



**CHANDIGARH COLLEGE OF ENGINEERING & TECHNOLOGY
(DEGREE WING), SECTOR 26, CHANDIGARH
(FAX No. 0172-2750872, Phone No. 0172-2750943)
E-TENDER NOTICE
College website: - www.ccet.ac.in**

Chandigarh College of Engineering & Technology (Degree Wing), Sector-26, Chandigarh invites tenders through e-tendering for purchase the Machinery/Equipments/Items for its Mechanical Engineering, Civil Engineering and Electronics & Communication Engineering Departments. The dates for opening and closing of e-tender are as given below:-

Start Date and Time of uploading of e-tender	End Date and Time of uploading of e-tender	Date and Time of opening of Online Bid (Technical Bid)	Earnest Money
21-01-2015 at 11.00 AM	12-02-2015 at 3.00 PM	13-02-2015 at 11.00 AM	Detail of Earnest Money to be deposited is available in the e-tender document.

The total estimated cost of the tender is Rs. 38.92 lacs (approx.).

Detailed Terms and Conditions including detail of Earnest Money are available in e-tender document.

The bid document can be downloaded from the website of Chandigarh Administration <http://www.etenders.chd.nic.in> however for general information, guidance and reference, the tenderer can approach to office of Principal, Chd. College of Engg. & Tech. (Degree Wing), Sector-26, Chandigarh (Phone No. 0172-2750943)

Principal



**CHANDIGARH COLLEGE OF ENGINEERING &
TECHNOLOGY,(DEGREE WING),
SECTOR 26, CHANDIGARH
(Phone No. 0172-2750943)
E-TENDER NOTICE
College website: - www.ccet.ac.in**

Chandigarh College of Engineering & Technology (Degree Wing), Sector-26, Chandigarh invites tenders through e-tendering for purchase the Machinery/Equipments/Items for following Departments:-

Schedule 1 - Mechanical Engineering			
Scheme Code	Item No.	Item	Earnest Money (In Rs.)
Mech. Sch.-I	1	Five Axes Educational Robotic System	15000
Mech. Sch.-II	1	CNC Milling Center	15000
Mech. Sch.-III	1	Small Format 3D Printer with Dual Extruder	4000
Mech. Sch.-IV	1	Hydraulically Operated Universal Testing Machine (Computerized)	14000
Mech. Sch.-V	1	Impact Testing Machine (Electronic Version)	2000
Mech. Sch.-VI	1	Brinell Hardness Tester (Electro-Mechanical Version)	2000
Mech. Sch.-VII	1	Two Stage Reciprocating Air Compressor Test Rig	2000
Mech. Sch.-VIII	1	Bomb Calorimeter	2000
Mech. Sch.-IX	1	Loeffler Boiler Test Rig with Separating and Throttling Calorimeter	2000
Schedule 2 - Civil Engineering			
Civil Sch.-I	1	Dissolved Oxygen Meter	1000
	2	pH Meter	1000
	3	Conductivity-TDS-Temp Meter	1000
	4	Turbidity Meter	1500
Civil Sch.-II	1	Digital Theodolite	2500
	2	Chains(30m)	
	3	Telescopic Alidades	
	4	Tapes	
	5	Prismatic Compass	
	6	Mirror Stereoscopes	
Civil Sch.-III	1	Laboratory California bearing Ratio Test Apparatus, Motorised	2000
	2	Laboratory Relative Density Apparatus	2000
Civil Sch.-IV	1	Cement Mortar and Concrete Permeability Apparatus	3200
Civil Sch.-V	1	O Marshal Stability Apparatus (Electrically Operated)	2000
	2	Weighing Balance	
Schedule 3 - Electronics & Communication Engineering			
ECE Sch.-I	1	Wireless Communication Lab	1000
	2	Bluetooth Development Board Bluetooth Hardware Modems, with LCD Display for Adhoc Network.	1000
ECE Sch.-II	1	Digital Communication Lab	2500
	2	Semiconductor (Common Base, Common Emitter, Common Collector Kit.	
	3	Portable Spectrum Analyzer	
ECE Sch.-III	1	Optical Fibre Communication	1000
	2	Wi-Fi (IEEE 802.11b) Application Kit	1000

Start Date and Time of uploading of e-tender : 21-01-2015 at 11.00 AM
End Date and Time of uploading of e-tender : 12-02-2015 at 3.00 PM
Date and Time of opening of Online Bid (Technical Bid) : 13-02-2015 at 11.00 AM

Detailed Terms and Conditions are available in e-tender document.

NOTE:-

Note 1:-The tenderer will have an option to submit tender for individual item or scheme separately. Tender can be submitted after consolidating the schemes and items, as the case may be. The rates shall be compared item wise and supply order will be issued to the tenderer accordingly. Each item shall be treated as independent from the other under each scheme and the tenderer shall have to submit a consolidated bid for all the components under each scheme separately.

Note 2:-The sealed envelope of EMD should bear the Advertisement No. and should be clearly superscribed as "EMD for Purchase of Machinery /Equipment/Items for Mechanical Engineering Deptt., Civil Engineering Deptt. or Electronics & Communication Engineering Department, as the case may be with specific mention of Scheme Code such as "EMD for Mech. Sch.-I, Item No.____", "EMD for Civil Sch.-I, Item No.____" and "EMD for ECE Sch.-I, Item No.____", as the case may be.

NOTE 3. The bidder may note that no column of the BOQ shall be left blank. In case of items for which no bid is being made by the bidder, numeric value 0 (zero) shall be invariably mentioned for the validation of the BOQ.

The bid document can be downloaded from the website of Chandigarh Administration <http://www.etenders.chd.nic.in>. However for general information, guidance and reference, the tenderer can approach to office of Principal, Chd. College of Engg. & Tech. (Degree Wing), Sector-26, Chandigarh (Phone No. 0172-2750943)

Principal

INSTRUCTIONS TO BIDDERS REGARDING E-TENDERING PROCESS

- a. Tenders without Digital Signatures will not be accepted by the electronic tendering system. No tender will be accepted in physical form and in case it has been submitted in physical it shall be rejected.
- b. Before submission of on line bids, bidders must ensure that scanned copies of all the necessary documents have been uploaded with the bid.
- c. Principal, Chd. College of Engg. & Tech. (Degree Wing), Chandigarh will not be responsible for any delay in online submission of bids due to any reason whatsoever.
- d. Bidders should get ready with the scanned copies of EMD as specified in the tender documents. The original instruments in respect of EMD in the shape of FDR or Deposit at Call or Term Deposit Receipt or Demand Draft in favour of the Principal, Chd. College of Engg. & Tech. (Degree Wing), Sector-26, Chandigarh should reach on or before **12-02-2015 at 3.00 PM.**
- e. The details of EMD specified in the tender document should be same as submitted online (scanned copies). Otherwise tender will be rejected summarily.

TERMS AND CONDITIONS OF THE TENDER

CCET STANDS FOR CHD. COLLEGE OF ENGINEERING & TECHNOLOGY, (DEGREE WING), CHANDIGARH.

1. The last date and time for receipt of tenders is **12-02-2015 at 3.00 PM** through e-tendering only.
2. Each tender must be accompanied with Earnest Money Deposit as mentioned against each item in the tender document for which bid is being made, in the shape of FDR or Deposit at Call or Term Deposit Receipt or Demand Draft in favour of the Principal, Chandigarh College of Engineering & Technology (Degree Wing), Chandigarh, valid for three months payable at Chandigarh on any Scheduled Bank.

Note:-The tenderer will have an option to submit tender for individual item or scheme separately or consolidated tender for all schemes and items, as the case may be. Each Scheme is independent of the other and the tenderer shall have to submit a consolidated bid for all the components under each scheme. Earnest Money has been mentioned / indicated in Col. 6 of the relevant schedule i.e. on the basis of the items for which the tender is being submitted. In case, the Earnest Money is found to be less than that mentioned in the tender document against the items for which bid has been submitted by the tenderer, the tender shall be straightway rejected.

3. The sealed envelope of EMD should bear the Advertisement No. and should be clearly superscribed as "EMD for Purchase of Machinery /Equipment/Items for Mechanical Engineering Deptt., Civil Engineering Deptt. and Electronics & Communication Engineering Department, as the case may be with specific mention of Scheme Code such as Mech. Sch.-I, Item No., Civil Sch.-I, Item No. and ECE Sch.-I, Item No., as the case may be, due on **12-02-2015 at 3.00 PM** should be separately submitted in the office of Principal, Chandigarh College of Engineering & Technology (Degree Wing), Sector-26, Chandigarh on or before **12-02-2015 upto 3.00 p.m.**
4. Any attempt direct or indirect, to cast influence, negotiation on the part of the tenderer with the officials/authority to whom he will submit the tender or the tender accepting official/authority before the finalisation of tenders will render the tenderer liable for exclusion from consideration.
5. Tender(s) received without earnest money as specified at Sr. No. 2 above shall be rejected straightway.
6. Earnest Money deposited with the Chd. College of Engg. & Tech., (Degree Wing), Chandigarh in connection with any other tender will not be considered against this tender.
7. The Public Sector Undertaking of the Central / State Govt. are exempted from furnishing Earnest Money Deposit.
8. This tender is not transferable.
9. The tender i.e. Pre-qualifying-cum-Technical Bid shall be opened at **11.00 a.m. on 13-02-2015** at Chandigarh College of Engineering & Technology (Degree Wing), Chandigarh.
10. Conditional offer shall be rejected.
11. The requirements of the Institute in terms of category of machinery/equipment/items, detailed specifications and quantity are given in **SCHEDULE OF TECHNICAL SPECIFICATION / REQUIREMENT (AS PER ANNEXURE-I)**. Principal, CCET reserves the right to change the quantity for any/all items without assigning any reason.
12. The tenders not accompanied by Earnest Money or incomplete in any respect will be rejected outrightly.
13. No advance payment will be made. Payment will be made after receipt of machinery/equipment/items, its inspection, installation and testing to the satisfaction of the Technical and Purchase Committees.
14. The quoted prices must be mentioned showing Excise Duty and VAT /sales tax separately.
15. The Principal, CCET reserves all rights to accept or reject any tender without assigning any reason.
16. Rates should be quoted F.O.R. Chd. College of Engg. & Tech., Sector-26, (Degree Wing) Chandigarh including packaging, forwarding, postage and freight etc.
17. The Principal, CCET reserves all rights to reject the goods if the same are not found in accordance with the required description / specifications.
18. In case of violation of any term and condition as mentioned, Earnest Money Deposit of the tenderer shall be forfeited in full or part at the entire discretion of the Principal, Chd. College of Engg. & Tech., Chandigarh.
19. Training for the operation of equipments, if any, shall be provided by the firm free of cost to the faculty / other staff of the college.

20. The defective machinery/equipment/items from the Store of Chd. College of Engg. & Tech., Chandigarh will be lifted at the entire cost & risk of the firm. Chd. College of Engg. & Tech., Chandigarh will not bear any expenses on this account and the machinery/equipment/items lying in the CCET premises will be at tenderers risk and cost.
21. The machinery/equipments/items will be maintained free of charges during the warranty period.
22. **PERFORMANCE SECURITY:-** Performance security @10% of the value of supply order covering the warranty period shall be furnished by the firm in the shape of Bank Guarantee duly pledged in favour of Principal, Chd. College of Engg. & Tech., Chandigarh before / along with supply of machinery/equipments/items. **The performance security should remain valid for a period of 60 days beyond the date of completion of all contractual obligations of the supplier including warranty obligations.**
23. The CCET would return the Earnest Money Deposit to the successful tendering firm on the submission of the Bank Guarantee. EMD of unsuccessful tenderer will also be returned.
24. Rates quoted in Indian Currency only shall be accepted irrespective of foreign make of machinery/equipment/items which should include all kinds of charges, taxes, duties etc. Financial bids showing the rates in other currency shall not be considered and deemed to be rejected automatically.
25. **PERIOD FOR WHICH THE OFFER WILL REMAIN OPEN:-**
The tendering firms should keep their offers valid for acceptance upto **31.03.2015**. If the firms are unable to keep their offers open for the above said period, they should specifically state the period for which their offers would remain open but such a provision may result in the rejection of their offers.
26. Any conditional tender or any deviation from the terms and conditions of the tender document shall render the tender liable to rejection.
27. The machinery/equipments/items will be installed free of charge by the firm / agent at the designated premises. The cost of material required for installation shall be borne by firm. Material for experimental set up such as Table, Stand etc. should be provided by the firm at its own cost. CCET will not provide any material required for installation. Foundations of equipments wherever necessary shall be provided/constructed by the supplier free of cost.
28. **DELIVERY PERIOD:-** The Delivery period of the machinery/equipment/items shall be strictly 6-8 weeks from the date of supply order. The delivery period will be extended at the sole discretion of the Principal, CCET in special circumstances on written request from the firm. Penalty @ 1.00% per week of the cost / price of machinery/equipment/items for actual period of delay after the due date of supply of machinery/equipments/items will be charged.
29. Installation and demonstration will be done by the supplier to the satisfaction of Head of Department concerned.
30. Warranty period, where applicable, should be clearly specified but not less than 1-year in any case.
31. After the receipt of machinery / equipment, any fault or deficiency in the machinery/equipments/items noticed should be rectified by the supplier within two weeks after intimation free of cost.
32. Instructional materials and **e-manuals** will be uploaded by the supplier free of cost.
33. The technical brochure for the equipments shall be uploaded along with Pre-qualifying – cum – Technical Bid.
34. **INSPECTION OF MACHINERY/EQUIPMENT/ITEMS**
The machinery/equipments/items will be inspected only at CCET premises. However, the inspection of machinery/equipments/items at factory site or any other place, if any, shall be carried out at the risk and cost of the Tenderer / Bider. The CCET will not bear any expenses on this account.
35. In the cases of failure or default in the performance or responsibilities or breach of terms and conditions of DNIT or MOU or any agreement of contract between the company / firm / agency / person or any legal entity and CCET, as the case may be, the said company / firm / agency / person or any legal entity shall be black listed in the light of notification issued by Chandigarh Administration vide their letter No. 1927-F&PO(3)-2009/1170 dated 27-02-2009 or any other instructions issued from time to time.

36. **The tenderer has to submit latest affidavit (as per Annexure II) regarding non black listing of individual / firm/ company, as the case may be.**

37. **JURISDICTION**

The courts of Chandigarh alone will have the jurisdiction to try any matter, dispute or reference between the parties arising out of this purchase. It is specifically agreed that no Court outside and other than Chandigarh Court shall have jurisdiction in the matter.

38. **Force majeure**:- Any failure or omission or commission to carry out provision of this tender by tenderer shall not give rise to any claim by one party against the other if such failure or omission or commission arise from an Act of God; which shall include all Acts of natural calamities such as fire, flood, earthquake, hurricane, or any pestilence or from civil strikes, compliance with any status and / or regulation of the Government, lock outs and strikes, riots, curfew, embargoes or from any political or other reason beyond the parties control including war (whether declared or not), civil war or stage of insurrection, provided that notice of the occurrence of any event by either party to the other shall be given within two week from the date of occurrence of such any event which could be attributed to force majeure conditions.

Note 1:-*The tenderer will have an option to submit tender for individual item or scheme separately. Tender can be submitted after consolidating the schemes and items, as the case may be. The rates shall be compared item wise and supply order will be issued to the tenderer accordingly. Each item shall be treated as independent from the other under each scheme and the tenderer shall have to submit a consolidated bid for all the components under each scheme separately.*

Note 2:-*The sealed envelope of EMD should bear the Advertisement No. and should be clearly superscribed as “EMD for Purchase of Machinery /Equipment/Items for Mechanical Engineering Deptt., Civil Engineering Deptt. or Electronics & Communication Engineering Department, as the case may be with specific mention of Scheme Code such as “EMD for Mech. Sch.-I, Item No.____”, “EMD for Civil Sch.-I, Item No.____” and “EMD for ECE Sch.-I, Item No.____”, as the case may be.*

NOTE 3. *The bidder may note that no column of the BOQ shall be left blank. In case of items for which no bid is being made by the bidder, numeric value 0 (zero) shall be invariably mentioned for the validation of the BOQ.*

Annexure-I

Schedule of Technical Specification / Requirement

(SPECIFICATIONS AND ALLIED TECHNICAL DETAILS OF MACHINERY/ EQUIPMENTS/ITEMS AND SCHEDULE OF REQUIREMENT)

- | | |
|---|------------------------------|
| 1. Mechanical Engineering Deptt. | Schedule 1 (Scheme I – IX) |
| 2. Civil Engineering Deptt. | Schedule 2 (Scheme I – V) |
| 3. Electronics and Communication Engg. Deptt. | Schedule 3 (Scheme I – III) |

Note 1:-*The tenderer will have an option to submit tender for individual item or scheme separately. Tender can be submitted after consolidating the schemes and items, as the case may be. The rates shall be compared item wise and supply order will be issued to the tenderer accordingly. Each item shall be treated as independent from the other under each scheme and the tenderer shall have to submit a consolidated bid for all the components under each scheme separately.*

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ANNEXURE-II

I/We (Name) _____

Contractor / partner / sole proprietor (strike out word which is not applicable) or (Firm)/Company
_____ do hereby solemnly affirm and declare that the individual
firm / companies are not black-listed by the Union or State Government or any autonomous body.

DEPONENT

Address _____

I/We do hereby solemnly affirm and declare that the above declaration is true and correct to the best of my knowledge and beliefs. No part of it is false and nothing has been concealed.

DEPONENT

Dated:

**CHECK LIST DULY FILLED IN TO BE ATTACHED WITH PRE-QUALIFYING-CUM-TECHNICAL
BID FOR THE EQUIPMENT OF THE DEPARTMENT OF CIVIL ENGINEERING/MECHANICAL
ENGINEERING/ELECTRONICS AND COMMUNICATION ENGG. DEPTTS.**

- | | | |
|----|--|----------|
| 1. | Whether EMD in the shape of FDR or Deposit at Call or Term Deposit Receipt or Demand Draft valid for three months, for the asked-for amount attached? | Yes / No |
| 2. | Whether tender document duly signed by authorized signatory attached? | Yes/No |
| 3. | Whether affidavit duly attested by Notary / Executive Magistrate regarding non-black listing of firm Attached? | Yes/No |
| 4. | Whether a list of institutions / organizations where your firm has supplied this item / equipment / instrument recently, is attached. | Yes/No |
| 5. | If you are an authorized agent / dealer / distributor of the firm / company / manufacturer and whether authority letter as issued by them in your favour attached? | Yes/No |
| 6. | Whether Technical broucher of the equipments attached? | Yes/No |

Signature of authorized signatory
with seal of the firm

SCHEDULE-1

MECHANICAL ENGG. SCHEME I to SCHEME IX

MECH. ENGG. - SCHEME-I

Scheme Code	Item No.	Name of Item	Specifications	Qty.	Approx. Cost (Amount in Rs.)
1	2	3	4	5	6
Mech. Sch. -I	1.	FIVE AXES EDUCATIONAL ROBOTIC SYSTEM	<p>(a) Robotic Mechanical Arm</p> <p>Mechanical Structure : Vertically articulated; open frame. Degrees of Freedom : 5 rotational axes + 1 gripper. Payload Capacity : at least 2 kg Axis Range :</p> <p>Axis 1 : Base rotation: At least 300°. Axis 2 : Shoulder rotation+110°-140°/(30°-40°). Axis 3 : Elbow rotation: +120°-140°. Axis 4 : Wrist pitch: +120°-140°. Axis 5 : Wrist rolls: At least ±550°, mechanically unlimited.</p> <p>Reach : at least 600 mm with gripper. Speed : 600- 700 mm/sec Repeatability : ± 0.18 mm or better Homing : Micro switch on each axis Gripper: Servo motor, parallel fingers Actuators : servo motor on each axis</p> <p>(b) Robot Controller</p> <ul style="list-style-type: none"> • Communication: USB type cable connection to PC. Plug and Play without rebooting; 2 integrated RS 232 channels: one for teach pendant; one for controller I/O card • Inputs/Outputs: 8-10 digital inputs; 4-6 analog inputs; 6-8 digital outputs (4 relay, 4 open collectors); 2-3 analog outputs. • Micro controller: Full featured 32-bit Microcontroller • Axis Servo Control: Real-time; PID; PWM. • Position Definition: XYZ coordinates, Joint coordinates (degrees), Absolute, Relative, Cartesian, Joints, Encoder counts • Trajectory Control: Joint, Linear, and Circular. • Speed Definition At least 10 speed settings; travel time definition. • Control Parameters: at least 150 user-accessible parameters. • Safety Features: Emergency switches; short-circuit protection; automatic shut-down upon detection of impact, overheating, PC failure or communication error. <p>(c) Programming Tool</p> <ul style="list-style-type: none"> • Robotics programming and operation tool. • 3D graphic tool – which enables actual tracking of the robotic cell. • Robotic learning software. • A robot control and programming PC based application which communicates with a USB robot controller over a USB channel. • Provides trajectory control for point to point, linear and circular types of movement. <p>(d) Teach pendant</p> <p>Functions:</p> <ul style="list-style-type: none"> • Should control up to 8 axes connected to the robot controller. • Should have movement according to encoder coordinates (Joint mode) and Cartesian coordinates (XYZ mode) • Should have manual movement of axes • Should have move to position commands • Should have position recording • Should have position insertion and deletion • Should have speed settings <p>Interface:</p> <ul style="list-style-type: none"> • LCD display with more than 75 characters • color-coded, multi-function keys 	01	

		<ul style="list-style-type: none"> Cable and connections Coiled connector cable extends to minimum 4m Emergency by-pass plug, for use when teach pendant is not present <p>Safety:</p> <ul style="list-style-type: none"> Certified for CE safety compliance. <p>(e) Robotic simulation software is also required along-with the robot being supplied. The software should allow offline programming and simulation as well as controlling the robot with the help of Windows 7/8 based PC. (50 licences)</p> <p>(f) A learning application need to be provided as an internet based application providing highly interactive learning resources and support for evaluation. The learning application should be accessible through internet using login-password. The learning application should support the simulation software being provided. (65 licences)</p> <p>(g) Warranty</p> <ul style="list-style-type: none"> Bidder /OEM shall provide Comprehensive Warranty for THREE year for the entire system from the date of commissioning of the machine at CCET. <p style="text-align: center;">Optional items</p> <p>(h) CIM simulation software that includes above mentioned robotic software and caters to the hardware along with other FMS software components, such as ASRS, Conveyer system, QC, FMS. The software should allow to virtually building a CIM system of different configurations.</p>		
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Total Scheme –I

MECH. ENGG. - SCHEME-II

Scheme Code	Item No.	Name of Item	Specifications	Qty.	Approx. Cost (Amount in Rs.)
Mech. Sch. –II	1.	CNC MILLING CENTER	<p>Machine Features:</p> <ul style="list-style-type: none"> Ethernet based control Powerful brushless spindle motor Full enclosure with Automatic safety door lock Tailstock Automatic diagnostics and power cut off protection PC based CNC software Robotic integration ready with 6 inputs & 6 outputs 4th Axis ready <p>Specifications :</p> <p>Work table size : 400x150mm (approx.)</p> <p>Worktable T-slot size : 10-12mm</p> <p>No of T slot on table : 3 (minimum)</p> <p>Max. worktable load : 15-25kg</p> <p>Table travel – X axis : 240- 270 mm (approx.)</p> <p>Table travel – Y axis : 150-160 mm (approx.)</p> <p>Head travel – Z axis : 180-230 mm (approx.)</p> <p>Rapid feed rate : At least 1500 mm/min</p> <p>Feed rate : (XYZ) at least 500mm/min</p> <p>Spindle Speed : 100-5000RPM</p> <p>Spindle motor power : 1000W</p> <p>Spindle taper : ISO 20</p> <p>Position accuracy : 0.04 mm</p> <p>Repeatability : 0.01mm</p> <p>Accessories:</p> <ul style="list-style-type: none"> ISO 20 tooling kit one shot lubrication system 4 Inch rotary work table with tailstock 24 pieces clamping kit 4 station ATC pneumatic door opener precision air wise Mobile work bench with 3-drawers Fanuc Control Simulator panel with Software 	01	

		<ul style="list-style-type: none"> Jog pendant hand wheel. <p>Software Simulation software is also required along-with the machine being supplied. The software should allow offline programming and simulation as well as controlling the machine with the help of Windows 7/8 based PC. (50 licences)</p> <ul style="list-style-type: none"> A learning application need to be provided as an internet based application providing highly interactive learning resources and support for evaluation. The learning application should be accessible through login-password. The learning application should support the simulation software being provided. (65 licences) <p>Warranty Bidder /OEM shall provide Comprehensive Warranty for THREE year for the entire system from the date of commissioning of the machine at CCET.</p>		
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Total Scheme-II

MECH. ENGG. - SCHEME-III

Scheme Code	Item No.	Name of Item	Specifications	Qty.	Approx. Cost (Amount in Rs.)																										
Mech. Sch. -III	1.	SMALL FORMAT 3D PRINTER WITH DUAL EXTRUDER	<p>SMALL FORMAT 3D PRINTER WITH DUAL EXTRUDER</p> <table border="1"> <thead> <tr> <th>Model</th> <th>Small Format 3D Printer</th> </tr> </thead> <tbody> <tr> <td>Primary attributes of the technology</td> <td>Providing high quality smooth surface finish</td> </tr> <tr> <td>Extruder system</td> <td>MK9 extruder</td> </tr> <tr> <td>Extruder Quantity</td> <td>2</td> </tr> <tr> <td>printing speed</td> <td>120mm/s</td> </tr> <tr> <td>printable area</td> <td>225*145*150mm</td> </tr> <tr> <td>Material support</td> <td>PLA, PVA, PEVA,ABS</td> </tr> <tr> <td>With Insulate cover or not</td> <td>YES</td> </tr> <tr> <td>Software</td> <td>Windows based software supporting the machine to be provided with training and learning material</td> </tr> <tr> <td>Overall size (cm)</td> <td>45 x 45 x 40 cm; w/cover 45x45x60cm (or better)</td> </tr> <tr> <td>Typical application</td> <td>•Very detailed parts and models for fit & form testing •Rapid manufacturing of small detailed parts</td> </tr> <tr> <td>Warranty</td> <td>01 year standard onsite warranty included. Additional 2 years as an optional (quote to be provided in the financial bid for additional warranty)</td> </tr> <tr> <td>Training</td> <td>Onsite training of faculty/staff to be included</td> </tr> </tbody> </table>	Model	Small Format 3D Printer	Primary attributes of the technology	Providing high quality smooth surface finish	Extruder system	MK9 extruder	Extruder Quantity	2	printing speed	120mm/s	printable area	225*145*150mm	Material support	PLA, PVA, PEVA,ABS	With Insulate cover or not	YES	Software	Windows based software supporting the machine to be provided with training and learning material	Overall size (cm)	45 x 45 x 40 cm; w/cover 45x45x60cm (or better)	Typical application	•Very detailed parts and models for fit & form testing •Rapid manufacturing of small detailed parts	Warranty	01 year standard onsite warranty included. Additional 2 years as an optional (quote to be provided in the financial bid for additional warranty)	Training	Onsite training of faculty/staff to be included	01	
Model	Small Format 3D Printer																														
Primary attributes of the technology	Providing high quality smooth surface finish																														
Extruder system	MK9 extruder																														
Extruder Quantity	2																														
printing speed	120mm/s																														
printable area	225*145*150mm																														
Material support	PLA, PVA, PEVA,ABS																														
With Insulate cover or not	YES																														
Software	Windows based software supporting the machine to be provided with training and learning material																														
Overall size (cm)	45 x 45 x 40 cm; w/cover 45x45x60cm (or better)																														
Typical application	•Very detailed parts and models for fit & form testing •Rapid manufacturing of small detailed parts																														
Warranty	01 year standard onsite warranty included. Additional 2 years as an optional (quote to be provided in the financial bid for additional warranty)																														
Training	Onsite training of faculty/staff to be included																														

Total Scheme-III

MECH. ENGG. - SCHEME-IV

Scheme Code	Item No.	Name of Item	Specifications	Qty.	Approx. Cost (Amount in Rs.)
Mech. Sch. -IV	1.	HYDRAULICALLY OPERATED UNIVERSAL TESTING MACHINE (COMPUTERIZED)	<p>Components:</p> <ul style="list-style-type: none"> Complete equipment along with suitable Hydraulic unit, along with suitable software, data acquisition system and computer. With standard accessories for tensile, compressive, bending & shear testing. <p>Technical Specification</p> <ul style="list-style-type: none"> Capacity: 1000 kN Mechanical test to be carried out: Tensile, compressive, bending and shear. Least count: 0.10KN. Clearance for tensile test: 50-850 mm. Clearance for compression test: 0-850 mm. Clearance between columns: 600-800 mm Minimum Ram stroke: 250 mm Piston speed: 0 to 80 mm/ min or more Operating voltage: 400 to 440V 	01	

			<ul style="list-style-type: none"> • Tensile Test Jaws should be - <ul style="list-style-type: none"> (i) For round specimen dia : 10 – 25 mm (ii) For round specimen dia : 25 – 40 mm (iii) For round specimen dia : 45- 70 mm (iv) For flat specimen thickness : 0 – 22 mm (v) For flat specimen thickness : 22– 44 mm (vi) For flat specimen thickness : 44– 65 mm (vii) Maximum width of flat specimen : 70 mm • Transverse Test should be - <ul style="list-style-type: none"> (i) Adjustable roller support of width : 160 mm (ii) Diameter of rollers : 50 mm (iii) With maximum adjustable clearance : 800 mm (iv) Punch tops of radius : 16 and 22 mm • Compression Test should be- <ul style="list-style-type: none"> (i) Compression Platen of Dia - 160 mm • Display of testing parameters: Value and real time curve (load, stroke and elongation), available to display and switch from a Windows based computer. • Complete with manual and standard accessories. The calibration, transportation, installation, commissioning, training and demonstration at the institution after installation should be included. Machine to be installed on turnkey basis. <p>Warranty</p> <ul style="list-style-type: none"> • Bidder /OEM shall provide Comprehensive Warranty for THREE year for the entire system from the date of commissioning of the machine at CCET. <p>Optional items Computer, Colour Laserjet printer and UPS with latest configurations (Quote for 2-3 options to be provided in the financial bid)</p>		
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Total Scheme-IV

MECH. ENGG. - SCHEME-V

Scheme Code	Item No.	Name of Item	Specifications	Qty.	Approx. Cost (Amount in Rs.)
Mech. Sch. -V	1.	IMPACT TESTING MACHINE (ELECTRONIC VERSION)	<ul style="list-style-type: none"> • The equipment should be suitable for Charpy & Izod Impact tests on various materials. Works on Pendulum principle. • Pendulum drop angle for Charpy should be 140° & for Izod is 90°. • Strike Velocity of pendulum 5.3 m/s for Charpy Test, 3.8 m/s for Izod Test • Initial potential energy for Charpy is 300 Joules & for Izod is 164 Joules with a resolution of 0.5 Joules. • The impact energy can be observed on Microprocessor based Digital Indicator Unit in bright Digital Display. • With strikers for conducting Izod and Charpy tests. • Complete with manual and standard accessories. The calibration, transportation, installation, commissioning, training and demonstration at the institution after installation should be included. Machine to be installed on turnkey basis. <p>Warranty 01 year standard onsite warranty included.</p> <p>Optional items Additional 2 years as an optional (quote to be provided in the financial bid for additional warranty)</p>	01	

Total Scheme-V

MECH. ENGG. - SCHEME-VI

Scheme Code	Item No.	Name of Item	Specifications	Qty.	Approx. Cost (Amount in Rs.)
Mech. Sch. –VI	1.	Brinell Hardness Tester (Electro-mechanical version)	<p>Machine designed with a hydraulic power pack and control circuit for effortless loading unloading operation. An optical screen provided in front to project dia. of ball impression on glass screen with a micrometer measuring system with 0.01mm accuracy.</p> <ul style="list-style-type: none"> • Max load (kgf): 3000 • Loads (kgf): 250 to 3000 in steps of 250 • Initial load (kgf): NIL • Max. test height (mm): 380 • Dept of throat (mm): 200 • Max. Depth of elevating screw below base (mm) approx: 180 • Machine height (mm) approx: 1250 • Size of base (mm) approx: 400 x 740 • Drive Motor (hp) 0.5 • Mains supply 3 phase, 415V, 50Hz, A.C • Indentation Measurement Direct reading optical drive with 14x Magnification <p>Standard Accessories:</p> <ul style="list-style-type: none"> • Testing table dia 200 mm • Testing table dia 70 mm with "V" groove for round jobs dia 10 to 80 mm • Ball holder dia 5 mm • Ball holder dia 10 mm • Test Block HBW -5 / 750 • Test Block HBW -10 / 3000 • Allen Key set • Telescopic Cover for elevating screw protection. <p>Complete with manual and standard accessories. The calibration, transportation, installation, commissioning, training and demonstration at the institution after installation should be included. Machine to be installed on turnkey basis.</p> <p>Warranty 01 year standard onsite warranty included.</p> <p>Optional Items Additional 2 years as an optional (quote to be provided in the financial bid for additional warranty)</p>	01	
Total Scheme-VI					

MECH. ENGG. - SCHEME-VII

Scheme Code	Item No.	Name of Item	Specifications	Qty.	Approx. Cost (Amount in Rs.)
Mech. Sch. – VII	1.	Two stage Reciprocating Air Compressor Test Rig	<ul style="list-style-type: none"> • Two stage twin cylinder. • Displacement capacity 200LPM. • Maximum working pressure up to 15 bars. • 3Hp, 1450- 1500 RPM motor. • V belt drive mounted on a large storage tank (200-250L). • Unit must contain pressure switch, safety valve, pressure gauge, water drain valve. • Air delivery valve. • Thermocouples with digital temperature indicators for measurement of different temperatures at the inlet and outlet of both cylinders. 	01	
Total Scheme-VII					

MECH. ENGG. - SCHEME-VIII

Scheme Code	Item No.	Name of Item	Specifications	Qty.	Approx. Cost (Amount in Rs.)
Mech. Sch. – VIII	1.	Bomb Calorimeter	<p>AS per I.P. 12 specifications: Bomb body and lid made up of stainless steel Capacity 300ml. Calorimeter vessel, water jacket and stirrer as per I.P. specifications Firing unit, ignition wire, pallet press, pressure gauge with oxygen cylinder.</p>	01	
Total Scheme-VIII					

MECH. ENGG. - SCHEME-IX					
Scheme Code	Item No.	Name of Item	Specifications	Qty.	Approx. Cost (Amount in Rs.)
Mech. Sch. -IX	1.	Loeffler Boiler Test Rig with Separating and Throttling calorimeter	High Pressure boiler, water tubes	01	
Total Scheme-IX					
Total Estimated Cost (Approx.) for Scheme I -IX of Mechanical Engineering Department					28,20,000/-

SCHEDULE -2

CIVIL ENGG. DEPARTMENT (Scheme I-V)

CIVIL ENGG. - SCHEME-I

UPGRADATION OF ENVIRONMENTAL ENGINEERING LAB.

Scheme Code	Sr. No.	Name of Item	Specifications	Qty.	Approx. Cost (Amount in Rs.)
1	2	3	4	5	6
Civil Sch.-I	1.	Dissolved Oxygen Meter	<p>Features & Specifications It shall be a heavy-duty portable waterproof meter for DO (Dissolved Oxygen) and temperature measurements, designed to provide laboratory results and accuracy even under harsh industrial conditions. Oxygen Range: 0.00 to 13.67 mg/L; % Oxygen Saturation Range: 0.0 to 50.0 oC, Accuracy: ± 1% f.s, ± 0.5 °C; Resolution: 0.01 mg/L, 0.1%, 0.1oC Features: ATC, Auto Altitude Compensation, Auto Salinity Compensation</p>	01	
	2.	pH Meter	<p>Heavy-duty portable waterproof meters for pH, ORP (Oxidation Reduction Potential) and temperature measurements, designed to provide laboratory results and accuracy even under harsh industrial conditions. Main features shall include: • 7 memorized buffers for pH calibration (pH 1.68, 4.01, 6.86, 7.01, 9.18, 10.01 and 12.45) • Messages on the LCD to make the calibration easy and accurate • pH readings with manual or automatic temperature compensation • Calibration time-out alarm • Log-on-demand • HOLD feature to freeze stable reading on the LCD • GLP feature to view last calibration data for pH and relative mV • PC interface • Connection to an external serial printer with the following specification at least 16 characters/line, baud rate 9600 and RS232 input</p>	01	
	3.	CONDUCTIVITY-TDS-TEMP METER	<p>Waterproof portable meters that read TDS and Conductivity in 5 ranges and temperature. The auto ranging feature of the EC and TDS ranges automatically sets the instrument to the scale with the highest resolution. Measurements are compensated for temperature effect automatically (ATC) or manually (MTC). It shall also be possible to disable the temperature compensation feature to measure the actual conductivity. The temperature coefficient shall be user selectable. These instruments shall also features a measurement stability indicator, GLP capability, and a user selectable ID code to uniquely identify the instrument. Moreover, It shall include PC interface and printing function. Connect the meter to an external serial printer with the following: printer Range: 0.00 to 19.99 mho / 0.00 to 10.00 ppm, 0.0 to 199.9 µS / 0.0 to 100.0 ppm, 0 to 1999mho / 0 to 1000 ppm, 0.00 to 19.99 mS / 0.00 to 10.00 ppt, 0.0 to 199.9 mS / 0.0 to 100.0 ppt,-9.9 to 120.0 °C, The instrument shall be internally calibrated to display the corresponding TDS concentration. Accuracy: ± 1% f.s, ± 0.5 °C; Resolution: 0.01 / 0.1 / 1 µS/ppm ; 0.01 /0.1 mS/ppt, 0.1 °C,</p>	01	
	4.	Turbidity Meter	Specification:	01	

			**Unit of measure: NTU,FNU,FAU,ASBC,EBC ** Range: 0-4000 ** Résolution : 0.01NTU (0.00-10.99), 0.1 NTU(11.00-109.9) 1 NTU (110-4000) ** Accuracy: ±2% ** Detection Limit: 0.05NTU ** Range Selection: Automatic ** Light Source: Tungsten (EPA) ** Averaging facility of 2,5,10 samples ** Data logging: 4000Points ** Response Time: <5s		
Total Scheme - I					
<u>CIVIL ENGG. - SCHEME-II</u>					
Scheme Code	Item No.	Name of Item	Specifications	Qty.	Approx. Cost (Amount in Rs.)
Civil Sch.-II	1	Digital Theodolite	Magnification - 30x or better Aperture - 45 mm (1.7 in) or better Focus Distance - 1.35 m to ∞ (4.43 ft) to ∞ Field of View - 1° 30' or better Stadia Ratio / Constant. - 100 / 0 Optical Plummet Image - Erect Magnification- 3X or better Angle of view - 5° or better Focusing range Reticle type Crosshair Angle Measurement System Minimum Reading - 1" or 5" Precision - 2" or better Units - Deg / mil / gon / V % Display - Dual, Large Character, Backlit LCD TILT Sensor Automatic Compensation - ±3' Range or better User set - On/Off VIALS Tubular - 30"/2 mm or better Circular - 8"/2 mm or better ON / OFF Power Backlight / Illumination On / Off HOLD Angle Hold - R/L Clockwise/Counterclockwise Measurement 0 SET - Zero Reset of Horizontal Angle V% - Convert Vertical Degrees to Percent Dust/Water - IP-54 Operating Temperature - -20°C to +50°C Size - Instrument 164 x 154 x 340 mm Weight - Instrument 4.5 kg (9.9 lb) OR LESS	1	
	2	Chains(30m)	METRIC CHAIN - Made of 8 SWG Wire. With 10 arrows:- As per ISI Specification: Size 30 M.	2	
	3	Telescopic alidades	TELESCOPIC ALIDADE 178 MM / 225 MM : Internal focusing with vertical circle graduated to read 30 minutes with vernier extendable base plate. The spirit level is mounted on the top of the telescope with circular bubble on straight edge. The telescope is fitted with pull out glass stadia diaphragm. The instrument is supplied in highly polished wooden box.	2	
	4	Tapes	MEASURING FIBER GLASS TAPE :- 100 M	5	
	5	Prismatic Compass	PRISMATIC COMPASS WITH TRIPOD STAND : Made of brass with aluminium ring, engine divided to read 30 minutes with fine agate centre, well magnetized needle, automatic lifter and prism reading, hinged coloured shades and reflector packed in fiber case with tripod stand having ball and socket head made of aluminium. AS PER IS SPECIFICATION NO. IS-1957-1961. Complete with aluminium stand.	5	
	6	Mirror	Mirror stereoscope with 3 x or 4 x binoculars;	2	

		Stereoscopes	Complete with all accessories required to view aerial photographs, a set of aerial photographs.		
Total Scheme-II					
CIVIL ENGG. - SCHEME-III					
Scheme Code	Item No.	Name of Item	Specifications	Qty.	Approx. Cost (Amount in Rs.)
Civil Sch.-III	1.	LABORATORY CALIFORNIA BEARING RATIO TEST APPARATUS ,MOTORISED.	<p>Ref. Standards IS: 9669, IS: 2720 (Part XVI), BS 1377;</p> <p>The equipment consist of the following replaceable parts :</p> <p>Load Frame, 50 kN Capacity, Mould Mild Steel -150 mm ID x 175 mm H. Perforated Base Plate-Mild Steel for AIM 12001 Mould Extension Collar –Mild Steel150 mm IDx50 mm high</p> <p>Penetration Piston 50 mm face dia</p> <p>Adjustable Bracket for Penetration dia gauge</p> <p>Circular Metal Spacer Disc, with detachable handle, 148 mm dia x 47.7 mm high.</p> <p>Annular Metal Weight 2.5 kg, 147 mm dia with 53 mm dia central hole. Slotted Metal Weight 2.5kg, 147 mm dia, with 53 mm dia slot Perforated Plate 148 mm dia, with adjustable stem and lock nut Metal Tripod for Dial Gauge</p> <p>Cutting Collar Rammer 2.6 kg, 310 mm controlled drop Rammer 4.9 kg, 450 mm controlled drop Proving Ring Capacity 50kN</p>	1	
	2.	LABORATORY RELATIVE DENSITY APPARATUS	<p>Ref. Standards IS: 2720, part XIV</p> <p>Vibrating Table Cylindrical Metal Unit Weight Mould, 3000ml capacity Guide Sleeve with clamp assembly Surcharge base plate for Mould, 3000ml. Handle for Surcharge base plate for Mould and for cylindrical metal unit weight mould Surcharge weight for cylindrical metal unit weight mould, 3000 ml. The total weight together is equivalent to 140g/sq.cm for the mould being used. Cylindrical metal unit weight mould 15000ml capacity Guide sleeve with clamp assembly for cylindrical metal unit weight mould 15000ml Surcharge base plate for Mould 15000ml Surcharge weight for cylindrical metal unit weight mould, 15000 ml. The total weight together is equivalent to 140g/sq.cm for the mould being used. Dial guage holder Calibration bar 75X300X3 mm Dial gauge 25mm travel, 0.01mm least count with an extension piece</p>	1	
Total Scheme-III					
CIVIL ENGG. - SCHEME-IV					
Scheme Code	Item No.	Name of Item	Specifications	Qty.	Approx. Cost (Amount in Rs.)
Civil Sch.-IV	1.	Cement Mortar and Concrete Permeability Apparatus	<p>150 mm dia single cell model) IS :3085-1965</p> <p>Supplied complete with Air Compressor</p> <p>Suitable for determination for permeability of cement mortar and concrete specimens of 150 mm diameter and 150 mm high, either cast in the laboratory or obtained by cutting out cores from existing structure.</p> <p>The equipment comprises the following:-</p>	1	

	i)		One permeability cell for 150 mm dia specimens consisting of a metal cylinder with a ledge at the bottom and flange at the top, one removable cover plate and a funnel. An air bleed valve is provided on the cover plate. Made of Mild Steel.		
	ii)		It is a two stage compressor for developing high pressure Upto 20 kg/sq. cm. It has a large air tank. Complete with ON-OFF switch, a pressure switch, safety valve, pressure gauge and one pressure outlet valve.		
	(iii)		Suitable for operation on 440v, 3 phase, 50 Hz supply. Other electrical specifications available on request.		
Total Scheme-IV					
<u>CIVIL ENGG. - SCHEME-V</u>					
Scheme Code	Item No.	Name of Item	Specifications	Qty.	Approx. Cost (Amount in Rs.)
Civil Sch.-V	1.	O Marshal stability Apparatus (Electrically Operated)	For use with hot mixture containing asphalt or tar and aggregate upto 25.4 mm max size. It should consist of three cylindrical moulds 10.16 cm dia x 7.6 cm high with base plates and extension collars, a specimen extractor, two compaction hammers (4.5 kg) a compaction pedestal, a breaking head assembly, a load transfer bar and a 50 kN loading unit. The motorised loading unit has a uniform rate of vertical movement of 50.8 mm/mnt. Suitable for operation on 220V, 50Hz, single phase supply	1	
	2.	Weighing Balance	Maximum Capacity : 300 kg Readability : 20 g Readability Approved : 100 g Size : 850 X 850 mm Height :35 mm Scale material : Stainless steel	1	
Total Scheme-V					
Total Estimated Cost (Approx.) for Scheme I –V for Civil Engineering Department					7,77,000/-

SCHEDULE- 3

ELECTRONICS & COMMUNICATION ENGINEERING SCHEME-I –III

ECE- SCHEME-I

Scheme Code	Item No.	Name of Item	Specifications	Qty.	Approx. Cost (Amount in Rs.)
ECE Sch.-I	1.	WIRELESS COMMUNICATION LAB	<p>Advance GSM Trainer Kit GSM Development module with 3 band communication (900,1800.1900) with on board Mini sim Card reader. FME Antena connector support. Operating status LED 8 nos. Onboard Handset audio interface , V.24/V.28 Interface on the connectors, Windows Drivers software for GSM Applications, On Board 89C51 Controllers RJ11 Connector for handset connection, Sim Card Holder , on board 16x2 LCD Display , 4 seven segment display with 2 on board relays for action. On board Buzzer ,with all port controller available . On board ADC and provision for temp sensor and wireless monitoring . User manual .Proper documentation, workbook, user manual. Applications / experimental Interface :- The system must be supplied with GSM Appliaction Experiments :- 1)driving LEDs thru SMS programming thru 8051 Controllers , with all port pins available Modules for batter study and approach of programming Like 14 GSM based dialing system with a 4x4 matrix keypad facility to dial/send an SMS b) Facility for Electronic Rolling Display using GSM technology for massage updates thru any cell phone , Demo programs/ windows software etc</p>	01	
	2.		<p>Bluetooth Development board Bluetooth hardware modems, with LCD Display for adhoc network</p> <p>Bluetooth Ver. 2.0+ EDR certification Transmit Power up to +18 dBm(class1) Hold, Sniff, Park, Deep sleep mode 3.0V to 3.6V operation, Full Bluetooth Data rate over UART and USB Support up to 7 ACL links and 3 SCO links Enhanced Data Rate(EDR) compliant for both 2Mbps and 3Mbps modulation modes Interface: USB, UART& PCM (for voice codec) Support for 802.11 Co – Existence, Module with Bluetooth stack.Open field range of 10+ meters, Low current consumption for long battery life, 2.4GHz Frequency Hopping Spread Spectrum (FHSS) technology ensures Based on MCS51 processor at 11.0592 mhz clock, 64k Flash memory, 32 Digital i/o ,With real time clock , E2PROM 4K (support I2c bus)sample programs and experimental manual serial port.On board stepper motor interface, On board LCD display, On board relay & buzzer interface for switching devices through Bluetooth. With Bluetooth Dongle.</p>	1	
Total Scheme-I					
<u>ECE –SCHEME-II</u>					

Scheme Code	Item No.	Name of Item	Specifications	Qty.	Approx. Cost (Amount in Rs.)
ECE Sch.-II	1	DIGITAL COMMUNICATION LAB	<p>ASK, PSK,FSK,QPSK Input : From the Transmitter Kit. • Output : 2 Channel TDM Multiplexed Data Stream • De conditioning Options : NRZ (M), RZ, AMI, RB Bi phase (Manchester) , Bi phase (Mark), differentially encoded dibit pair to NRZ (L) • Carrier Demodulation : ASK Rectifier Diode FSK PLL Detector PSK & DPSK Square Loop Detector QPSK Fourth Power Loop Detector • Bi phase clock recovery : by PLL • Test Points : 54 • Interconnections : 2/4 mm socket • Power : 220 V± 10%, 50/60 Hz, 6VA (approx)</p> <p>QAM trainer kit • Data Speed: Fixed greater than 4.5KHz. • Data Format: Synchronous with carrier. • Data Sequence : 24 bit User Selectable data with the help of 3x8 Dip Switches. • Data Coding: Tri-bit data coding for generating C, Q and I signals from 24 bit user data. • Sine & Cosine Carrier Generator: 4.5KHz(approx.) • Fault Switches: 16 fault switches for easy fault creation. • Test Point: More than 35 test points for intermediate signal display. • Power Supply: In built power supply. • Assembled in ABS Plastic Box with cover & circuit screen printed PCB with 2mm socket for test points & to see the waveforms</p> <p>PULSE CODE MODULATION Crystal frequency- 16 Mhz On-board analog signal- 2-4 Khz Input channels- 2 Multiplexing- TDM Modulation- PCM Sync. Signal- Pseudo random sync. Code gen. Error check code- Off odd even hamming Operating mode- 320 Khz/channel Slow- 1.9 Hz/channel PC-PC communication-2 channel via RS232 Test Points- 50 Main Supply- 230 V +/- 10 %, 50Hz Weight- 1.3 Kg</p>	01 01 1	
	2	SEMICONDUCTOR	<p>COMMON BASE, COMMON EMITTER Trace frequency range-500 Hz-500Khz Collector sweep freq. range- 0-20V No. of base steps selection- 0-16 step Sweep freq. range- 500 Hz-500Khz Range- 0-300uA(moving coil)</p> <p>COMMON COLLECTOR KIT Max. collector base supply- +/-12V Max. emitter base power supply- +/-5V Test points- 16 Inter connections- 2 mm socket Internal power supply- +/-12V, +/-5V, 200ma Main supply- 230V +/- 10%, 50Hz Power consumption- 5 VA (approx) Dimensions- W325* H90 *D255 Weight- 1.1 Kg</p>	01(each) 01(each)	
	3		<p>Portable spectrum analyzer Frequency Coverage: 950-2150 MHz L-Band, continuous precision rotary encoder tuning Extendable with MFC's Frequency Display: ±100 KHz, On Screen Span: Greater than 1,200 MHz - 03 MHz; 100 kHz.Resolution Bandwidth: Greater than -85 dBm .Typical- 10 dBm, -30 dBm, -50 dBm RF Sensitivity: 5dB/Div Reference Levels: ± 2 dB TypicalScale: 40 dB On Screen Amplitude Accuracy: Type-N, 50 Ohm, N/F Adapter</p>	1	

			Included+13/18 VDC & 22 KHz Signal Dynamic Range: 9.5" W x 4.5"H x 9.5" D/8 lbs Input Connectors: 9.5" W x 4.5"H x 9.5" D/8 lbs 85 - 265 VAC 50/60 Hz, 12VDC, Vehicle Power Cable Included Internal Li-Ion Battery Pack and Smart Charger 5.7" High Contrast ¼ VGA		
Total Scheme-II					
ECE SCHEME-III					
Scheme Code	Item No.	Name of Item	Specifications	Qty.	Approx. Cost (Amount in Rs.)
ECE Sch.-III	1	OPTICAL FIBRE COMMUNICATION	WDM KIT Data Generators : 2 nos. (15 Bit Data) Comparators : 2 nos. (5V TTL Output) Light Sources : 2 nos, Laser Diode, Power Output -3dB Optical Detectors : 2 nos, Photo Diode, Measuring Range +3dB -50dB WDM Coupler : 2X1, Coupling Ratio 50:50, Operating Wavelengths (all) : 1310nm & 1550nm Connector types (all) : FC Fiber Optic Cable : Single Mode, 25Km (Optional) PC-PC Communication : Using 2 Channels (RS-232 Port) Advance Fiber optics Lab : 2 Kg approximately Fiber Spool 25Km (Optional) : 3 Kg approximately Power Supply : 230 V 10%, 50/ 60Hz Power Consumption : 3.5 VA approximately Weight : 2.3 Kg approximately Dimensions (mm) : W 450 × D 280 H 113 Included Accessories : Patch cord 16" (2mm) : 10 nos. Mains cord : 1 no. RS232 Cable, Length 1 meter : 2 nos. Learning material : Online (Theory, procedure, reference results, etc)	1	
	2		Wi-Fi (IEEE 802.11b) Application Kit WI-FI Serial adaptor , with RS 232 interface Ethernet conversion. Configuration monitoring tools Configuration tools through Serial. AT command Set-Protocol with 8051 processor telnet com port control protocol.Wi-fi development board with access point. RS-232 to Wi-Fi conversion, Wi-Fi scanner Based on MCS51 processor at 11.0592 mhz clock,On boards ADC / DAC WITH 4 k Eeprom Two 12V relays with isolated O/Ps. LCD display with 4x4 Keypad DIP switches digital input / output On boards LM35 Temp interface and example of control thru relays.	1	
Total Scheme-III					
Total Estimated Cost (Approx.) for Scheme I –III for ECE Department					2,95,000/-

Total Estimated Cost of the Tender (Approx.)

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Rs. 38.92 lacs

