares/inadequate man power etc.
11. The Supplier should submit the services call report, to the Consignee for each and every service call without fail.
12. In case of delay/lack of communication, down time will be calculated as mentioned below in WMC Clause.



WARRANTY MAINTENANCE CONTRACT (WMC) CLAUSE

Normal response time for repair is 24 hours from the actual time of reporting of the problem to the Supplier.

	Period	Extension of WMC period
Response Time	Above 24 hrs & below 48 hrs.	2 days for delay of each day.
	Above 48 hrs & below 96 hrs	One Week for each day of delay
	Above 96 hrs	Two weeks for each day of delay
Down time	Above 24 hrs & below 48 hrs	Two days for each day of delay
	Above 48 hrs & below 96 hrs	One Week for each day of delay
	Above 96 hrs	Two weeks for each day of delay.

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

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

15. 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-IV

MANUFACTURER'S AUTHORISATION FORM

No. _____ / Date _____ /

To
Principal,
U C P Engineering School.
Berhampur (Ganjam) Odisha-760010

Dear Sir, Tender No. _____

We _____ who are
established and reputable manufacturers of
_____ having factories at

_____ (Address of Factory) to thereby authorize
M/s. _____ (Name and address of Agent) to
submit a bid and sign the contract with you against the above tender.

* 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 IFB.

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 tender.
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 by the Bidder 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-V

CALCULATION OF BID SECURITY

Item No.	Item Quoted	Approx. Qty.	Rate/Unit (Highest Quoted Rate)	Total Amount (in Rs.)
			Grand Total :	Rs.
Bid Security Amount :- 1% of Grand Total Amount				Rs.

Signature of Bidder

N.B. – Only highest rates (if alternate models quoted) of each item quoted are to be taken in to account for calculation of bid security.



PERFORMANCE STATEMENTS

ANNEXURE-V

(In proof of Eligibility of bidder for a period of three years).

Order placed by the organisation with Address.	Order No & date	Stores ordered	Value of order	If the equipments are giving trouble free service.

Copy of Purchase order may be enclosed.

Signature of bidder

Signature 1 *Signature 2* *Signature 3*

ANNEXURE-
VII

CHECK LIST:

DOCUMENTS TO BE SUBMITTED IN

Technical Bid

Commercial bid

- | | | |
|----|--|-----------------------------------|
| 1. | Accepted Terms and Conditions. | 1.Price
(Item Wise)-Annexure-1 |
| 2. | EMD amount(1% of Tender value) | 2. BID calculation sheet |
| 3. | Detail Specifications along with leaflet, literature. | |
| 4. | Performance statements | |
| 5. | Authorization from manufacturer | |
| 6. | GST certificate. | |
| 7. | Letter regarding Delivery period of supply. | |
| 8. | Demand draft/Money Receipt towards processing charge of tender Papers. | |

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PACKAGE-1 CIVIL ENGINEERING DEPARTMENT, U.C.P ENGINEERING SCHOOL, BERHAMPUR

	NAME OF THE EQUIPMENT WITH SPECIFICATION
1	Thermostatically controlled Oven , with Digital Indicator cum controller with safety alarm, Range 50 Deg.C.to 250 Deg.C. +/- 1 Deg.C with Air Circulating Fan S.S. Inside size 600 x600x600mm
2	Permeability Apparatus- Permeameter mould, internal diameter = 100mm, effective height =127.3 mm, capacity = 1000ml. Detachable collar, 100mm diameter, 60mm height, Dummy plate, 108 mm diameter, 12mm thick, Drainage base, having porous disc Drainage cap having porous disc with a spring attached to the top. Compaction equipment such as Proctor's rammer or a static compaction equipment, as specified in IS:2720 (Part VII)-1965. Constant head water supply reservoir Vacuum pump Constant head collecting chamber, Stop watch, Large funnel, Filter paper.
3	Universal Testing Machine (Computerised), Capacity 1000kN with hydraulic jaws, Electronic extensometer strain gauge type with 2.5mm extension and gauge length 25 & 50 mm, Bend test attachment 180, shear test attachment 6,8,12,16 & 20 mm dia, shear attachment 25,30,35, and 40mm dia, Pair of threaded holding heads for 6, 8, 10, 12, 16, 18, 20(per set), Gripping devices for threaded and shouldered specimens, Pair of split ring for shouldered specimen 6, 8, 10, 12, 16, 18, 20(per set) Software for UTM should plot load vs displacement on the screen. Safety feature with alarm can be set to protect the instrument.
4	Compression Testing Machine (Computerised) 2000kN , Split cylinder tensile test attachment for DCMT 2000kN along with brick platen 320x220mm for 150mm dia x 300mm long cylinder, Brick platen set with spherical seating size 30 cm x 30 cm square
5	Hot water bath (40cm X 30cm X 10cm with 12 holes of 75mm diameter)
6	Nephelometer (Turbidimeter) -with all accessories in complete set 0 to 10 NTU.
7	Digital pH Meter
8	Differential Global Positioning System(DGPS) Detail specification is attached separately.
9	MS Project software , Microsoft project software standard, 2021-Educational version
10	Photogrammetry software ERDAS Imagine Version 2018 or latter Digital Schmidt Rebound Hammer
11	Computer System for Photogrammetry software Specification :- Windows 10, 64 bits , CPU Intel i9/Threadripper/Ryzen 9/, GeForce RTX 2080 GPU, compatible with OpenGL 3.2 and 2 GB RAM, Hard disk: 500 GB SSD , 16GB RAM 24" LED Monitor , mouse and Key Boad

TECHNICAL SPECIFICATIONS BASE & ROVER INCLUDING ANTENNA RECEIVER, CONTROLLER, FIELD SOFTWARE & POST PROCESSING ETC.

Sl. No	Point	Description
1	MAIN	Identical interchangeable Base & Rover complete system including accessories like Antenna receiver.controller and cables etc.
2	BASE & ROVER	
2.1	TYPE	Antenna and receiver built in single housing with Bluetooth
2.2	TRACKING	GPS: L1C/A, L1C, L2C, L2E, L5
		GLONASS: L1C/A, L1P, L2C/A, L2P, L3
		SBAS: L1C/A, L5 (for SBAS satellites that support L5)
		Galileo: E1, E5A, E5B
		BeiDou (COMPASS): B1, B2
		SBAS: QZSS, WAAS, EGNOS, GAGAN
3	NO OF CHANNELS	400 or more
4	MODES	Static, Rapid Static kinematic, Real Time Kinematic
	ACCURACY	
5	STATIC PERFORMANCE	
5.1	HORIZONTAL	3mm+0.1ppm
5.2	VERTICAL	3.5mm+0.4ppm
6	KINEMATIC & RTK PERFORMANCE	
6.1	Horizontal Accuracy	8mm + 1 ppm
	Vertical Accuracy	15mm + 1 ppm
	CODE DIFFERENTIAL GNSS POSITIONING	
	Horizontal	0.25 m + 1 ppm RMS
	Vertical	0.50 m + 1 ppm RMS
	Time to RTK Initialization	Less than 8 sec
7	LED STATUS INDICATOR	Tracking , transmission & Bluetooth etc
8	COMMUNICATIONS	<ul style="list-style-type: none"> • Serial: 3 serial on Port 1, full RS-232 serial (Dsub 9 pin) on Port 2 • fully Integrated in built Radio Modem & support of External radio protocol • Cellular GSM/GPRS modem option. • Bluetooth
9	POWER	Battery for continuous data logging at least 5 hours/each
10	POWER CONSUMPTION	Not more than 3.2 watts
11	WEIGHT	Receiver with battery weight should be less than <1.7 kg
12	UPDATE RATE	20Hz or better
13	OPERATIONAL TEMPERATURE	-40° C to +65° C
14	STORAGE TEMPERATURE	-40° C to +75° C
15	DUST & WATER PROTECTION	IP 67 or better
16	SHOCK/DROP	2m or more on to hard surface
17	HUMIDITY	100%, condensing
SPECIFICATION FOR CONTROLLER		
Sl. No	Point	Description
1	TYPE	Scratch-resistant, touch-screen display, highly readable in both low light and glaring sunshine.
2	OPERATING SYSTEM	Android 10

3	WEIGHT	Not more than 1 kg
4	CAMERA& GPS	8MP or more resolution with autofocus and LED Flash Inbuilt GPS with Geo-tagging Facility.
5	DISPLAY	5" SVGA LCD TFT with High visibility backlit LCD.
6	GRAPHICAL DISPI,AY	Controller should be capable of creating complete points, lines in the field which will be displayed
7	KEYBOARD	Full QWERTY key pad Hard with Numeric keyboard for numbering & function short keys
8	MEMORY	4GB of RAM or more Internal 32GB or more flash storage
9	BATTERY	More than 10 hours on operation condition on a single charge
10	OPERATION	-30°C to +60°C or better
11	STORAGE	-40 C to +70 C or better
12	COMMLNICATION	Bluetooth, USB Port, Wi-Fi ,3G, Data communication interface
13	DIJST AND WATER PROTECTION	IP65 waterproof and dust proof
14	DROP	1 m or better

CONTROLLER FIELD SOFTWARE

Sl. No	Point	Description
1	Should have following functions	The software should be able to log data for all the signals tracked & Static, Fast Static, RTK. Automatic survey (by distance, by time, stop & go) Satellite view status (quality, position, sky view, satellites list, base info, PDOP, HDOP) , Line, polygon, area calculation , National grids, System settings (units, precision, parameters, etc.) Stake Out Should support Graphical stakeout, not only for points but for Lines as well. Should be able to perform Real Time Quality Control for stake out positions Feature Coding with Automatic drawing Active Background maps in the form of JPEG/TIFF, DXF/DWG Export to industry standard formats like CSV, DXF, KML etc Should support COGO functionality Calculation of transformation parameters from point list. Data formats input and outputs • CMR: CMR+, CMRx input and outputs • RTCM: RTCM 2.1, RTCM 2.3, RTCM 3.0, RTCM 3.1 NMEA outputs,
2	ELLIPSOIDS	All common ellipsoids, User definable ellipsoids
3	MAP PROJECTIONS	Mercator, Transverse Mercator, User definable UTM and country specific Oblique Mercator, Lambert (1 and 2 standard parallels) Soldner Cassini, Polar Stereographic, Double Stereographic, RSO, other country specific projection
4	GEOIDAL MODEL	Upload Geoidal model to system
5	GRAPHICS	Graphical representation of points, lines and areas application result plots

6	ICONS	Icons indicating the current status of measure modes, settings, battery etc. It should be possible to configure or see status of the iconed devices by touching on the screen
7	CONFIGURATIONSETS	Ability to store and transfer all instrument and application configuration settings for different operators, survey tasks etc.
8	FREE CODING	Recording codes with optional attributes in between of measurements
9	THEMATICALCODING	Manual code entry or selection from a user defined coding points. lines and areas with optional attributes when measuring Manual code entry or selection from a user defined
10	QUICK CODING	Recording a measurement with a point code or free code by entering numerical quick code from user defined code list
11	AVERAGING	Averaging of multiple points within user defined
12	ON BOAR-D PROGRAMMES	Surveying, Staking, COGO, Area ,Two point distance, Hidden point measurements.
13	ON BOARD APPLICATION	Controller should have software to work in both GPS and TPS mode and should support survey data collection, job creation, Graphical stakeout, Map screen with zoom in
OFFICE SOFTWARE		
Sl. No	Point	Description
1	PLATFORM	Inbuilt CAD Platform Calculate distance & Angle between points , Line Joining, polygon, text, circle, etc The software should be a combined software capable of handling the GPS, TPS and Digital level data
2	IMPORT	Capable of importing the RAW Data logged from GPS and RINEX data with maps created in the field to be downloaded as such and should be capable of downloading data from Total stations and Digital levels
3	EXPORT	Capable of Exporting the data in RINEX format as well as capable of transferring the maps directly to CAD with the code lists enabling the symbols to be attached without manual editing.
4	REPORTING	Software should be capable of generating HTML Style reports directly for the surveyed data
5	PROCESSING OPTIONS	Capable of Processing the Raw static data of GPS and GLONASS for both manually and automatically
6	DATUM TRANSFORMATION	Capable of transferring the data from one datum to another for given set of common points with or without the knowledge of datum
7	ADJUSTMENT	Capable of performing 3D adjustments for the surveyed area of GPS networks.
8	OPERATINGSYSTEM	Designed to run on windows 7, windows 8, windows 10 operatingsystem
9	DATUMCONVERSION	Facility to compute parameters fordatum conversion
10	COGO Calculation	Software should be capable ofcomputing the coordinates of unknownpoints using reference points andcoordinates
11	IMAGEREFERENCING	Software should have an imagereferencing module and the surveyeddata should be imported directly on thisback ground Raster image

12	IMPORT RTK DATA	Should be able to handle RTK data and be able to Process RTK data
13	SURFACE & CONTORING	The software should be a capable of Surface Modelling, 3D visualization and quick contouring.
ALL ACCESSORIES, HARDWARE AND SOFTWARE SHOULD BE OF SAME OEM		
BASE STATION		
SL.No.	ITEM	QUANTITY (No)
1	Receiver	1
2	Wooden Telescopic Tripod	1
3	Tribrach with optical plummet,	1
4	Rechargeable batteries	2
5	Quick charger , charge two battery simultaneously	1
6	Carrying case	1
7	Post Processing software	1
8	Controller with Battery , Charger & cable	1
9	Controller Software	1
10	Controller mount	1
11	External Battery Cable	1
ROVER STATION		
SL.No.	ITEM	QUANTITY (No)
1	Receiver	1
2	Aluminum Telescopic Bipod	1
3	Carbon Fibre Pole	1
4	Rechargeable batteries	2
5	Quick charger , charge two battery simultaneously	1
6	Controller with Battery , Charger & cable	1
7	Controller Software	1
8	Pole bracket	1
9	Controller mount	1
Special NOTE: -		
<p>1. Bidders are requested to go through the Technical specifications All the Fields are must (100% matching or higher specification) for Technical Evaluation of the DGPS Equipment. Otherwise bid will be rejected.</p>		
<p>2. The above noted Specifications are the guideline for quoting the rates. The Tendering Authority has discretionary power in accepting/rejecting the bid submitted by the tenderer with any deviation from the above noted specifications for DGPS Equipment.</p>		

PACKAGE-2 COMPUTER SCIENCE & IT DEPARTMENT U C P ENGINEERING SCHOOL, BERHAI

Department of CSE & IT	
SI No	Name of the Software with detailed specification
1	Microsoft 365 (Office 365) (or Equivalent) (with Product key)
1	Wireless Router (450Mbps)
2	Switch (min 24 port)
3	NIC Card
4	Crimping Tool(RJ 45)
5	Hub (min 3 port with USB)
6	Multi purpose screwdriver set (115 in 1 interchangeable)
7	Pendrive 128 GB Ultra flash 3.0
8	Pendrive 64 GB Ultra flash 3.0
9	External Hard Disk (1 TB, USB 3.0)
10	Mega 2560 + WiFi R3 ATmega2560 with 32 Mb flash memory and CH340G USB-TTL converter on a single board+ ESP8266 CH340G board Compatible with Arduino
11	MEGA ARDUINO 2560 r3 WITH USB CABLE
12	4 CHANNEL RELAY (5V)
13	SINGLE CHANNEL RELAY (5V)
14	2 CHANNEL RELAY (5V 10A)
15	MALE TO MALE JUMPER WIRE
16	MALE TO FEMALE JUMPER WIRE
17	FEMALE TO FEMALE JUMPER WIRE
18	BREAD BOARD (175 *67*9 mm, 840 Pin)
19	9V DC BATTERY for Transistor Radios
20	5V DC BATTERY for Transistor Radios
21	LED - BLUE
22	LED - RED
23	LED - GREEN
24	LED - WHITE
25	Transistor - PNP
26	Transistor - NPN
27	Plastic One and Two Push Button Switch Control Station Box Case 22mm (1, 1 Push Button)
28	HC-05 BLUETOOTH MODULE with TTL
29	Buzzers (BIG SIZE 3-12V)
30	20X4 LCD
31	Soldering iron kit
32	Tester
33	Standard Type B USB Cable
34	Standard Type C USB Cable
35	Push Button
36	LM35 Temperature Sensor
37	DHT11 Humidity Sensor
38	10 kΩ Potentiometer
39	MQ135 Gas sensor
40	LDR SENSOR(LM393)

41	10K Potentiometer
42	1K ohm Resistors
43	2.2k ohm Resistor
44	5K Ohm Resistor
45	10K Ohm Resistor
46	220 ohm Resistor
47	330Ω Resistor
48	Sensor Kit compatible with Arduino (46 IN 1)
49	ELEGOO UNO R3 Project Most Complete Starter Kit and ELEGOO Upgraded 37 in 1 Sensor Modules Kit and ELEGOO 120pcs Multicolored Dupont Wire
50	UCTRONICS Ultimate Starter Kit for Arduino with Instruction Booklet, MEGA 2560 R3, ESP8266 Module, 1602 LCD, NE555 Timer, RTC Module, DHT11 Temp & Humi Sensor, Water Level Sensor, Sound Sensor Module
51	EPICTAC RC522 RFID Starter Kit for Arduino UNO, Mega2560, Nano with ADXL345, Joystick, Ultrasonic Sensor including 30-Projects Tutorial & Codes
52	REXQualis Most Complete Starter Kit Base on Arduino MEGA 2560 w/Detailed Tutorial Compatible with Arduino IDE
53	Acrylic sheet 1.5ft x 3ft (12MM THICKNESS)
54	port for connection to arduino cables for usb connection
55	10 KVA online ups with battery
56	Ultra HD Projector having 3840x2160 resolution, minimum 6500 Lumen Display and Contrast Ratio 15000:1 having Wifi and Bluetooth Connectivity
57	ARDUINO CABLE(A-B)

PACKAGE-3 MECHANICAL ENGINEERING DEPARTMENT U C P ENGINEERING SCHOOL,

Sr No.	Name of the Equipment	Specifications
1	DIGITAL PARALLEL FORCES APPARATUS	Complete with two strups, hooks & two 10kg weights.DIMENSIONS AND WEIGHT :Size :1.2M(L)X0.4M X 0.5m (H),TWO DIGITAL DISPLAY UNIT
2	SEARLE'S APPARATUS	SEARLE'S APPARATUS made up of steel
3	TORSION TESTING MACHINE	MAX TORQUE CAPACITY 100NM,TORQUE RANGE 100,50,20NM,NO.OF DIVISIONS ON DIAL 500,TORSION SPEED 1.5RPM,MOTOR SPECIFICATION:440V/3PZ/50HZ/0.5HP
4	DIGITAL UNIVERSAL TESTING MACHINE	Capacity:Upto 20 Ton,Test Speed : 0.01 mm/min-500 mm/min.,Width -Preferably in the range of 1000-1200 mm ,Depth- Preferably in the range of 500-600mm,Height -Preferably in the range of 1600-2000 mm
5	VICKERS HARDNESS TESTING MACHINE	Test Loads-5,10,20,30,50Kg.,Magnification of optical projection-70X,Max. Test Height (mm.)-200,Scale least count(mm.)-0.001,Depth of throat (mm.)-133,Dimensions of Machine (mm.)-L585 x W290 x H860,Weight (Approx)-73 kg.,Power Supply-220V AC, 50Hz, 1-Phase
6	IMPACT TESTING MACHINE(CHARPY/IZOD)	MAX.CAPACITY 170-300J,MIN.SCALE GRADUATION 0.5J,OVERALL SIZE(APPROX)1.3MX.45MX1.05M(H),NET WT-375KG,DIGITAL DISPLAY UNIT-01NO.BASIC MACHINE WITH HAMMER PIPE,CHARPY & IZOD STRICKER ,PROTECTIVE RAILING,HAND BRAKE &STOPPER-01 SET,V-NOTCH&UNOTCH MILLING CUTTER,SELF CENTERING TONG FOR QUICK & ACCURATE SETTING OF CHARPY TEST SPECIMEN
7	FLASH POINT & FIRE POINT APPARATUS	Automated Pensky-Martens flash point tester PMA 500 Flash point measuring range 20 °C to 410 °C
8	JOULE'S APPARATUS	Pressure range 0 .0.1 MPa Division 5 kPa Tube length / diameter. (Mm): 250/46 Copper coil 37.5 m / 132 coils 1 m pressure hose Hose clamps

9	GOVERNOR APPARATUS(HARTNELL/WATT/PORTER)	Universal Governor apparatus
10	STATIC & DYNAMIC BALANCING APPARATUS	Electricity Supply,220 V AC, Single Phase, 0.5 kW,Floor Space-0.5 x 0.5 m,Rotating Shaft,Material Stainless Steel,Balancing weight-4 Nos. of Stainless Steel with different sized eccentric mass for varying unbalance.
11	JOURNAL BALANCING APPARATUS	Journal : 50 mm. dia. (nominal),Bearing : 55 mm. Dia,Weights : 4 adjustable weights,Motor : D.C. shunt Motor, 3,000 RPM,Control panel : For speed control of Motor,Manometer panel : 16 tube Manometer,Oil recommended : SAE 10.
12	CAM & FOLLOWER ANALYSIS APPARATUS	Cam -Eccentric, tangent and circular ARC type – one each,Follower- mushroom, flat faced and roller type – one each,Variable speed motor coupled to camshaft of suitable range and Variac,A dial gauge to note the follower displacement,230 V, A.C. stabilized supply along with earthing connection,Bench area 0.5m x 0.5m x 0.5m height,Tachometer to measure the jumping speed, (can be supplied extra)
13	EPICYCLIC GEAR TRAIN	RPM Measurement-Digital RPM Indicator with proximity switch.,Floor Area-1.5 x 2 m,Electricity Supply-220 V AC, Single Phase, 0.5 kW,Motor-Variable speed motor, 1 hp,Speed Control Unit-Variable Speed Drive for varying the speed of motor.
14	VERNIER CALIPER	Standard size with measuring range 150 mm,accuracy 0.01 mm,Digital display unit, material-stainless steel
15	MICROMETER	Standard size with measuring range 0-25mm
16	VERNIER HEIGHT GAUGE	The metric height gauges measure height up to a maximum of 1 000 mm using a main scale and vernier scale graduated to read to 0.02 mm
17	SLIP GAUGE	Standard size
18	SINE BAR	Distance Between Roller Axes
19	Sheet Bending m/c	Capacity-10 Tons,Ram Dia-50 mm,Stroke-100mm,Plate thickness-12 mm,Weight-200 kg etc.

20	Drilling m/c with stand	WORKING SURFACE OF BASE PLATE-430x360 mm,ELECTRIC MOTOR-1.5 HP/1440 mm,V-BELT SIZE-B65,WEIGHT OF MACHINE -400 KG
21	Single phase Bench Grinding m/c	Grinder Motor-0.55 KW , 0.75 HP, 3 Phase , 2800 RPM,Wheel Size-200 x 25 x 31.75 mm (8"),Over all Dim-L x W x H 650 x 650 x 1050,Approx Weight-180 Kg
22	Steel rule(scale)	Length-300 mm,material-stainless steel,thickness-2 mm
23	Scriber	Standard size Material- Mild steel, Tip diameter- 1mm
24	Marking gauge	Size- Standard, shaft length 5 cm,weight-81 kg,material-steel
25	Mortise gauge	size- 6 inch, weight- 250gm
26	RIP SAW	Blade length=18 INCH, power= hand powered, cutting angle= 90 degree, Blade material= Alloy steel
27	FIRMAR CHISEL	size- standard 1 inch
28	HAND DRILL	Power Input: 950W.,Full Load Impact Rate: 3000 IPM,Weight: 5.9 Kg, single phase
29	MALLET	material= wood, head diameter=75mm , head length= 175 mm
30	WOOD WORKING LATHE	Automation grade= automatic, max swing over bed= 750 mm, max spindle speed= 2000 rpm
31	CIRCULAR SAW	Blade diameter= 270 mm, Maximum Cutting Capacity= 2.11/16 inch, Arbor diameter: 5/8 inch
32	WOOD CUTTING MACHINE	SINGLE PHASE, Blade Size : 185mm, Speed : 5500 RPM, depth of cut= 70mm
33	GOGGLES	glass= welding glass/ cobalt blue glass, size= standard size
34	CHIPPING HAMMER	Dimensions (LXW)12.9x28cm, material= alloy steel, weight= 300gm
35	WIRE BRUSH	size- standard size
36	MIG MACHINE	Three PHASE, Power: 15 KVA, Length: 560 mm, Height: 530 mm
37	TIG MACHINE	Three PHASE,Frequency: 50-60 Hz,Input Current: 27.5/19.9 A,Size: 515x262x468(mm)

38	HACKSAW	length= 12 inch, Material Blade Material: Chrome alloy Steel Blade, Handle Material Aluminium Die Cast Handle
39	AIR BLOWER	Power= 415 v,Blower Type =Centrifugal Blower,Power Source =Electric Blower
40	SHOVEL	Item size: 16.5*3.7inch, weight- 350gm
42	FLAT TONG	Product Type: Flat Tongs, size- 350mm
43	HOT CHISEL	Material= Mild Steel, Surface Finish= Color Coated
44	COLD CHISEL	Material= Mild Steel, Surface Finish= Color Coated
45	PADESTAL GRINDING M/C	MG18, SINGLE PHASE, Resinoid Bond - 450 x 50 x 50.8, Wheel Centre distance=1280 MM, Base to centre line of spindle= 860
46	BENCH VICE	6 INCH, Base Type =Fixed
47	TRY SQUARE	8 INCH
48	SURFACE GAUGE	8 INCH
49	DOT PUNCH	4 INCH, material= alloy steel
50	CENTRE PUNCH	4 INCH, material= alloy steel
51	ANGLE PLATE	8X4 INCH
52	VERNIER CALLIPER	size= standard size
53	DIVIDERS	10 inch
54	FEELER GAUGE	size= large size
55	VERNIER HEIGHT GAUGE	size= 600mm, stainless steel
56	HACKSAW	length= 12 inch, Material Blade Material: Chrome alloy Steel Blade, Handle Material Aluminium Die Cast Handle
57	TAP WRENCH	Tap Size=M4 - M20 mm, Length =370 mm
58	POWER SAW MACHINE	3PHASE, Motor Power= 1 Hp, Height =875 mm, Blade 350 mm
59	Vaccum Pump set with accessories	DOUBLE STAGE Vacuum Pump 220/50Hz 35 lit/min, 1.5CFM, 25 Microns, 1/6 HP, 2850 RPM, 5.4 KG. Model: 90060-220
60	Halide Torch or any leak tester	Model Name/Number 303 A/B Power Supply 3VDC (2 quality batteries) Warm-up about 6 sec Reaction time Instant
61	MODEL OF 2 STROKE PETROL ENGINE	NON-WORKING MODEL OF 2 STROKE PETROL ENGINE
62	MODEL OF 4 STROKE PETROL ENGINE	NON-WORKING MODEL OF 4 STROKE PETROL ENGINE
63	MODEL OF 2 STROKE DIESEL ENGINE	NON-WORKING MODEL OF 2 STROKE DIESEL ENGINE

64	MODEL OF 4 STROKE DIESEL ENGINE	NON-WORKING MODEL OF 4 STROKE DIESEL ENGINE
65	SINGLE CYLINDER PETROL ENGINE TEST RIG	FUEL TYPE : PETROL , VOLTAGE : 230 V AC AIR BOX: MS VOLTAGE: 230 V AC AIR BOX: MS MATERIAL MS & STAINLESS STEEL
66	SINGLE CYLINDER DIESEL ENGINE TEST RIG	FUEL TYPE : DIESEL , VOLTAGE : 230 V AC AIR BOX: MS VOLTAGE: 230 V AC AIR BOX: MS MATERIAL MS & STAINLESS STEEL
67	2 STAGE AIR COMPRESSOR TEST RIG	PHASE: 3 VOLTAGE: 415 V MOTOR: 2W PRESSURE: 10 Mpa speed: 1500 RPM
68	BOURDON TUBE PRESSURE GAUGE, MANOMETER	Wetted: Brass & stainless steel Max Pressure: upto 3 times end of scale Max Temperature: up to 200*c Nominal size: 63 mm
69	FLOW THROUGH PIPE APPARATUS	Tank Capacity: 140L Material: MS Power: 15A Voltage : 230V Single Phas
70	DRAWING BOARD	D1 SIZE=700X500X25mm, material= wood
71	Computer System	Operating system windows 10 , 8Gb RAM , 512 GB Hard Disk, 2gb graphics
72	CHASSIS OF A CAR	Petrol Engine Displacement (cc) 1197 No. of cylinder 4 Max Power (bhp@rpm) 88.50 bhp@6000rpm Max Torque (nm@rpm) 113 Nm@4400rpm Seating Capacity 5 Transmission Type Automatic Boot Space (Litres) 268 Fuel Tank Capacity 37.0 Body Type Hatchback
73	DIFFERENTIAL OF A TRACTOR	Differential side gear or sun gears. Pinion shaft or cross pin. Axle shafts or half shafts. Ring gear or crown wheel. Drive pinion or bevel pinion. Differential pinions or planet gears. Differential case or Housing.

74	HYDRAULIC BRAKE SYSTEM OF A CAR WORKING MODEL	<p>Real" automotive components with fully functional disc/drum hydraulic braking system including:</p> <ul style="list-style-type: none"> All hydraulic components Brake pedal and parking brake pedal Power brake booster Parking brake components Hydraulic pressure gauges at each wheel (4) Fully functional parking brake system Fits through a standard 30" door opening Heavy duty metal stand with casters for easy transport (two fixed and two swivel w/locks) All routine brake service procedures can be performed on this trainer including: Master cylinder service Brake pad/shoe replacement Disc/Drum service Wheel bearing service Caliper/Wheel cylinder service Brake hose/line service Parking brake service
75	SOLEX CARBURETOR	<p>Components of carburetors usually include a storage chamber for liquid fuel, a choke, an idling (or slow-running) jet, a main jet, a venturi-shaped air-flow restriction, and an accelerator pump.</p>
76	MARUTY CAR TYPE CARBURETOR	<p>Components of carburetors usually include a storage chamber for liquid fuel, a choke, an idling (or slow-running) jet, a main jet, a venturi-shaped air-flow restriction, and an accelerator pump.</p>
77	CUT SECTION OF A FUEL PUMP	<p>Engineering Cut Section Models Engineering Cut Section Working Models Automobile cut section Models</p>
78	GEAR BOX	<ol style="list-style-type: none"> 1. Actual Cut Model of gear box body for better view of shifting mechanism and main shaft clutch shaft and countershaft. 2. 12V dc motor drive gear box for better understanding of gear ratio. 3. Gear Box mounted on Heavy Duty 1.5inch Square MS Pipe with power Coated
79	NEW CAR ENGINE	<p>Dimension(L*W*H): 867x550x988 mm Stroke: 4 Stroke</p>

80	Journal bearing apparatus	Electricity supply: 230 V AC, Single Phase, 0.5 kW. Area : 1.5 x 1.5 Digital Tachometer Oil SAE 40 about 5 Ltrs, Journal : Diameter 50 mm Bearing : Diameter 55 mm
81	Strain gauge	Measurement Range= \pm 15,000 micro strain, Overall length=200 mm nominal, Effective Gage length=166 mm, Effective Gage length=166 mm
82	PIEZOMETER	Non-working Model of piezometer
83	model of venturimeter	Non-working Model of venturimeter
84	bernouli's apparatus	single phase, Voltage =230, Measuring Tank= Metal
85	model of cochran boiler	Non-working Model of Vertical water tube boiler
86	model of steam engine	Non-working Model of stem engine
87	Hydraulic Trainer Kit with accessories	Material Metal Operating Pressure 20 bar Display analog Finish Coated Surface treatment Galvanised Wheel Material Nylon
88	Pnumatic Trainer Kit wth accessories	Autmation grade : Automatic Design : Digital Voltage 230 Volt Max Pressure SAP-20
89	Digital Tachometer	5 Digits LED Display Range 10.00 to 99999 Auto Rnage RPM Maximum Distance 50 to 300 mm
90	Modern steam power plant model	Non-working Model of Thermal power plant
91	Cooling tower model	Non-working Model of Natural cooling tower
92	Jet Condenser model	Non-working Model of Parallel/Counter flow type Jet Condenser
93	De-lavel turbine model	Non-working Model of De-lavel turbine
94	Spring loaded safety valve	Non-working Model of spring loaded safety valve
95	Lancashire boiler Model	Non-working Model of Lancashire boiler
96	Cornish boiler Model	Non-working Model of Cornish boiler
97	Babcock and Wilcox boiler model	Non-working Model of Babcock and Wilcox boiler
98	Vertical water tube boiler model	Non-working Model of Vertical water tube boiler
99	Cooling tower model	Non-working Model of Forced cooling tower

PACKAGE-4 ELECTRICAL ENGINEERING DEPARTMENT U C P ENGINEERING SCHOOL,

Equipments List of Electrical Department

Sr. No	Name Of the Equipments	Specification
1	DC Superposition and Maximum power transform Theorem study trainer kit	9V,20mA IC regulated Power Supply, 0-12V & 20mA Continuous power supply, DVM 20V range
2	DC Network Theorem Study kit	Regulated Volatge Supply(0-5V,12V and 100mA)
3	DC Network Theorem and Law's trainer kit	Input 230V AC, Inbuilt DC regulator(0-30V and 0-15V, 150mA)
4	Series and Parallel RLC resonance Study trainer kit	Input Voltage-230V AC \pm 10%, 50Hz, Inbuilt Sine wave Generator
5	RC High pass and low pass Filter trainer kit	Input and Output frequency 1KHz, Passive type, Pi type Construction
6	VI Characteristics study of SCR, TRIAC, DIAC, MOSFET, IGBT trainer kit	AC power supply(18V-0-18V and 0-15V) DC power supply range(5-35V and 250mA and 500mA), 5 Gate and PWM control, minimum Ripple 3mV
7	Single phase inverter trainer study kit	Input Range(170V to 270V, 50Hz), Output range(195V to 250V), 200W and 12V 7Ah Battery
8	Single Phase Cyclo-Converter Trainer kit	16VAC Power Supply, 4 SCR, 0-180 degree firing control
9	Single Phase Controlled Rectifier trainer kit	0-15VAC power supply, 4 SCR, 0-180 degree firing Control
10	Desktop Computer	16GB RAM, CORE i5, 512GB SDD, 6th GEN or above, Microsoft Windows 10 professional OS 64bit,
11	MATLAB Software R2018a or above(25 User Standard, Individual/Perputual license)	OS support Windows, LINUX, Macintosh, Support High-level language for numerical computation, Mathematical functions for linear algebra, statistics, Fourier analysis, Filtering, optimisation, numerical, Built in graphics, Integrating MATLAB with external language C, JAVA, .NET, MS excel. SIMULINK shall have Editor and Organisation, Synchronisation from MS word, MS excel. Bidirecional traceability between requirments, design, generated code and test.

**PACKAGE-5 ELECTRONICS & TELECOMMUNICATION
DEPARTMENT U C P ENGINEERING SCHOOL,**

SI NO.	EQUIPMENT WITH SPECIFICATION	QTY
1	Digital Multimeter (4 1/2 DIGIT)	
2	Digital Clamp Meter	
3	Maximum power transfer theorem trainer kit	
4	Two port network trainer kit	
5	Attenuator trainer kit (Pi and T)	
6	8051 Microcontroller with interfacing	
7	Delta modulator/demodulator trainer board	
8	Xilinx with compatible FPGA/CPLD board (Vivado 2021.x)	30 user
9	Embedded Kit (ARM processor, its OS, with interface board)(Latest Version)	30 user
10	Satellite Communication Trainer Kit	
11	RADAR Trainer Kit	
12	ISDN Trainer Kit	
13	MATLAB (R2021b - 30 users)	
14	PLC with HMI and SCADA (S7-400)	
15	SMART INTERACTING PANEL	
16	LCD Projector	
17	Steel Almirah (78"x36"x18")	
18	6 self racks (78"x36"x18")	
19	Web Chair	
20	Faculty table for classroom (54"x30"x36")	
21	25 PCs (Windows 11- i7-8GB RAM)	

PACKAGE-6 CHEMICAL ENGINEERING DEPARTMENT U C P ENGINEERING SCHOOL,

sr no	Name of the Equipment with detailed of Specification
1	<p>Fractional Distillation :</p> <p>Color - Transparent Material-Borosilicate Glass 3.3 Body: Stainless Steel Temperature : 400 Deg C Capacity: 20 Ltrs Operating Voltage -230 V With Condenser Facility</p>
2	<p>Differential distillation UNIT</p> <p>Material Stainless Steel Capacity: 5 ltrs. Insulation: with ceramic wool and cladding with Aluminum foil. Condense: Concentric Tube type (Material : Stainless Steel) Distilled Tank: Material- Stainless Steel, Capacity- 2 ltrs Control panel : Digital Temp. Controller Controller Type : PID Controller, Temperature Range-0-199.9°C (For Steam Generator) Digital Temp. Indicator : 0-199.9°C with multi-channel switch. Temp. Sensors :</p>
3	<p>Bubblecap Rectification column</p> <p>Distillation Column : Material Stainless Steel, Dia. 110mm, Seven plates.</p> <ul style="list-style-type: none"> ••Pressure Gauge : Bourdon type ••Rotameter : For cooling water flow rate measurement. ••Steam Generator : Made of Stainless Steel, provided with Pressure Gauge & Level Indicator, Safety valve & insulated with ceramic wool and cladding with Aluminium foil. ••Reflux Divider : Should have Special arrangement to change R/D ratio automatically. ••Condenser : Made up of Stainless Steel, Shell & Tube type. ••Bottom product tank : Made of Stainless Steel, capacity 5 Ltrs. ••Distillate tank : Made of Stainless Steel, capacity 5 Ltrs. ••Heater : Nichrome wire heater. ••Temp. Sensors : RTD PT-100 type ••Control panel comprises of : Digital Temp. Controller : PID Controller, 0-199.9°C, For Reboiler. Digital Temp. Indicator : 0-199.9°C, with multi-channel switch Reflux timer : For changing R/D ratio With Standard make on/off switch, Mains Indicator etc
4	<p>Steam Distillation Unit</p> <p>Material :Borosilicate Glass Design Type: Standard Color: Transparent Flask Material: Borosilicate Glass Maximum Temperature Capacity: 300degC</p>
5	<p>Open Boiling Pan</p>

6	<p>Packed Bed Absorption Tower Column : Borosilicate Glass Dia. 55 mm, Length 750mm (approx.) Packing : Borosilicate Glass Reaching Ring Feed Circulation: By compressed air. Pressure Regulator: 0-2 kg/cm². Pressure Gauge : Bourdon type Feed Tank Material: Stainless Steel, Capacity 20 Ltrs. Flow measurement: Rota meters (One each for feed, air & CO₂). Collecting Tank: Material Stainless Steel, Capacity 10 Ltrs. Control Panel:Standard make On/Off switch, Mains Indicator etc</p>
7	<p>Cooling Tower Cooling tower, fabricated of M.S. Sheets, 200 X 200 mm. cross section, 1.2m. height with Perspex front. Wire mesh packing is provided in the tower Geyser - 3 Kw Capacity to provided hot water Centrifugal blower, 1 HP capacity to force air through the tower Multichannel Digital Temperature indicator to measure temperature at various points Rotameter to measure inlet water flow Measuring tank to measure outlet water flow Calibrated orifice and water manometer to measure airflow. Arrangement to measure dry and wet bulb temperatures of air at 5 intermediate stations.</p>
8	<p>Wetted Wall Column Heater: Nichrome Wire Heater Column: Borosilicate Glass Dia: 45mm Length: 1000 mm (approx) Rotameter: For water flow rate measurement Dry & wet Bulb Temp: With Digital Temperature Indicator Temperature Sensors : RTD PT-100 Type Heating Chamber capacity: Compatible Water Tank Material: Stainless Steel Water Tank Capacity: 20 Litres Electricity Supply: 1 Phase, 220 V AC, 0.5 Kw Digital Temp. Indicator : 0-199.90C, RTD PT-100 type with multi-channel switch. Standard make on/off switch, Mains Indicator Water Circulation: FHP Pump</p>

9	<p>Tray Dryer</p> <p>Number Of Tray 5 Voltage 240 V Frequency 50 Hz Material of construction: Stainless Steel (Tray) Volt Meter& Ammeter Display Driven Type: Electric Voltage :240 V Frequency :50 Hz</p>
10	<p>Fluidized Bed Dryer</p> <p>Column Material Borosilicate Glass, Dia. 80 mm. Length 500mm Separator: Cyclone Separator Material Stainless Steel, Compatible Capacity with collector Air Circulation: By forced draft fan Heating Chamber: Compatible capacity Heater: Nichrome wire heater</p>
11	<p>Open Pan Crystallizer</p> <p>Evaporator: Hemi-Spherical, Jacketed Type, Made Of Stainless Steel Insulated From Outside. Dia. 300 Mm Steam Generator: Made Of Stainless Steel, Provided With Pressure Gauge & Level Indicator, Safety Valve And Drain Etc. & Insulated With Ceramic Wool And Cladding With Aluminium Foil Condensate Measurement: Using Measuring Cylinder & Stop Watch Temp. Measurement: By Rtd Pt-100 Senso Control Panel: Digital Temp/ Controller: 0-199.9°C, (For Steam Generator) Digital Temp. Indicator: 0-199.9°C Standard Make On/Off Switch, Mains Indicator Etc</p>
12	<p>Swanson Walker Crystallizer:</p> <p>Capacity: 20 Ltrs Material :SS Orientation: Horizontal Automation Grade Semi-Automatic Color standard Voltage: 220 V AC Temperature : 100'C Production Capacity 25 Ltrs</p>

13	<p><u>CSTR In series or Cascade C.S.T.R.</u> Reactor (3Nos.): Material Stainless Steel, Capacity 1 Ltr.(Approx) Stirrer (3Nos.): Stainless Steel Impeller and shaft coupled with FHP Motor. Feed Tank (2Nos.): Material Stainless Steel, Capacity - 20 Ltrs. Feed Circulation: By compressed air. Flow Measurement: Rotameter 2 Nos. (One each for Reactants). Piping: Stainless Steel and PVC Pressure Regulator: 0-2 Kg/cm² Pressure Gauge: Bourdon type 0-2 Kg/cm² Stop Watch: Electronic. Control Panel comprising of: Standard make on/off switch, Mains Indicator etc.</p>
14	<p>Shell and Tube heat exchanger fabricated shell, tubes: With baffles on outer side Type:1-2 heat exchangers, Flow rate Measurement: Rotameter Pump:magnetic drive pump Heating Element: Crompton made Geyser Display and Control: Digital Temperature Controller</p>
15	<p>Finned Heat exchanger Specimen Tube : 35 mm OD, 32 mm ID, 500mm long Fin : 500 mm long, 20 width, 06 nos. Geyser 1 liter, 3 kW, Instantaneous 02 nos Flow measurement Rota meters 0 to 150 cc / sec Blower Electrex make, speed 3000 RPM</p>
16	<p><u>Double Pipe Heat exchanger</u> Inner copper tube through which hot air flows Dia : 6 mm Dia : 100 mm (Inside) Heaters to heat the air (3 Nos -1 kw each) Material Grade SS - 304 / MS Frame Type Steel Air Flow measurement: Orificemeter and manomete Water flow measurement: Rotamete</p>
17	<p><u>Stefan Boltzmann Aparatus</u> Specs Circuit and Instrument specification Voltage Measurement Range: 0-300 Volts-AC Current Measurement : Voltage Measurement Range 0-300 Volts-AC Current Measurement 0-30 Ampere Temperature sensor range 0 to +1024 Degree Celcius</p>

18	<p>Forced Convection</p> <p>heat transfer surfaces – flat plate, pinned and finned Material of Construction: Stainless Steel temperature Measurement : Thermocouple Air velocity Measurement : Anemometer Power: 1 Phase, 240V</p>
19	<p>Composite wall</p> <p>Electric Heater Disk Type Heater, Capacity 300 W, Supply 230 V AC Composite Slab Slab of three different materials Steel, Pressed Wood & Bakelite with embedded Electric heater Wooden Cabinet Cabinet with glass door on front side for housing the slab Frame Made of M.S. Square Tubes & Sheets, Welded & Powder coated</p>
20	<p>Digital Weighing Balance. DIGITAL BALANCE/DIGITAL WEIGHING MACHINE</p> <p>LCD Display Customized, large, attractive LCD with multi parameter display illuminated by white back light.</p> <ul style="list-style-type: none"> • Multiple Weighing Units Grams, Ounces, Automatic count correction for precise calibration. Capacity: 30 gram Readability/Accuracy: 0.001 gram
21	<p>Reynolds's apparatus •Tube Material : Borosilicate Glass •Dye vessel Material: Stainless Steel</p> <ul style="list-style-type: none"> •Capillary Tube Material: Copper/Stainless Steel •Constant Head Water Tank : Capacity 40 Ltrs, MOC-SS / MS with Powder Coated •Sump Tank : Capacity 60 Ltrs, MOC -SS / MS with Powder Coated •Piping & Fittings : GI/PVC with necessary Valves.
22	<p>Notch Apparatus</p> <p>Rectangular Notch- 80 mm (Aluminium or Brass)</p> <ul style="list-style-type: none"> • Triangular Notch - 450,600,900 (Aluminium or Brass) • Open Flow channel- 1000 X 250 mm • Flow control valve to change Discharge. • Transparent pizometer tubes with scale to measure head and measuring tank discharge. • Measuring tank- 295 X 345 X 345 mm. • Sump tank- 900 X 350 X 350 mm.

23	<p>Flow Through Helical Coil</p> <ul style="list-style-type: none"> • Helical Coil Material Stainless Steel Dia – 12” • No. of Turns 15 • Coil Tube Dia OD 21 mm, ID 17 mm (Approx.) • Sump Tank Material Stainless Steel/PVC, Capacity 50 Ltrs. • Water Circulation oF HP Pump, Crompton/Sharp make • Manometer o2 Nos • Flow measurement rotameter • Piping GI and PVC • Control panel comprising of Standard make on off switch, Mains Indicator etc • The whole set-up is well designed and arranged in a good quality painted structure
24	<p>Digital turbidity meter</p> <ul style="list-style-type: none"> • Type : Digital pH Meter • Measuring Range : 0-1000 NTU • Accuracy : 0-200 (0.1) 0-1000 (01) <p>Temperature : 45 C*</p>
25	<p>Magnetic stirrer with hot plate</p> <p>Speed control range: 200-1000 rpm</p> <p>Power consumption (Stirring): maximum upto 10 W</p> <p>Power consumption (Heating): maximum upto 600 W</p> <p>Nominal operating voltage: 230 V; 50/60 Hz or 120 V; 50/60 Hz</p> <p>Plate Material: Stainless steel</p>
26	<p>pH-meter</p> <p>pH Range : 0-14</p> <p>Resolution: 0.1/ 0.01/ 0.001 pH</p> <p>Accuracy: +/- 0.001 pH</p> <p>Sensor: Combination pH electrode</p> <p>Millivolt range: - o to +/- 1999.9 mv</p> <p>Temperature range: - 0 to 150°C</p> <p>Power requirement: 230 V ac, 50Hz</p>
27	<p>Polarimeter</p> <p>Scale: Optical rotation</p> <p>Measurement Range: 2 Graduated circles(0-180 degree)</p> <p>Scale Division: 1 degree</p> <p>Reading accuracy: 0.05 degree</p> <p>Light source: 1 LED with filter</p> <p>Wavelength: 589 nm</p>

28	<p>Colorimeter Wave Length Range: 350 to 700nm % Transmission: 0 - 100% T Absorbance: 0 - 1.99 A Photo Detector: Silicon Photodiode/Photo Cell Display: LCD display with backlit for %T, Absorbance Light Source: 6.8V, 0.3Amp. Tungsten Lamp Sample System: 10 mm path length matched glass test tubes Filters: 420, 440, 490, 520, 540, 570, 600, 700nm Power Supply: 230V AC+10% 50Hz. with in-built stabiliser Accessories: Matched Test Tube Set of 5, Operation Manual, Dust Cover, Spare Lamp</p>
29	<p>Thermocouple Display: 4 digit LCD display Scale: Centigrade/Fahrenheit selectable Temperature range: -200 to 1370 degree centigrade Accuracy: 0.1 C & 0.1 F Sampling rate: 2.5 times per second Temperature measurement: Minimum, Maximum & Average 2 Channel temperature measurement, Data hold, Low Battery indicator and auto power off.</p>
30	<p>Red Wood viscometer Type Of Bath : Electrically Heated Immerssion Heater. Max Working Temperature :- 99 Degree C Continous Working Temperature :- 95 Degree C Capacity : 1 Sample At A Time. Heater : Ss Tubular Immerssion Heater Accuracy : +/- 3 Degree C 7) Readability : +/- 0.5 Degree C Temperature Controller : By Energy Regulator Which Will Turn On & Off Heater As Time Switch. Input Power Supply : 230 V Ac, 50 Hz, 1 Phase With 6 Amp Current Rating. Heating Load : 1 Kw . Stirrer : Manual Stirrer With Stirrer Blade For Maintaining Uniformity Throughout Chamber. Top Lid Made Of Stainless Steel With Provision Of Mounting Of One Thermometer. Control Panel/Display : Energy Regulator/ Heater Indicator/ Kettle Plug For Heater Connection. Construction : Double Walled Construction , Thermally Insulated With Inside Body Made Of Stainless Steel Outside Gi./ Powder Coated External Surface</p>

31	<p>Aniline point apparatus Power requirement: 230 V ac, 50Hz Temperature range: 0°C to 150°C Accessories Spare outer Jacket with cork. Spare tube with cork. Heater with energy regulator</p>
32	<p>Cloud and pour point apparatus Type Of Chamber : Manually Cooled. Max Working Temperature : -20 Degree C Refrigeration Media : All at Supplier Scope. IPA Or Kerosene Capacity of Refrigerant Media : 5 Ltr. Cooling Way : Ice up to + 5 Deg. C Ice +Salt (Bromine Solution) up to 0 Deg. C Dry Ice up to -20 Deg. C Coolant Capacity : 2 Kg Approx. Sample : Two Samples at a Time. Insulation : Dense Grade Glass wool Or Puff. Accessories required Pour Point Tube : 2 no Bar Cork : 2 no Silicon Bush : 2 no Cork Sheet : 2 no. Thermometer IP 1C with calibration certificate : 1 no. Or Digital Temperature Indicator : 1 no.</p>
33	<p>Flash and fire point apparatus Power requirement: 230 V ac, 50Hz Temperature range: 30-150 degree centigrade Material: Stainless steel</p>
34	<p>Ball mill Type: laboratory type Motor speed: 20-85 rpm Jar Capacity: 2 Kg Power supply : 230 V, 50 Hz Motor: 5/4 FHP Jar material: Stainless steel Ball material: stainless steel ball with tungsten carbide coating</p>
37	<p>Induction Heater 1600 watt Induction Cooktop Touch control (Black) with Crystal Glass Plate, Button Control soft push button gives easy accessibility to operate the device Temperature Control The automated temperature control will match the required heat</p>

38	<p>ANALOGUE/MANUAL MELTING POINT APPARATUS</p> <p>Melting Point Apparatus measures the melting point of a substance i.e. the temperature at which the state of the substance changes from solid to liquid. The actual melting point is an indication of the purity of a substance and hence an ideal tool for the quality control of medicines, perfumes, dyestuff and other organic crystalline substances.</p> <p>Specifications:</p> <ul style="list-style-type: none">* Measuring Range of Melting point : Ambient to 300°C* Provision for heating with AC Current* Power Supply : 220 V +/-10%, 50Hz <p>Additional Accessories:</p> <p>Supply of Capillary sample tube-1000 no compactable to Apparatus and Mercury and alcohol thermometer range-0- 100 degree centigrade</p>
39	<p>Melting Point Apparatus-Digital: Melting Point Apparatus measures the melting point of a substance i.e. the temperature at which the state of the substance changes from solid to liquid. The actual melting point is an indication of the purity of a substance and hence an ideal tool for the quality control of medicines, perfumes, dyestuff and other organic crystalline substances.</p> <ul style="list-style-type: none">* Photo Electric detection.* Large Backlite LCD display.* RS-232 Interface.* Measurement of 3 samples simultaneously (Optional).* Display of initial and final melting points.* Calculation of average value of initial and final melting points.* Platinum resistor sensor for the precise temperature measurement.* Capillary sample tube as stipulated by pharmacopoeia <p>Specifications:</p> <ul style="list-style-type: none">* Measuring Range of Melting point : Ambient to 300°C* Resolution : 0.1°C* Rate of heating(°C/min) : 0.2,0.5, 1, 1.5, 2 3, 4, 5* Accuracy : +0.5°C upto200°C, +0.8°C from 200°C to 300°C* Heating time (50 to 300°C) : 3 mins* Cooling time(300 to 50°C) : 5 mins* Capillary sample tube size : OD 1.4mm, ID 1mm* Power Supply : 220 V +/-10%, 50Hz <p>Additional Accessories:</p> <p>Supply of Capillary sample tube-1000 no compactable to Apparatus</p>

40	<p>Distilled Water Plant:Stainless Steel Water Distillation Equipment</p> <p>water~Heating~Vapor~Condense~Distil water</p> <p>General: This device can be mounted on wall, and producing the distil water in lower cost, continuously, automatically and effectively. Operation: The tap water enters the bottom of the condense pipe and circle along with the pipe and enters the vaporize pan in the end, the height of the overflow be pre-set. The steam in the pipe go down and meat the water go up, thus to make the gas in it.</p> <p>The steam produced in vaporize pan reached the condense pipe through guide plate. The guide plate be installed as can change direction three times before the steam enters the condense pipe. This way can protection of bring tap water in the distil water, the tap water bring in the distil water is the main cause of chemical of distil water worse. If the working is normal, it can get the water of fyrogen-free. The vaporize, condense, overflow and guide plate inner are made in stainless steel. And the cover outside and the cover of guide plate are made in heat-resistant borosilicate glass, all the electric elements with safety cut off switch.</p> <p>The unit construction by Vaporize pan, cooling pipe, condense pipe, overflow and guide plate inner etc. Specifications Water output 3 lt/hour. Fitted with Electric Connection</p> <p>Accessories: Additional Heating element</p>
41	<p>Automatic Electrically Heated All Glass Distillation Apparatus:</p> <p>Heater embedded in spherical Glass tube complete with metallic stand, plug and board, All Electrical accessories are ISI Certified/Marked</p> <p>Single stage distillation with automatic cutoff</p> <p>Made of Good quality heat resistant glass with capacity 3 lt/hr</p>

42	<p>Table Top Ball Mill: Laboratory Ball Mill</p> <p>It is primarily designed for grinding pigments. The material is ground at a specific speed by using a specific quantity of grinding media (steel balls) for a specific period. The equipment is used for making the ground cement samples in the laboratory. Apart from the cement industry, it is also used in the paint, plastic, granite and tile industries. The equipment is provided with a revolution counter for recording the revolutions.</p> <p>Models available: Laboratory Ball Mill 5 Kg capacity</p> <p>Laboratory Ball Mill 5 Kg capacity , Housing Stainless steel/MS Powder Coated Jar Construction: Aluminum or stainless steel, Ball made of Steel or any suitable material, fitted with counter manual/digital to count no of revolution. Accessories: Balls of varying size and weight, Digital/manual stop watch. Additional feature: Inside Rubber coated or any coated with any abrasive resistant material</p>
43	<p>Table Top Centrifuse: Compact laboratory centrifuse with variable speed control and Digital display</p>

MUFFLE FURNACE

44	<p>Laboratory model, compact, closed circuit operation.</p> <p>Pressure filters can apply a large pressure differential across the septum to give economically rapid filtration with viscous liquids or fine solids. The most common types of pressure filters are filter press. A filter press contains a set of plates designed to provide a series of chambers or compartments in which solids may collect. The plates are covered with a filter medium such as canvas cloth. Slurry is admitted to each compartment under pressure; liquor passes through the canvas cloth and out a discharge pipe, leaving a wet cake of solids behind. Plates and frames sit horizontally in a metal rack, with cloth covering the face of each plate, and are squeezed tightly together by a screw. Slurry enters at one end of the assembly of plates and frame. It passes through a channel running lengthwise through one corner of assembly. The set up consists of 7 plates and 6 frames. Frames are covered with filter cloth. Feed is fed by gear pump at the top and filtrate collected at the bottom from each plate by operating the cock. After removing Cake, washing and cleaning can be done by water provided by overhead tank. Inlet & outlet pressures are measured by pressure gauges. Rate of filtrate removals is measured by calibrated tank provided.</p> <p>Specification: Made of high-quality stainless steel having customized finished design. The cartridge assembly consist of plates, perforated screens, spacer and filter media stand on SS Trolley. The whole assembly complete with compactable slurry pump and pipe lines through welding. Single phase electric supply, provision of cleaning of cake from filter material that can be recycled.</p> <p>Capacity: 20-50 litre per hour.</p> <p>Experimentation:</p> <ul style="list-style-type: none"> • To study the operation of filter press in the laboratory. • To evaluate specific cake resistance and medium resistance. <p>Utilities Required :</p>
45	<p>Manometer: 1.U-tube Manometer. 2.Enlarged Leg Manometer. 3.Well Type Manometer. 4.Inclined Tube Manometer. Made of Glass mounted wooden or suitable frame, Small size laboratory model with mercury(separately supplied) 2 kg</p>

46	<p>Friction Losses in pipe:DESCRIPTION : Closed Circuit operation</p> <p>The setup consists of 2 pipes of different diameters, which are connected in parallel. Pressure tapings are provided on each pipe to measure the pressure losses with the help of a Differential Manometer. Control valves are fitted on each pipe, which enables to use one pipe at a time for experiment. Present set-up is self-contained water re-circulating unit, provided with a sump tank and a centrifugal pump etc. Flow control valve and by-pass valve are fitted in water line to conduct the experiment on different flow rates. Flow rate of water is measured with the help of measuring tank and stop watch.</p> <p>EXPERIMENTATION :</p> <p>To determine the losses due to fiction in pipes. To determine the friction factor for Darcy Weisback equation.</p>
47	<p>Basic Plumbing Tool set:</p> <ol style="list-style-type: none"> 1 set consisting of following tools(Taparia or equivalent) 1.125 mm fixed base bench vice, rotating jaw made of cast iron or cast steel 2.Adjustable wrench 3.Adjustable pipe wrench 4.Pipe die set for threading pipe(1/2" ,3/4", 1") 5.Pipe vice 6.Water pump plier 7.Spanner set (Double open ended spanner, Hexagonal spanner, Ring Spanner) 8.Drill Machine set(in box) Bosch or equivalent 9.Chisel with handle 10.Hammer with handle 11.Measuring tape 12.Spirit level 13.Spray gun for painting 14.Tool Box of Plastic for tools

48	<p>Heating Oven: Laboartoty Model:Tripled walled construction Inside S.S. 304 mirror finish. Outer Mild steel (CRCA) sheet with powder coated 3 High grade heavy glass wool insulation ensures stable temperature & reduced energy consumption Air Recirculation by Motorized Blower on top side of the chamber to ensures maximum uniform temperature distribution inside the chamber 1/12 HP, TEFC , F-class insulation, Single Phase, 1440 RPM, 230 Volts S. S. tubular heating elements on side walls to maintain uniform condition inside the chamber Safety cum stand by thermostat to cut off the heater supply in case of overshoot of temperature Single door fitted on heavy cast and chromium plated hinges with spring and roller type latch with Asbestos gasket. Stainless Steel Rod Trays to ensure uniform temperature distribution 230V AC, Single Phase, 50Hz supply Temperature Range: 5C above ambient to 250C will be provided. Temperature Accuracy: 0.2 C Temperature Uniformity: 1 C Control System: Imported Microprocessor based auto tuned PID controller with CE mark & dual display of set value & process value for precise control of temperature. Capacity 216 litres with 3 trays will be provided.</p>
49	<p>Single Stage Distillation Unit: Single Stage Quartz Distillation Apparatus, Horizontal Model</p> <p>Single Stage Quartz Distillation Apparatus, Horizontal Modal, Borosilicate Condenser, Output Capacity : 2 Litre/Hour, Power Rating (Approx.) : 1.65 kw,</p> <p>Specification :</p> <p>Replaceable Silica Heater : The horizontal quartz jacket is fitted with removable silica heater and screw threaded connectors for ease of cleaning.</p> <p>Distillate temperature is approx. between 25^o to 45^o C which is ensured by an efficient condenser.</p> <p>The stand is powder coated for rust free operation and lustrous appearance.</p> <p>The unit automatically switches off if water level in the boiler falls below heater.</p> <p>Cooling water from the condenser is re-circulated into the boiling chamber, hence saving energy.</p> <p>Screw Threaded Connectors : These are provided for easy plumbing & Installation to avoid any glassware breakage during assembly.</p> <p>Fuse/MCB is provided for safety in case of voltage fluctuation or short circuit.</p> <p>Electrical Power : 220/240 V, 50/60Hz, Single Phase Supply.</p> <p>Boiler is provided with Replaceable Constant Level Device for easy draining and cleaning of boiling chamber.</p> <p>The model shall be equipped with in-built temperature switch to protect the Glass parts in case of water fail</p>

50	<p>Reverse Osmosis Water System: Single Phase power supply, wall mounted for Public Health Water supply system, Inlet water has low TDS. The RO system shall be made of Food Grade plastic and has storage capacity of 5 Lt or more and output 20 litre per hour</p>
51	<p>Heating Mantle: HEATING MANTLE 250 ML/500ml/1 Lt (Quote rate separately for each capacity) Suitable for laboratories, chemicals, pharmaceuticals, Dyes, Glass plants etc. Particularly useful for Heating inflammable liquids. Electric heating net is hand knitted from glass Yarn and there is no joint to maintain the strength of the yarn and stands high temperature up to 350 degree c. the body of the mantle is spun one piece from non-rusting Aluminum (up to 250 milliliters Capacity) duly stoving painted. All heating mantles are lagged with special grade mineral wool</p>
52	<p>Furnace: Muffle Furnace is box type heat treatment equipment used to change physical properties of samples at very high temperature; for example 1100°C. These laboratory furnaces are widely used in scientific experiments in physics lab, rice laboratories, steel and paint industries, biotech companies and small industrial production etc. Their major applications include general laboratory testing, annealing, ash determination, coal analysis, leaves carbonization and lime calcination etc.</p> <p>We need ISO certified muffle furnace with digital temperature display and auto cut for temperature. Each unit is made with rugged construction and equipped with easy to use controller system and safety devices. Temperature range: In muffle furnace there is maximum temperature range and continuous working temperature range. standard models are made with maximum temperatures 1100°C with working temperatures 1000°C.</p> <ul style="list-style-type: none"> • Heating Element: In muffle furnace 1100°C imported Kanthal A-1 resistive wire heating elements are used; • Heating Zone: The heating zone is the most crucial part of any muffle furnace. High density Ceramic fiber blanket is used as insulation to keep the outer surface at minimum temperature. • Controller: As standard microprocessor based PID temperature controller is fitted in each muffle furnace; in addition, accuracy during the entire cycle and also keep displaying set value (SV) and process value (PV). • Construction: These laboratory furnaces are built on a thick steel frame. Outer cabinet is usually made of powder coated cold roll sheet. or GMP muffle furnaces with all stainless steel 304 grade sheets (For SS Grade Quote rate separately). <p>Max temperature 1100°C Continuous operating temp. 1000°C Heating element Kanthal wire Thermocouple K Type</p>

53	<p>Fractional Distillation Unit:This unit is typically used for only distillation and fractionation under vacuum or at atmospheric pressure. The typical unit has distillation vessel fitted with a metal heating / cooling bath and with a packed column above reflux divider and coil condensers below are fitted on the packed column. All components shall have glassware made of borosilicate or heat resistant glass. Condensed material is either taken back to the vessel or to the receiver via product cooler. capacity 5 lt/hour .Fitted with heating mantle with auto cut feature. The complete unit shall be mounted on table so all stand/frame with accessories shall be provided Capacity: 10 Ltr. Accessories: Mercury Thermometer shall be provided</p>
54	<p>Steam Distillation Unit:Steam Distillation unit: Laboratory model capacity 1lt-5lt. All component made of stainless steel/ borosilicate glassware(Quote separately for Borosilicate glass ware and SS made) with provision of Essential oil from grass.</p>
55	<p>Open Boiling Pan:Open Pan Evaporator Laboratory Model: Objective: 1. To Determine Overall Heat Transfer Coefficient under Unsteady State Conditions at different temperature 2. To Determine Heat Transfer Coefficient at Boiling Point</p> <p>Technical Specification:</p> <ol style="list-style-type: none">1. Evaporator: Hemi Spherical, Jacketed type made of stainless, Steel insulated from outside2. Steam Generator: Made of Stainless Steel provided with pressure gauge and level. Provision of level indicator, safety valve, drain and Pressure gauge. Heat insulation will glass wool/ceramic wool and cladding with aluminum foil. Electrically heated.3. Temperature measurement digitally.4. The whole set up is mounted on a power coated rigid structure5. Control panel: Shall have digital temperature indicator and controller, on/off switch and mains indicator
56	<p>Refrigerator: 190 lt 3 star Direct cool, Single Door with stand , Digital Inverter Compressor</p>

57	<p>Smart Board:Interactive Flat panel LED 4K UHD Display for classroom teaching and video conferencing</p> <p>Objective: To use in classroom teaching, meeting and presentation without need of projector ,Laptop, Desktop or white board</p> <p>Specification:</p> <ol style="list-style-type: none">1. Built on Anroid OS Display: 65 inch,75 inch (Mention price separately)2. Flat panel with multi point touch capability blended with dual stylus3. Supporting major teaching learning software-MS Office,pdf etc with preloaded licensed version of these application software(life time validity), Loaded with reputed antivirus for Internet protection with 3 year validity4. Screen sharing through device mirroring5. Versatile connectivity- Wi-fi, blue tooth, HDMI,USB,VGA6. Provision of all in one video conference and preloaded licensed version of conferencing APP like Zoom, Microsoft team, Google meet7. Warranty for 2 year and after sales service availability.8. Wall mounted/Support with stand and frame(if extra cost quote separately)9. Accessories: including power cord, Remote with battery, HDMI Cable, USB Cable, Touch pen, items for wall mounting and stand with frame.
58	<p>Q LED Smart TV 55": Resolution : 4K Ultra HD (3840 x 2160) Refresh Rate : 120 Hertz QLED Panel, Accessories: USB Cable,HDMI Cable, frame for wall mounting</p> <p>Connectivity: 4 HDMI ports to connect set top box, Blu-ray speakers or a gaming console 2 USB ports to connect hard drives or other USB devices</p> <p>Smart TV Features : Voice Assistants PC Mode Universal Guide Auto Game Mode & Game Motion Plus Super Ultra Wide Game View & Game Bar Web Browser Screen Mirroring Supported Apps : Prime Video, Hotstar, Netflix, Zee5 and many more</p> <p>Sound: 40 Watts Output - 4 Ch Powerful Speakers with Dolby Digital Plus Surround Sound Active Voice Amplifier Adaptive Sound+ Q Symphony</p> <p>Display: Ultra HD (4k) QLED Panel</p>

59	<p>Smart TV 32":Resolution: HD Ready (1366x768) Refresh Rate: 60 hertz</p> <ul style="list-style-type: none">• Connectivity: 2 HDMI ports to connect set top box, Blu Ray players, gaming console 1 USB ports to connect hard drives and other USB devices• Sound : 20 Watts Output Dolby Digital Plus• Smart TV Features : Personal Computer Screen Share Music System Content Guide Connect Share Movie• Display : LED Panel Mega Contrast PurColor HD Picture Quality Slim & Stylish Design• Warranty Information: 1 year comprehensive warranty plus additional 1 years on panel by brand from date of invoice• Installation: TV Table stand/Wall mounting is to be included this model.
60	<p>Inverter,Battery,Trolley:1100 VA Pure Sinewave Inverter Battery: 150AH Tubular Inverter Battery inle battery design, Normal/high output voltage models, Intelligent Fuzzy Logic Battery water topping reminder for water topping to avoid battery failures, Battery gravity builder, Digital Signal Controller based design for pure sinewave output, Battery Gravity Builder with overcharge and deep discharge protections, Battery water topping reminder, Selectable charging mode for different battery technologies (Flat/Tubular battery) and capacities (BO to 230 Ah) using selector switch, Normal/high voltage modes for different out put voltage performances, Use UPS/Normal modes easily from front switch - No need to put hand behind the inverter as in other products, 32 bit DSC Based design, High load handling capacity with in the mentioned capacity, High inrush load handling</p> <ul style="list-style-type: none">• Input voltage (standard range) 100 v - 300 v; Charging Current (Standard) : 10 Amps ± 1 Amps• Output Power- 760 Watts. Rated Capacity- 950 VA; Efficiency (Battery Mode) > 80%. Solar Power Compatible : No• Warranty 2 years• Smart overload sense and short circuit protection
61	<p>Public Address System:1. Amplifier, Cord less microphone, Microphone with stand and 40 Watt speaker 2 no 6 Mic & 2 Aux Inputs Preamplifier and Line Output for connecting to a Booster Amplifier and for recording the programme Line Input for connecting the output from any external mixer or permitting SSA-250 to be used as a Booster Power Amplifier. Resettable circuit breaker for protection against overload and short circuit. Instant transfer to DC power (Car Battery) if AC power fails</p>

62	<p>Projector for Classroom teaching: •3,600 lumens high brightness enable lights-on presentations to promote discussion and collaboration in larger meeting rooms accommodating up to 20 participants 20000:1 Ultra High Contrast for Clear Text</p> <ul style="list-style-type: none"> • Project an up to 100-inch image from a distance of 3.98m • GOING GREEN AND ECONOMICAL: SmartEco Mode saves lamp power up to 70% and extends the lamp life to upto 15000 hrs • EASY SETUP AND ALIGNMENT: Ergonomic retractable foot and vertical keystone for easy setup and fast image alignment. • Kensington Lock to Discourage Theft • One-Touch Access to Install Functions
63	<p>Desktop Computer:• Windows 11 Home</p> <ul style="list-style-type: none"> • Intel Core i3 • SSD Capacity 1 TB • RAM 8 GB DDR4 • 23.8 inch HD Display • Preloaded Office Home and Student 2021, Anti virus software for 3 year warranty • Compactable graphic card and wi fi facility • Key Board, Mouse • Accessories: 30 W Sound system with remote compactable for USB, BLUE TOOTH, AUX, FM, SD CARD
64	<p>Laser Printer with scanner without wi-fi: Acceories includes all cable,installation software and 1 extra catridge</p>
65	<p>White Board: Made of Ceramicsteel,framed with aluminium and side corner with plastic Ultra-smooth writing,Easy dry-erasability, Accepts MagnetsNon reflective,Superior visibility and optimum eye comfot,Greater colour contrast Size: 120 cm x 300 cm,120 cm x 240 cm,120 cm x 180 cm</p> <p>Hard surface is virtually indestructible,Scratch and stain resistant,Fire and chemical resistant,Bacteria and graffiti resistant</p>
66	<p>Display Board: Quality: The board has light weight Aluminium Frame with Satin-finish anodizing for contemporary looks and maximum rigidity. Ensures Documents Stay Securely Pinned.</p> <p>Color: Blue Size: 3 X 4 Feet</p>

PACKAGE-7List of equipment /tools ,Department of Biotechnology

Sl.No Name of equipment with detail specification

1	HOT AIR OVEN Material Stainless Steel Size 350 Liter , Material : Stainless Steel
2	SPECTROPHOTOMETER Wavelength Range : 195-1000 nm Optical System: Single Beam Spectral Bandwidth : 2 nm Mobility: Benchtop Display: Digital ,Detector: silicon photodiode
3	MAGNETIC STIRRER Speed Range [Rpm] 40 to 2500 rpm Connection Voltage 230 V Frequency 50 Hz Motor Type DC Motor Stirrer Plate Top Stainless Steel Power Source Electricity
4	Desktop COMPUTER Processor Type i5/ i7 Screen Size 17" Hard Drive Capacity 250GB Memory Size 2/4/8GB
5	Refridgerator 180 Litre Single door
6	PRINTER black and white Functions Print Scan Copy Technology Laser paper size A4 ,PRINT SPEED: upto 30 pages /min Connectivity Wireless(Wi-Fi)
7	Digital Weighing balance Size 270 X 195 MM Capacity 200 gms Accuracy 1 mg Calibration External Type Of Weighing Scale Analytical Display Green LED Weighing Capacity 220gm Pan Size 270x195mm Readability 2 mg
8	Ultra HD Projector having 3840x2160 resolution, minimum 6500 Lumen Display and Contrast Ratio 15000:1 having Wifi and Bluetooth Connectivity

9	Ouchterlony double diffusion Teaching Kit Anti gen -Antibody pattern Form Liquid Packaging Size 10 experiment Result Time 24hr Shelf Life 6 Months Pack Type Box
10	Rocket electrophoresis kit packaging size 5 experiment
11	Micropipette Capacity (100ul to 1000ul) with Tip Channel Multi Channel Material Plastic
12	Petri dish Material Glass Size 3 Inch Usage/Application Chemical Laboratory
13	Micro tips (0.5 μ l to 10 μ l)
14	Micro tips (100 μ l to 1000 μ l)
15	Anthrone 25 gm
16	Bovine serum Albumin (BSA) 5gm
17	Potassium iodide 100gm
18	Sodium -potassium tartarate 500gm
19	DNA sodium salt 5 gm
20	RNA (powder form) 10 gm
21	Pipette pump 10ml plastic material
22	Ethidium bromide 1gm
23	Latex Agglutination kit Quantity 10 experiments/kit Unit Size Each

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