



# INSTITUTE OF TECHNOLOGY, KORBA (C.G.)

BALCO - URGARING ROAD, VILL- JHAGARHA,  
POST - RISDI, KORBA, DISTRICT- KORBA (C.G.)  
PHONE NO. 098939-05053, 094241-44099, 99814-43708  
E-mail: [korbait@rediffmail.com](mailto:korbait@rediffmail.com), Website: [www.itkorba.com](http://www.itkorba.com)

Tender No. ITK/ Pur/2016/1960....

Korba, Dated: 24/09/2016


## NOTICE INVITING TENDER


Institute of Technology, Korba, Chhattisgarh invites sealed tender from eligible bidders (Manufactures, or their authorized dealers) for procurement of Laboratory Equipments, Materials, Library Books, Services i.e 1.Civil Engg Lab Equipments 2.Civil Maintenance Work 3. EEE Lab Equipments 4. Electrical Maintenance Work 5.Computer Lab Equipments/ Software 6.Mechanical Lab Equipments 7. Science & Humanities Lab (Physics & Chemistry) 8.Library Books 9.Hostel Related Materials & Utensils 10. Canteen of I.T. Korba (C.G.)

The tender form (Complete set of bidding documents including details of item with quantity for purchase) is available on the website [www.itkorba.com](http://www.itkorba.com) from...24/9/16..

A complete set of bidding documents may be purchased by any interested eligible bidder.

The sealed tender should reach Office of the Principal, Institute of Technology, Korba, Balco-Urga Ring Road, Village-Jhagarha, Post-Risdi, Korba, District-Korba (C.G.) 495683 on or before 25/10/2016 by 17.00 hours and will be opened on 26/10/2016 at 12.00 hours. Any bid received after the deadline for submission of bids as prescribed above will be rejected and returned to the bidder. The undersigned has all the rights pertaining to the tender. For any information please contact the I.T. Korba (C.G.).

  
Principal  
Institute of Technology  
Korba (C.G.)





# INSTITUTE OF TECHNOLOGY, KORBA (C.G.)

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E-mail: [korbait@rediffmail.com](mailto:korbait@rediffmail.com), Website: [www.itkorba.com](http://www.itkorba.com)

Tender No. ITK/PUR/ PUR/2016/1960

Korba, Dated: 24/09/2016

Last date of selling tender document: 25/10/2016 at 15:00 hrs  
Last date of submission of sealed tender document: 25/10/2016 at 17:00 hrs  
Date of opening of technical bid of tender document: 26/10/2016 at 12:00 hrs  
Tender Document Fee (for each Department/Category) Rs.1,000.00

## TERMS & CONDITION OF THE TENDER

Tender documents/Qualification requirements should be submitted in Main envelope as give below:

### Tender details:-

1. The tender contains 11 categories/departments i.e 1.Civil Engg Lab Equipments 2.Civil Maintenance Work 3. EEE Lab Equipments 4. Electrical Maintenance Work 5.Computer Lab Equipments/ Software 6.Mechanical Lab Equipments 7. Science & Humanities Lab(Physics, Chemistry) 8.Library Books 9.Hostel Related Materials & Utensils 10. Canteen.

| Sr .No | Category/ Department                | Approx Cost(Rs) in lakh | Remark   |
|--------|-------------------------------------|-------------------------|--|
| 1      | Civil Engg Lab Equipments           | 69.0                    | Separate tender document fee and separate EMD department wise to be submitted along with the tender document |
| 2      | Civil Maintenance Work              | 6.5                     |  |
| 3      | EEE Lab Equipments                  | 44.54                   |  |
| 4      | Electrical Maintenance Work         | 2.0                     |  |
| 5      | Computer Lab Equipments/ Software   | 68.0                    |  |
| 6      | Mechanical Lab Equipments           | 40.0                    |  |
| 7      | Science & Humanities Lab            | 0.3505                  |  |
| 8      | Library Books                       | 15.0                    |  |
| 9      | Hostel Related Materials & Utensils | 3.06                    |  |
| 10     | Canteen                             | ----                    |  |

If the bidder is interested to apply for more than one category/department then they must apply for each and every category separately i.e they should submit separate tender cost, emd amount, tender bid form etc for each and every category. In case if the firm has quoted for more than one department/section but submitted only one tender fee then the specifications submitted for the first department/section will be considered and the remaining specifications will be ignored Each part of the tender contains two stage bidding: Technical and Commercial bids.

2. In addition to the terms & conditions mentioned below, there are special terms & conditions applied for the category of Library Books & Services.

### Tender Document Procurement:-

3. Tender document can be obtained by the prospective tenderer on payment of Rs.1000/-(Rs.One thousand only) through demand draft only in favour of "Principal Institute of Technology, Korba" payable at Korba in person from the college or can be downloaded from our website [www.itkorba.com](http://www.itkorba.com). The DD of Rs.1000/- (Rs. One thousand only) or copy of receipt through e-payment as tender document fee must be submitted with downloaded tender document. The Tender

J. A. G. K.

[Signature]

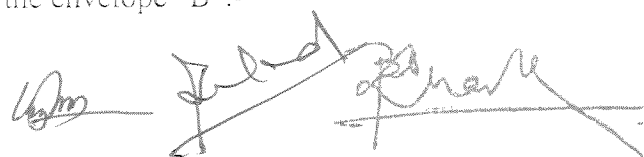
[Signature]

form is non transferable. Any department laboratory items/software/material etc may be quoted only by those firms who have registered TIN in that particular area for sale.

**Tender Submission details:-**

4. Tender documents should be submitted separately for technical bidding (only the technical specification) and commercial bidding .The sealed tender should be clearly marked as technical bid and commercial bid on the top of the envelope. for each category/department of the tender. The envelope should be marked with the category/department number for which it meant.
5. Tender should be submitted in Duplicate. They should be tagged separately and marked as original and duplicate. Complete tender document must be duly signed, stamped, paged & indexed by the bidder. Unsigned or unpagged bids shall be straightway rejected.
6. Tender document will be prepared in following manner-
  - a. Main envelop "A"- Contains following two envelops "B" & "C".
  - b. Technical Bid envelop "B"- Contains Technical Bid with hard and soft copy (CD). Annexure I. Following should be kept in envelope "B" along with all mentioned documents as per clause 7 of this tender document.
    - I. Technical Bid (Annexure I) with catalogue and brochure.
    - II. Firm registration TAN/PAN/TIN/Turn Over and experience
    - III. Income Tax Clearance  
Sales Tax Clearance  
CST/VAT Clearance
    - IV Tender Document Fee Receipt/DD/Proof of e-payment
    - V EMD/DD
    - VI Form A(Annexure III A) and Section XII(Annexure-IV) as per Tender Document
  - c. Financial bid "C"- Contains financial bid for the tender with hard and soft copy(CD). Annexure II.
  - d. On the top of each envelope of Commercial bid, bidder should clearly mention Tender No., Due Date, Category/department, and Item Name with seal & sign of bidder.
  - e. Item no. and page no. of the tender form should be arranged strictly in chronological order.
  - f. There should be no alternations/corrections made in the quoted rates. Rates should always be in figures and words.
  - g. Tender should be valid for at least twelve months from the date of opening the commercial bid of the tender. The price should be firm without variations of any kind.
  - h. Bidders should compulsorily quote the minimum delivery period required for the supply of items if the tender is awarded.
7. Following documents should be kept inside the envelope "B":-





- a. Covering letter for submission of bid which should indicate- Index for all the submitted documents for the tender all particulars of bidders via address, phone no., e-mail, name of the authorized person(s), TIN/TAN/ Service Tax No. etc. for correspondence. Category/department, Item & Name for which bid is submitted, etc.
  - b. Completely filled Form - "A" with signature & seal of authorized person which includes Earnest Money/ Bid security details - @ 5% of total tendered value. Tender received without form "A" duly signed (As token of acceptance of tender conditions by the tenderer) will not be accepted (Annexure-III a).
  - c. The contents of the form "A" should not be changed or amended otherwise will not be acceptable by this office.
  - d. Demand Draft/ copy of e-Pay Receipt for earnest money/ bid security. Bank Guarantee will not be accepted against EMD amount in any condition.
  - e. Valid certificates related to TIN / TAN / Service Tax No. etc. issued by competent Govt. authority pertaining to tender.
  - f. Undertaking for "After Sales Services" on the letter head of bidder.
  - g. Affidavit in prescribed format as given in Annexure-V on non judicial stamp paper of Rs. 50/- certified by Notary.
  - h. Manufacturer's Company Profile showing its product range, turn over, web-address and certifications like ISO/ ISI etc. along with the documentary proof of such certificates if company/ products bear such certificate.
  - i. All relevant particulars, illustrative catalogue/ brochures etc. which should indicate the products technical specifications for all packages which is submitted in the bid.
  - j. Filled Manufacturer's Authorization Form as given in SECTION XII (Annexure-IV) for all the quoted items.
  - k. The bidder should submit the Manufacturer's Make/ Brand name being used for marketing and registration no. of Commercial Tax Department.
  - l. Category/department, Item wise Commercial Bid in prescribed format (i.e. Annexure-II) should be submitted (Separately for each item) in individual envelope along with the soft copy in CD (MS- Excel).
8. The fact that the tenderer has signed the form "A" will mean that the tenderer has completely accepted Terms & Conditions of the tender and that the tenderer agrees to abide by these Terms & Conditions of the tender. No deviation from

*[Handwritten initials]*

*[Handwritten signatures and marks]*

Terms & Conditions of the tender will be accepted under any circumstances. The Terms & Conditions of the tender and clause usually printed on the party's tenders or bills will not be binding on this department.

#### Tender opening details:-

9. Complete Tender Documents will be opened on the prescribed date and time in the presence of Purchase Committee/ related department members and Bidders (who choose to attend) / representatives who choose to attend. The Bidders / representatives willing to attend the bid opening event should submit authorization to attend and shall sign in a register evidencing their attendance.
10. Commercial bid opening dates will be finalized after opening of technical bids and shall be informed to the technically qualified tenderers separately.
11. Commercial bids of those tenders, which are found technically suitable, will only be opened and considered for the items technically approved.

#### EMD Details:-

12. The bid should be accompanied by Earnest Money/ bid security @ 5% of total tendered value (for all quoted materials/ services) as part of the bid, in the form of Demand Draft of Schedule Bank/ copy of receipt by internet. Payment/ Draft should be in favour of "Principal, Institute of Technology, Korba" payable at Korba, Chhattisgarh. The EMD has to be deposited department wise and then laboratory wise to avoid ambiguity in future. Earnest Money submitted in any other form will not be accepted and the tender will be rejected. Unsuccessful bidder's earnest money will be discharged/ returned as promptly as possible.
13. The EMD will be treated as security deposit in case of selected tenders. EMD/Security deposit will be forfeited in case of breach of agreement of supply by the tenderer (supplier). If purchase order is issued, the Security Deposit will only be returned after warranty period of supply (which will be as per point No.28 mentioned in terms & conditions of this Tender document), if the machine/ equipment/ material/ services will found satisfactory at that time.
14. The supplier can quote part or full tender requirements of the department (applicable to all tender categories except Library/ services) and proportionately the EMD may be submitted as mentioned in respective laboratory/department.
15. If any document given by the bidder is found fake/manipulated, then the entire EMD deposited by the bidder in the tender will be forfeited without assigning any reason and such bidder will not be entitled for future biddings.

#### Award of Tender:-

16. Contracts will be awarded only for those items which have minimum 3(Three) valid rates.
17. Contracts for procurement will be awarded as per the priority and availability of budget. Suppliers have to deliver the specified items within stipulated time. One time extension for two months may be granted on request for one month at 2% penalty.

st. la Gf

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18. The undersigned reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time without assigning any reason prior to contract award, without thereby incurring any liability to the affected bidder(s).
19. The undersigned reserves the right at the time of Contract award to increase or decrease the quantity of goods originally specified without any change in unit price or other terms and conditions.
20. As per State Government policy, Vendors registered within the State will be given advantage in price bid limited to the applicable VAT compared to the price quoted by the vendors registered outside CG State.

**Supply & Payment Terms & Conditions:-**

21. The rates quoted by the bidder must be inclusive of all the charges (like – transportation, installation charges, delivery charges, inspection charges, training charges, charges for services, excise duty, customs duty etc.) except VAT. The VAT should be mentioned separately. Loading/ Unloading charges shall be borne by the supplier.
22. The tender matter including prices should be typed neat- corrections/ overtyping in prices will not be accepted. However if correction/ overtyping is there, it should be attested by the tenderer with signature, date and their seal. Hand written and Xerox tender will not be accepted.
23. If the Supplier fails to deliver any or all of the Goods or to perform the services within the stipulated delivery period(s) specified in the Contract, then Principal, Institute of Technology, Korba (C.G.) shall, without prejudice to its other remedies under the Contract, forfeit the Bid Security and the order is liable to cancel.
24. If the supplier/ dealer fails to supply the items as per the specifications, items will not be received by the consignee and supplier/ dealer has to take them back on his/ her own cost. The supplier / dealer may supply the items of higher specifications (due to manufacturing obligations) if accepted by consignee after examination and testing.
25. The undersigned may get, the items supplied by the successful tenderer, inspected on receipt of the same by such person or persons he deems fit or may reject the items as in his opinion do not come up to the specification. The decision of the under signed will be final in such cases.
26. The one time extension (if application received within specified time) may be granted at the discretion of the undersigned. The liquidated damage at a rate of 2% per month of the contract price of the full cost of the tool/equipment/machine is liable to be charged for the extension of the delivery period(which includes the date of demonstration). Exemption in penalty may be given in a particular case of default by the institute side for the period of delay. Once the maximum (two months) is reached, the Purchaser may consider termination of the Contract. Equipment received after the delivery period or dispatched after the delivery period mentioned in the order will also be subjected to this liquidated damage or termination of contract. Power to extend delivery period would remain reserved with Principal, Institute of Technology, Korba (C.G.).







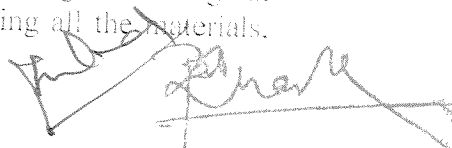
27. The rates quoted by the bidder shall be fixed for the duration of the contract and shall not be subject to adjustment on any account. All items will come under warranty of two years which will cover free servicing/spares if any.
28. 80% payment will be released after the safe receipt of goods, as per the specifications given in purchase order & and after ensuring successful installation, commissioning and performance of supplied items etc. Bills will be submitted in triplicate for payment. 5 % of the payment will be released at every six month interval till two years subjected to successful training/demo of the equipment/software to staff/students and satisfactory report by users.
29. Items should strictly comply the standards/norms as prescribed in BIS specifications.
30. The tenderer will have to submit samples on demand before the technical team at the purchaser end, in the prescribed time limit. In case the samples are not produced in the prescribed time it shall be open to the undersigned to forfeit Earnest Money Deposited by the tenderers.
31. Prices shall be quoted in Indian Rupees only. All quoted rates should be for new and unused items unless and otherwise specified so.

**Other Terms & Conditions:-**

32. Request for the supply of any details regarding quotation or comparative chart or any other enquiry in respect of the tenders received will not be entertained. Exact and earliest possible time of delivery should be indicated in the tender against each item. Other things, being equal, the tenders who give earliest delivery period will be preferred while comparing the rates. The delivery period given in the order will be the date of receipt of the equipment in the institute and not the date of dispatch of the equipment by the supplier.
33. Either a manufacturer or their authorized dealer can bid for the items. For each of the quoted items, appropriate documentary evidence for being a Manufacturer or their authorized dealer (Manufacturer's Authorization Form given in SECTION XII as Annexure-IV) must be submitted necessarily. In absence of above the bid will be treated non- responsive & likely may be rejected.
34. Vague expression such as "complete with standard accessories" or "as per your specification" will not be accepted. The tenderers must specifically indicate all specification of the items and should mention clearly what item will be supplied under "accessories" with the Equipment/ Machinery in price schedule enclosed as Annexure-I. Any ambiguity or vagueness in tender for item concerned will be liable for rejection.
35. The bids will be examined to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed, and whether the bids are in order.
36. Samples sent by the party and the approved samples will be adjusted in regular supply and in the case of rejection, they will be returned back to the party at his cost.
37. The rejected items will be returned on the tenderer's cost.
38. All the equipments shall be suitably protected, coated, covered or boxed and crated to prevent damage or deterioration during transit/ handling and storage at site till the time of installation/ commissioning. While packing all the materials.




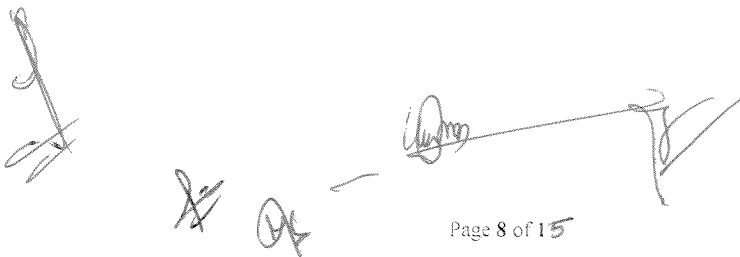




the limitations from the point of view of availability of railway wagon sizes. in India should be taken into account. The contractor shall be responsible for any loss or damage during transportation, handling and storage due to improper packing.

39. It must be noted that normally all correspondence and transactions will be made only with the parties whose tenders have been accepted and not with anybody else.
40. At any time prior to the deadline for submission of bids, the Purchaser may modify the bidding documents by amendment. All prospective bidders who have purchased the bidding documents will be notified of the amendment by uploading in the website [www.itkorba.com](http://www.itkorba.com) or by E-mail, letter or by fax and will be binding on them.
41. No offer should be made for imported item for which import license has to be arranged by the undersigned. The entire imported item will have to be delivered in the institute and payment will be made in Rupees only.
42. Quality and price of the product will be the decisive factors for the award of tender. Merely quoting the lowest price without desired quality may lead to the consideration of next suitable tenderer.
43. Other terms and condition (if not specified in this tender document) will be as per C.G. State Government store purchase rule. Any dispute arising out of this tender or supply of any other matter will fall under the civil jurisdiction of Korba district only.

  
Principal  
Institute of Technology  
Korba (C.G.)





## TECHNICAL SPECIFICATION SCHEDULE

Department/Section.....,  
 Laboratory Name/Work.....  
 Name of Bidder.....

| Item serial no | Item Code | Specification of items, which bidder offers | Name of Accessories with specification (if any) | Make/ Brand of item | Manufacturer's Name | Catalogue/ Brochure Page No. (as indexed by you) | Mention the deviations from the required specifications (if any) | Whether higher of lower side (if higher specifications or shortfall if any) |
|----------------|-----------|---|---|---------------------|---------------------|--|--|---|
| (1)            | (2)       | (3)   | (4)   | (5)                 | (6)                 | (7)  | (8)  | (9)   |
|                |           |   |   |                     |                     |  |  |   |
|                |           |   |   |                     |                     |  |  |   |
|                |           |   |   |                     |                     |  |  |   |

## Note:-

- Specifications quoted should strictly comply the asked ones. However with valid justification the higher/lower specifications may be quoted (Column 8). Consideration of such deviated specifications will be purely at the discretion of the concerned department & Principal I.T.Korba.
- Vendor has to specify if the specifications quoted by him are extra and more modernized than the asked ones (Column 9)
- Specifications of the item which bidder offers as per the catalogue / brochure / Technical details etc. will be considered for comparison and selection. Incomplete details will not be considered for comparison.

*J* *L* *QF*

*400*

*12/12/15*

*Chavla*

FORM - A

(To be signed and returned along with the tender)

I/We (Full name).....

Address.....

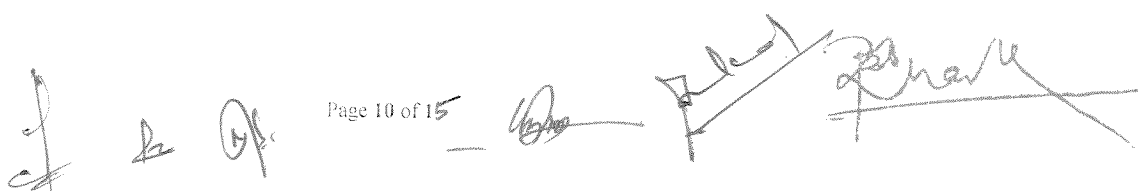
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have read the Term and Condition of the tender for the supply of various stores as per your tender notice for supply \_\_\_\_\_ for \_\_\_\_\_ Chhattisgarh due on \_\_\_\_\_ and I/We fully accept the Term and Condition of the Bid supplier to me / us with the Bidding Documents.

I/We also undertake to permit the inspection our accounts and records and other documents related to the bid submission and contract performance and to have them audited by auditors appointed by the society.

It is further noted that if any manipulation is found at any stage, the tender / Contract / Supply order shall be rejected and the Principal, I. T. Korba, Chhattisgarh may take any action against me/ us, as she/ he deems appropriate.

Handwritten signatures and initials at the bottom of the page, including a signature that appears to be 'I. T. Korba' and several other initials.

Details of Earnest Money/ bid security in the form DD/BG @ 5% of the total tender value for which bid is submitted) :

(a) DD/BG No.-----

(b) Values `-----

(c) Name of Bank-----

Date:-----

Signature  
(Name & full Address of the firm)

*[Handwritten marks and signatures]*

On Non Judicial Stamp Paper of Rs. 50/-

निविदाकर्ता द्वारा निविदा प्रपत्र के साथ दिये जाने वाला

## शपथ-पत्र

निविदाकर्ता फर्म मेसर्स .....की ओर से मुझे/हमें अधिकृत किया गया है और मैं/हम निम्नलिखित कथन शपथपूर्वक करता हूँ/करते हैं कि :-

1. मैंने/हमने निविदा की सारी शर्तें ध्यानपूर्वक पढ़ी हैं और उनसे सहमत हैं तथा उन्हें मानने के लिये वचनबद्ध हैं।
2. मेरे/हमारे द्वारा संलग्न किये गये सभी दस्तावेज सही है और उनमें किसी प्रकार की कांट-छांट नहीं किया गया है एवं गलत जानकारी नहीं दी गई है।
3. मेरे/हमारे द्वारा कमर्शियल बिड में सामग्रियों के लिये जो स्पेशिफिकेशन दिया गया है और उनके सपोर्ट में जो भी संबधित दस्तावेज, कैटलॉग/ब्रोशर्स आदि संलग्न किये गये हैं उनमें लिखा विवरण निर्माता द्वारा जारी किया गया है एवं मूल रूप में हैं और उनमें कोई फेरबदल या कांट-छांट नहीं किया गया है।
4. मेरे/हमारे द्वारा निर्माता से मुझे/हमें जारी आर्थोराइजेशन प्रमाण पत्र जो कि बिड के साथ संलग्न किये गये हैं वे सही एवं मूल रूप में हैं और उनमें कोई फेरबदल नहीं किया गया है।
5. यदि हमें क्रय आदेश आपूर्ति का अवसर दिया जाता है तो, मैं/हम दिये गये क्रयादेशानुसार सामग्रियों को निर्धारित समय सीमा में स्पेशिफिकेशन के अनुसार सप्लाय करने के लिये बाध्य हैं। देर होने या सामग्रियों के स्पेशिफिकेशन में अन्तर होने पर मुझे/हमें दिये गये क्रयादेश को निरस्त किया जा सकता है एवं संस्था को होने वाले नुकसान की भरपाई मेरे/हमारे द्वारा की जायेगी।
6. मेरे/हमारे द्वारा दी गई जानकारी असत्य पाये जाने पर मुझे/हमें एवं हमारी फर्म को निविदा में भाग लेने से वंचित किया जा सकता है।

दिनांक .....

हस्ताक्षर : .....

नाम : .....

धारित पद : .....

फर्म का नाम : .....

EARNEST MONEY / BID SECURITY FORM

To:  
The Principal,  
Institute of Technology,  
Korba (C.G.)

WHEREAS.....(Name of Supplier) hereinafter called "the bidder" has undertaken, in pursuance of Tender No.....Date..... to bid in the said tender.

AND WHEREAS it has been stipulated by you in the said Tender notification that the Supplier shall furnish you with a Bank Guarantee by a schedule bank for the sum specified therein as Earnest Money/ Bid Security for compliance with the Bidders obligations in accordance with the Tender terms and conditions.

AND WHEREAS we have agreed to give the Bidder a Guarantee:

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

This guarantee is valid until-----day of-----20----

Signature and Seal of Guarantors

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

Date.....20.....

Address.....

.....  
.....

.....  
(Signature of the Bank)

*[Handwritten initials]*

*[Handwritten signatures and marks]*

SECTION XII

MANUFACTURERS' AUTHORIZATION FORM\*

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

To  
Principal,  
Institute of Technology,  
Korba (C.G.)

Dear Sir:

Tender no \_\_\_\_\_ Dated \_\_\_\_\_

We.....who are established and reputable manufacturers of (name and description of goods offered) having factories at(address of factory) do hereby authorize M/s(Name and address of Agent) to submit a bid, and sign the contract with you for the goods manufactured by us against the above IFB.

No company or firm or individual other than M/s.....are authorized to bid, and conclude the contract for the above goods manufactured by us, against this specific Tender. (This para should be deleted in simple items where manufacturers sell the product through different stockiest.)

Yours faithfully,

(Name)  
(Name of manufacturers)

Note: This letter of authority should be on the letterhead of the manufacturer and should be signed by a person competent and having the power of attorney to legally bind the manufacturer. It should be included by the Bidder in its bid.\* Modify this format suitably in case where manufacturer's warranty and guarantee are not applicable for the items for which bids are invited

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Note:- Give bid price item-wise in the following Performa only. Any deviation will not be accepted.

PRICE SCHEDULE

Department/Section....., Laboratory Name.....  
Name of Bidder.....

(Amount in )

| Item serial no.  | Item Code | Specification of items, which bidder offers | Name of Accessories with specification (if any) | Make/ Brand of item | Manufacturer's Name | Catalogue/ Brochure Page No. (as indexed by you) | Quantity of item as per tender with unit (8) | Cost per unit (Inclusive of all charges) except VAT (9) | VAT (10) | Total value item wise (col 9+ col 10) | Total Value in (col 8* col 11) |
|------------------|-----------|---|---|---------------------|---------------------|--|--|---|----------|---------------------------------------|--------------------------------|
|                  |           |   |   |                     |                     |  |  |   |          |                                       |                                |
|                  |           |   |   |                     |                     |  |  |   |          |                                       |                                |
|                  |           |   |   |                     |                     |  |  |   |          |                                       |                                |
| Total (in words) |           |   |   |                     |                     |  |  |   |          |                                       |                                |

Note -

- The bidding prices shall be for F.O.R. Destination.
- Rates should be inclusive of all charges (such as charges for inspection / Demonstration / Installation/ Commissioning/ Transportation/ Excise / Custom / Services charges etc. except VAT. VAT should be mentioned separately.
- Conditional rates will not be accepted.
- Comparison will be done item wise on the basis of total values as mentioned in column 11.
- Rates will be finalized for purchase on the basis of individual items having 03 valid rates.
- Specifications of the item which bidder offers as per the catalogue / brochure / Technical details etc. will be considered for comparison and selection. Incomplete details will not be considered for comparison.
- Price schedule give in other form will not be accepted and bid will be rejected.

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Institute of Technology, Korba (C.G.)

Department of Civil Engineering,

PROPOSED BUDGET FOR YEAR 2016-2017

| S. NO.    | NAME OF LABORATORY                    | PROPOSED BUDGET 2016-2017 (RS.) | EMD AMOUNT 2016-17 |
|-----------|---------------------------------------|---------------------------------|--------------------|
| 1         | Environmental Engg.lab                | 12,00,000.00                    | 60,000.00          |
| 2         | Concrete Lab,                         | 4,00,000.00                     | 20,000.00          |
| 3         | Surveying Field Work lab              | 5,00,000.00                     | 25,000.00          |
| 4         | Fluid Mechanics lab                   | 10,00,000.00                    | 50,000.00          |
| 5         | Structural Analysis & Engineering Lab | 20,00,000.00                    | 100,000.00         |
| 6         | Geotech Engineering- Lab,             | 10,00,000.00                    | 500,000.00         |
| 7         | Engineering Geology Lab               | 4,00,000.00                     | 20,000.00          |
| 8         | Transportation Engg. Lab              | 3,00,000.00                     | 15,000.00          |
| 9         | Consumable for all labs               | 1,00,000.00                     | 5,000.00           |
| TOTAL Rs. |                                       | 69,00,000.00                    | 795,000.00         |

  
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Checked By

  
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**INSTITUTE OF TECHNOLOGY, KORBA**  
**Schedule of Requirements, Civil Engg. Deptt.**

Name of Lab :- Environmental Engg.

| S.NO. | Code     | EQUIPMENT REQUIRED | DETAILS OF SPECIFICATION   | Qty. |
|-------|----------|--------------------|--|------|
| 1     | C_ENV_01 | digital Microscope | Specification: Basic Functions<br>Camera Imaging device 1/1.8 inch 2.11 megapixel CCD<br>Scanning Mode Progressive scan<br>Total number of pixels Approx. 2.01 megapixels 1688 (H) x 1236 (V)<br>Number of effective pixels Approx. 2.01 megapixels 1688 (H) x 1236 (V)<br>Frame rate 30 fps (15 fps, double buffer method)<br>Electronic shutter AUTO(1/15 ~ 1/15000), 1/15000, 1/8300, 1/5800, 1/4400, 1/3600, 1/2500, 1/1000, 1/500, 1/250, 1/125, 1/60, 1/30, 1/15<br>Slow shutter 1/7.5, 1/4, 1/2, 1, 2, 4, 8, 16<br>Gain AUTO.MANUAL, OFF<br>White balance AUTO, MANUAL (R, B)<br>LCD monitor Image adjustment Gamma correction, color correction, edge enhancement<br>Display size 15" LCD color monitor<br>Pixel pitch 0.1905mm(H)x0.1905mm(V)<br>Number of pixels 1600(H)x1200(V)<br>Brightness 200cd/m2(typ.)<br>Contrast ratio 500:1(typ.)<br>Light source Viewing angle 170°[H], 170°[V] (type.)<br>Lamp 60 W metal halide lamp<br>Lamp life 4000 H (average)<br>Color temperature 5500±100K<br>Output Analog RGB output UXGA, SXGA, XGA<br>Pinter output USB2.0(B type)±ictBridge<br>LAN 10BASE-T/100BASE-TX/1000BASE-T<br>External terminal Round 6 pin<br>ACS terminal Round 10 pin<br>Remote control RS-232C connector<br>Input Mouse and keyboard input USB 2.0 (Type A)<br>USB ports USB 2.0 (Type A) x 6<br>If any acsary is required , Quote them under the heading of extra but essential | 1    |

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| S.NO. | Code | EQUIPMENT<br>REQUIRED          | DETAILS OF SPECIFICATION  | Qty. |
|-------|------|--------------------------------|---|------|
|       |      | digital Microscope<br>(cont..) | Microphone input MIC jack<br>Record Recording media 160 GB hard disk, CD-R/RW, DVD±R/+R DL/±RW/-RAM<br>Still image format Exif-TFF [non-compressed], BMP [non-compressed],<br>Exif-JPEG [compressed]<br>Compression mode JPEG [4 levels]<br>Number of recorded still pixels Standard:<br>1600x1200, 1280x960, 1024x768, 800x600, 640x480, 320x240<br>High resolution:<br>6400x4800, 4800x3600, 3200x2400, 2400x1800<br>Video image format AVI [non-compressed]<br>Number of recorded video pixels 1600x1200(7.50FPS), 1280x1024(7.50FPS), 1024x768(15.00FPS),<br>800x600(15.00FPS), 640x480(15.00FPS)<br>Image adjustment Contrast, edge enhancement, noise reduction, binarizing<br>Rated voltage AC100 ~ 240V, 50/60Hz<br>Power consumption 250W<br>Ambient temperature 50°C to 40°C (No freezing or condensation)<br>Storage temperature -15°C to 50°C (No freezing or condensation)<br>Relative humidity 25 to 85% RH (No condensation)<br>Atmosphere Corrosive gas prohibited<br>Weight Main Unit Approx. 12 kg<br>Camera Approx. 1kg<br>Size LCD shut 417.4(W)x154(H)x343.1(D)mm<br>LCD open 417.4(W)x429.6(H)x343.1(D)mm |      |

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| S.NO. | Code     | EQUIPMENT REQUIRED | DETAILS OF SPECIFICATION   | Qty. |
|-------|----------|--------------------|--|------|
| 3     | C_ENV_03 | BOD Incubater      | <ol style="list-style-type: none"> <li>1. Refrigerated Insulation &amp; Freezing in one unit.</li> <li>2. Better mineral &amp; Puf Insulated to keep the surface Temp. of body comfortable &amp; avoid Cooling loss.</li> <li>3. Silent energy saving Kirloskar/ Tecumseh compressor, Designed to circulate uniform air through out the chamber with better imported coil condenser copper coil, improved Temperature distribution</li> <li>4. Polish 304 grade S. Steel interior corrosion resistant long life operation having adjustable shelves to make more space for different Height.</li> <li>5. Kanthal A-1 tubular heater is fitted for better accuracy.</li> <li>6. Safety Controller are provide with the Digital Temperature Controller Cum Indicator</li> <li>7. Full features with Digital Temp. Controller Cum Indicator &amp; Microprocessor Based PID Temperature Controller Cum Indicator with Voltmeter Digital Voltmeter)</li> <li>8. Choose among the model with window front glass door or inner Perspex / Acrylic sheet full view door to observe the Test Process inside the incubator as desired while keep Temp. uninterrupted.</li> <li>9. Angle Iron Frame at bottom with castor wheel for easy movement.</li> <li>10. Fitted with 2 Nos. Fan (One for Cooling &amp; One for Heating inside the chamber)Capacity (Ltrs. 280<br/>Interior (mm) 570 x 875 x 550 . 10 Cuft<br/>Heater Wattage "W" 250 W<br/>Shelves 3 \</li> </ol> | 1    |

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| S.NO. | Code     | EQUIPMENT REQUIRED                        | DETAILS OF SPECIFICATION  | Qty. |
|-------|----------|---|---|------|
|       |          | BOD Incubator<br>(cont...)                | TECHNICAL SPECIFICATIONS:<br>Material : CRC / Mild Steel duly power Coated<br>Optional : Double Colour Gate, Top & Grill<br>Power Consumption : 220/ 230V AC supply +- 10% 50Hz.<br>Safety Function : Safety Controller for Safety of Digital Temp.Controller cum Indicator & Cooling Compressor<br>Optional : RSS 232 Communication Interface<br>Compressor : Kirloskar/ Tecumseh Model as per size requirement<br>Refrigerant :<br>Duty Cycle : Continuous<br>Interior : illumination provide inside the chamber : Illumination of 3 Fluorescent tube<br>. BOD, 24 Hrs. Cyclic Manual Timer<br>Voltage Stabilizer, Capacity as per size / Cap. requiremen <span style="float: right;">If any</span><br><b>accessary is required , Quote them under the heading of extra but essential</b> |      |
| 4     | C_ENV_04 | Determination of Dissolved Oxygen         | DIGITAL DISSOLVED OXYGEN ANALYZER CUM TEMP. METER<br>RANGE : 0 to 20.0ppm<br>RESOLUTION : 0.1 ppm<br>ACCURACY : ± 0.2ppm<br>TEMPERATURE COMP. : 0to 50 deg. C. Manual.<br>DISPLAY : 3.5 Digit LED<br>STIRRER : Provided.<br>POWER : 230V ± 10% 50 Hz<br>SENSOR : DO Amperometric Gold / Sliver Temp. RTD (PT-100)<br>TIME RESPONSE : 10 Sec <span style="float: right;">If any</span><br><b>accessary is required , Quote them under the heading of extra but essential</b>   | 1    |
| 5     | C_ENV_05 | MICROPROCESSOR DIGITAL CONDUCTIVITY METER | DISPLAY : 16 X 2 Alpha Numeric LCD Display<br>RANGE : 0.1 µS to 100mS (6 Decadic Ranges)<br>RESOLUTION : 0.01 µS.<br>ACCURACY : ± 1% of F.S.± 1 Digit<br>CALIBRATION : Auto / Manual.<br>TEMPERATURE COMP. : 0 to 100 UC.<br>CELL CONSTANT : 0.1 To 5.0 Adjustable.<br>SENSOR : Up to 100 Samples.<br>POWER : 230V ± 50 Hz. AC.<br><b>If any accessary is required , Quote them under the heading of extra but essential</b>  | 1    |





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| S.NO. | Code     | EQUIPMENT REQUIRED               | DETAILS OF SPECIFICATION  | Qty. |
|-------|----------|----------------------------------|---|------|
| 6     | C_ENV_06 | DIGITAL WATER & SOIL TESTING KIT | DIGITAL WATER & SOIL TESTING KIT (MODEL SL-EE-013)<br>DISPLAY : 3.5 Digit LED<br>PH: RANGE : pH 0 TO 14.00<br>RESOLUTION : pH 0.01<br>ACCURACY : pH 0.01 ± 1 Digit<br>TEMP. COMP. : 0 to 100 Deg. C.<br>ORP: RANGE : 0 to ± 1999mV<br>RESOLUTION : 1mV.<br>ACCURACY : 1mV ± Digit.<br>CONDUCTIVITY: RANGE : 0 to 200M Mhos / Cm in 4 ranges.<br>RESOLUTION : 0.1 µ Mhos / Cm<br>ACCURACY : 0.5% of Range ± 1Dight<br>CELL CONSTANT : 0.4 to 1.5 on Display<br>TDS: RANGE : 0 to 200M Mhos / Cm in 4 ranges.<br>RESOLUTION : 0.1 ppm<br>ACCURACY : 0.5% of Range ± 1Dight<br>CELL CONSTANT : 0.4 to 1.5 on Display<br>DO: RANGE : 0 to 20ppm<br>RESOLUTION : 0.1 ppm.<br>ACCURACY : 0.2ppm ± 1 Digit<br>TEMP. COMP. : 5 deg C to 55 deg C.<br>SENSOR : Gold / Sliver Amperometric Probe.<br>TEMPERATURE: RANGE : 0 to 100Deg.C<br>RESOLUTION : 0.1 Deg.C.<br>ACCURACY : ± 0.2% of range ± 1 digit.<br>If any accsary is required , Quote them under the heading of extra but essential | 1    |

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**INSTITUTE OF TECHNOLOGY, KORBA**  
**Schedule of Requirements, Civil Engg. Deptt.**

Name of Lab :-Concrete Technology

| S.NO. | Code     | NAME OF PRACTICAL | EQUIPMENT REQUIRED                              | DETAILS OF SPECIFICATION  | QUANTITY |
|-------|----------|-------------------|---|---|----------|
| 1     | C_con_01 |                   | Flexural Testing Machine(Electrically operated) | <p>Flexure Testing Machine (as per IS 516,BS1861)</p> <p>Flexural testing machine upto 100 KN capacity hand operated For 10 x 10 x 50 and 15 x 15 x 70 cms concrete beams as per IS-516-1959, IS: 4696. •Complete with Hydraulic Load gauge 0-100 KN x 0.5 kN/div. With Calibration certificate. electrically operated for 220V 50HZ Single phase Loading unit 100 KN cap. with a self retracting type jack &amp; hydraulic Pump, Load gauge with maximum load indicating pointer, •The machine has a set of platens, top platen has a self aligning roller fixed at the center and lower one has two rollers of 25 mm dia, equally spaced at a distant of 15 cm. •These rollers are hard chrome plated to increase the abrasion resistance and hardness. Type of Loading: Third point. with specimen mould and all accessories and safety devices (if required) conforming to ISI/BIS/ISO</p> <p>Aim :determination of flexural strength of concrete</p> <p>With all accessories and anti vibrating mounting required,as per I.S.Standards.</p> <p><b>If any accessory is required , Quote them under the heading of extra but essential</b></p> | 1        |

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| S.NO. | Code     | NAME OF PRACTICAL | EQUIPMENT REQUIRED    | DETAILS OF SPECIFICATION  | QUANTITY |
|-------|----------|-------------------|-----------------------|---|----------|
| 2     | C_con_02 |                   | Air Entrainment Meter | <p>Air entrainment meter in compliance with IS:1199 An entrainment of air in limited percentage improves durability of concrete and very low percentages deteriorate it, measurement of air entrapped in freshly mixed concrete becomes important. The use of chemical additives to increase workability of concrete requires an air content check to be made. Air Entrainment Meters are used to determine air entrained in freshly mixed concrete by pressure method.</p> <p>The apparatus consists of a pressure tight flanged cylindrical measuring bowl of 0.005 cubic meter capacity for maximum size of aggregate 38 mm The bowl is fitted with a removable flanged conical cover assembly with the help of a seal The conical cover has an air valve and a pet cock for bleeding off the water A transparent cylindrical stand pipe which is graduated in air content is fixed to the conical cover assembly Pressure is applied to the specimen with the help of a pressure bulb and the pressure is recorded on the pressure gauge, which is mounted on the stand pipe The whole assembly is mounted on a flat base The instrument is supplied complete with one each following accessories\$ Calibration cylinder with spring clamp, trowel, tamping rod, straight edge, rubber mallet and measure.</p> <p>With all accessories and anti vibrating mounting required, as per I.S. Standards. (For Concrete Lab)</p> <p><b>If any accessory is required , Quote them under the heading of extra but essential</b></p> | 1        |
|       |          |                   |                       |   |          |

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Civil Engg. Deptt

22/9/2015



INSTITUTE OF TECHNOLOGY, KORBA  
Schedule of Requirements, Civil Engg. Deptt.

Name of Lab :-Surveying Field Work Lab

| S.No | CODE     | NAME OF EQUIPMENT  | DETAILS OF SPECIFICATION   | Qty |
|------|----------|--------------------|--|-----|
| 1    | C_SUR_01 | Vernier Theodolite | <p>:Watts_Pattern<br/>Watts Theodolite is designed to meet the requirements of Civil Engineer, Surveyor and Mining Engineer for high grade instruments giving a maximum portability. Both circles are totally enclosed making the instruments suitable for work either above or below the ground. The instrument is supplied with standard accessories in teak wood box with aluminum telescopic tripod stand.</p> <p>Technical Data:<br/>Telescope Model - 20<br/>Image Erect<br/>Length 178 mm<br/>Magnification 25X<br/>Effective Aperture 38mm<br/>Field of View 2.6 M at 100M<br/>Short Focus 1.5M<br/>Stadia Ratio 02:40:00 AM<br/>Stadia Constant 0<br/>Resolving Power 4"<br/>Circle Diameter Hz113mm, V100 mm<br/>Graduation 20'<br/>Vernier Reading 20"<br/>Plate Level Sensitivity 45" / 2mm<br/>Vertical Circle Level 1' / 2mm<br/><b>If any accessory is required , Quote them under the heading of extra but essential</b></p> | 1   |
| 2    | C_SUR_02 | Line Ranger        | As per Standard Specification, (3 Meter size)  | 2   |





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| S.No | CODE     | NAME OF EQUIPMENT | DETAILS OF SPECIFICATION  | Qty |
|------|----------|-------------------|---|-----|
| 3    | C_SUR_03 | Abney Level       | <p>The abney level is an engineering instrument which can be used to determine height. It is moderately expensive and of medium size and weight. Although the abney level is relatively robust, the bubble tube can be knocked out of alignment during rough treatment angle of inclination of a line from the observer to the target.</p> <p>Specifications</p> <p>Used to determine slope angle, tree heights etc</p> <p>Graduated 0-+/-90 degrees, 0-+/-100% on a stationary arc</p> <p>Vernier reads to 10'</p> <p>Scale pointer incorporates friction thumb lock</p> <p>Includes leather carry case with belt loop</p> <p>With all accessories and ,as per I.S standards.</p> <p style="text-align: right;"><b>If any accessory is required , Quote them under the heading of extra but essential</b></p>  | 2   |
| 4    | C_SUR_04 | Tilting Level     | <p>Features Of Tilting Level</p> <ul style="list-style-type: none"> <li>• Internal focusing telescope having 3 foot screws leveling base with locking arrangements</li> <li>• Screw focusing eye piece</li> <li>• Highly sensitive spirit bubbles</li> <li>• Aperture not less than 3.76 cm</li> </ul> <p>Fitted With</p> <ul style="list-style-type: none"> <li>• Compass</li> <li>• Reader</li> <li>• Longitudinal bubble that is mounted with folding reflector fitted along with a telescopic tube</li> </ul> <p>Specifications</p> <p>Telescope Image Erect/Invert</p> <p>Magnification 24x</p> <p>Length 175mm</p> <p>Shortest Focusing Distance 1.5mtr</p> <p>Longest Focusing Distance 200/300 mtr.</p> <p>Objective Aperture 40 mm</p> <p>Stadia Constant 1:100</p> <p>Addition Constant 0</p> <p>Bubble Sensitivity 45"/2 mm</p> <p>Nominal Accuracy 2.3mm/km</p> <p style="text-align: right;"><b>If any accessory is required . Quote them under the heading of extra but essential</b></p> | 1   |





| S.No | CODE     | NAME OF EQUIPMENT             | DETAILS OF SPECIFICATION  | Qty |
|------|----------|-------------------------------|---|-----|
| 5    | C_SUR_05 | Electronic Digital Theodolite | angle measurements (Hz, V)<br>Precision 2"<br>Display resolution 1 or 5"<br>Display units DEG (360o 00' 00"), GON (400), MIL (6400), V / %<br>Telescope<br>Magnification 30x<br>Objective aperture 45 mm (1.7 in)<br>Minimum focusing distance 1.35 m (4.43 ft)<br>Stadia multiplication factor/constant 100/0<br>Compensator<br>System Automatic vertical compensator, User set On/Off<br>Working Range ± 3'<br>Operation<br>Display Double side large character back-lit LCD<br>Keys 6 one touch button functions<br>Laser plummet<br>Type Visible laser point<br>Accuracy 1.5 mm at 1.5 m instrument height<br>Environmental conditions<br>Operating temperature -20o C ~ +50° C<br>Protection to dust and water Dust and water resistant, IP54<br>Weight<br>Weight including battery and tribrachv 4.5 kg (9.9 lb)<br>Battery/Power Management<br>Type of battery Rechargeable NiMH, replacement alkaline battery pack<br>Operation period without laser plummet 36 h Dust and Water resistance<br>Carrying case<br>• Plumb bob<br>• User-manual,levelling staff ,tripod<br><b>required , Quote them under the heading of extra but essential</b> | 1   |

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| S.No | CODE     | NAME OF EQUIPMENT | DETAILS OF SPECIFICATION   | Qty |
|------|----------|-------------------|--|-----|
| 6    | C_SUR_06 | Auto level        | Telescope<br>Image E rect<br>Magnification 30x<br>Objective Aperture of 30 mm<br>Resolving Power 3"<br>Field of view 1°20'<br>Minimum Focus Distance 0.3 m<br>Stadia ratio 100<br>Stadia constant 0<br>Accuracy<br>Standard Deviation of 1km<br>double run leveling 1.5 mm 1.5 mm 2 mm<br>Automatic Compensator<br>Working range ±15'<br>Type Magnetic<br>Circular Vial<br>Sensitivity 8" / 2mm<br>Horizontal Circle<br>Minimum division 1°<br>Reading system T otal area 360°<br>Size and Weight<br>Dimensions 130mm x 140mm x L 200mm<br><br>Dust and Water resistance<br>• Plumb bob<br><br>Carrying case | 1   |

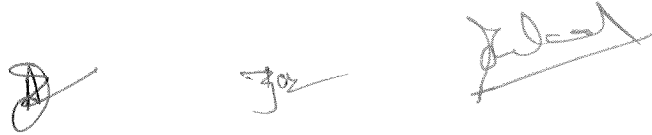
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| S.No | CODE     | NAME OF EQUIPMENT | DETAILS OF SPECIFICATION   | Qty |
|------|----------|-------------------|--|-----|
| 7    | C_SUR_07 | Total Station     | <p>SPECIFICATIONS OF TOTAL STATION</p> <p>1. Telescope</p> <p>i. Image - Erect</p> <p>ii. Magnification <math>\geq 30X</math></p> <p>iii. Field of view <math>\geq 22m @ 1000 m</math></p> <p>iv. Minimum focus distance <math>\leq 2.0 m</math></p> <p>v. Resolving power <math>\leq 2.5''</math></p> <p>2. Angle measurement</p> <p>i. Tilt compensation method – dual axis</p> <p>ii. Tilt compensation range <math>\geq 3''</math></p> <p>iii. Angle accuracy <math>\leq 2''</math> horizontal and vertical</p> <p>iv. Displayed resolution (Least count) <math>\leq 1''</math></p> <p>3 Distance measurement</p> <p>i. Range (20 km visibility) <math>\geq 1500 m</math> with 1 prism &amp; <math>\geq 3000 m</math> with assembly of 3 prisms.</p> <p>ii. Accuracy (in static mode) <math>\leq (5 mm + 3 ppm \text{ of distance})</math></p> <p>iii. Resolution (Least count) <math>\leq 1 mm</math></p> <p>iv. Measurement time <math>\leq 5 s</math></p> <p>v. Prism –Retro reflective type</p> <p>4. Optical plummet</p> <p>i. Magnification <math>\geq 2.0 x</math></p> <p>ii. Focusing range <math>\leq 0.5</math> to <math>\geq 2 m</math></p> <p>iii. A small Bull's eye Bubble on alidade.</p> <p>iv. Two Electronic bubbles <math>30'</math> sensitivity at right angles to each other on display panel.</p> <p>v. One Circular Bubble on Tribrach.</p> <p>Contd</p> <p>Key board and display – Alpha Numeric keyboard on both sides (identical). Display: 1/4 VGA (320*240 pixels), graphic LCD, colour, illumination, Touch screen Keyboard: (function keys, alphanumeric keys), Angle display: <math>360^\circ</math> ' " , <math>360^\circ</math> decimal. Readable under field light</p> | 1   |

| S.No | CODE | NAME OF EQUIPMENT          | DETAILS OF SPECIFICATION  | Qty |
|------|------|----------------------------|---|-----|
|      |      | Total Station<br>(cont...) | <p>conditions. Marking on keys are clear and non-removable. Graph of entire survey displayed on screen of Total Station with Zoom &amp; Pan facility.</p> <p>6. Pressure &amp; Temperature sensors – In built Temperature &amp; pressure Sensors for measurement and display of instant atmospheric temperature and pressure in SI system of unit.</p> <p>7. Accessories – Total station should have following original accessories showing company's mark on it in strong carrying case with Data Transfer Cable. Data Transfer Software. Two rechargeable Batteries, One Charger, One CD containing Instruction Manual. Two Single prism with Target Plate and one wooden stand Range, Two pole, Two display, Two Detachable Tribrach, lens cover set, cleaning brush, cover of durable plastic, shock absorbing carrying case with shoulder strap etc in complete.</p> <p>8. Data storage (with pc-software for data retrieval, presentation and archiving)</p> <ul style="list-style-type: none"> <li>• Capacity <math>\geq 10000</math> points on board memory or more</li> <li>• SD Card/CF card slot with 256 MB or more</li> <li>• RS232/USB Interface</li> </ul> <p>9. Focusing Mode:<br/>Three Focusing Mode viz.</p> <ul style="list-style-type: none"> <li>b) Auto Focus mode</li> <li>c) Power Focus mode</li> <li>d) Manual Focus mode.</li> </ul> <p>10. Physical</p> <ul style="list-style-type: none"> <li>i. Weight <math>\leq 10</math> kg</li> <li>ii. Temperature range <math>\leq 0</math> to <math>\geq 55</math> ° C fully operational</li> <li>iii. Humidity 0 to <math>\geq 90\%</math> RH</li> <li>iv. Protection splash waterproof and dustproof</li> </ul> <p>11. Power</p> <ul style="list-style-type: none"> <li>i. Batteries Li-ion rechargeable, no memory effect, during changing of batteries.</li> <li>ii. Capacity <math>\geq 4</math> hours of continuous measuring</li> <li>iii. Battery charger, adaptor and cables</li> <li>iv. Recharge time <math>\leq 2</math> hours</li> <li>v. Power supply 220 VAC <math>\pm 25\%</math>; 47 to 53Hz</li> <li>vi. Operating temperature 0 to 55 ° C</li> </ul> |     |



| S.No | CODE | NAME OF EQUIPMENT          | DETAILS OF SPECIFICATION  | Qty |
|------|------|----------------------------|---|-----|
|      |      | Total Station<br>(cont...) | ii. Range under Normal Conditions:-<br>• Single Prism: 5000 to 7000m or more<br>• Distance Accuracy in Prism Mode:<br>a) Up to 10 meters: + (3mm+2ppmxD)mm<br>b) From 10 meters: + (2mm+2ppmxD)mm<br>• Distance Accuracy in Reflectorless Mode:<br>c) Up to 300 meters: +(5mm+2ppmXD)mm<br>The total station shall comprise.<br>a. Theodolite with integrated laser distance meter, tilt compensation, digital controller with keypad and display, supporting data storage.<br>b. Data retrieval and communication unit .<br>c. Tripod for the total station.<br>d. Prism poles with associated tripods for prism assemblies. |     |





| S.No | CODE | NAME OF EQUIPMENT                  | DETAILS OF SPECIFICATION  | Qty |
|------|------|------------------------------------|---|-----|
|      |      | <p>Total Station<br/>(cont...)</p> | <p>. Batteries Li-ion rechargeable, no memory effect, during changing of batteries.<br/>                     ii. Capacity <math>\geq 4</math> hours of continuous measuring<br/>                     iii. Battery charger, adaptor and cables<br/>                     iv. Recharge time <math>\leq 2</math> hours<br/>                     v. Power supply 220 VAC <math>\pm 25\%</math>; 47 to 53Hz<br/>                     vi. Operating temperature 0 to 55 ° C<br/>                     vii. Humidity 0 to <math>\geq 90\%</math> RH<br/>                     12. Other features<br/>                     i. Tri axis Compensator (in addition to dual axis correction in the (X) and (Y) direction, mechanical error in the instrument is corrected).<br/>                     ii. Range under Normal Conditions:-<br/>                     • Single Prism: 5000 to 7000m or more<br/>                     • Distance Accuracy in Prism Mode:<br/>                     a) Up to 10 meters: + (3mm+2ppmxD)mm<br/>                     b) From 10 meters: + (2mm+2ppmxD)mm<br/>                     • Distance Accuracy in Reflectorless Mode:<br/>                     c) Up to 300 meters: +(5mm+2ppmXD)mm<br/>                     The total station shall comprise.<br/>                     The total station shall be of such a design that it functions reliably and accurately under the prevailing environmental and operational conditions.<br/>                     • The total station should be able to work efficiently within the temperature range 0° C to + 55° C<br/>                     • Can measure Distance without Reflector 300 to 500 meter to a 90% reflective object (in good condition).<br/>                     • The total station shall be easy to operate and maintain.<br/>                     • The total station shall have all the latest technology of Absolute Encoders.<br/>                     • The total station shall be supplied with the accessories as needed for effective deployment.<br/>                     • All materials of the total station exterior shall be non-corrosive.<br/>                     • All enclosures, cables and connectors shall be sturdy and water resistant.<br/>                     • The total station shall be a rugged design that can cope with the prevailing shock and vibration as experienced in surveying operations and transport by jeep in</p> |     |

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| S.No | CODE | NAME OF EQUIPMENT          | DETAILS OF SPECIFICATION   | Qty |
|------|------|----------------------------|--|-----|
|      |      | Total Station<br>(cont...) | <p>The total station shall have an expected technical lifetime of not less than 10 years.</p> <ul style="list-style-type: none"> <li>• Operator's and technical manuals, related to the type and model of the total station and the accessories shall be part of the delivery.</li> <li>• Power consumption shall be small, to be derived from batteries integrated and/or External batteries.</li> <li>• The batteries shall be rechargeable and assembled in packages</li> <li>• The connectors and electrical cables associated with the total station shall be reliable and sturdy.</li> <li>• The total station shall have Visible Laser Pointer.</li> <li>• Date &amp; Time is recorded while modifying or creating a file.</li> <li>• On Board pre-loaded graphical software Power Topo Lite or equivalent including Area Perimeter, Volume (Cut/fill) and Licensed copy of Auto Plotter Civil Software should invariably be part of the supply. In built road design function.</li> <li>• The total station shall comprise.               <ol style="list-style-type: none"> <li>a. Theodolite with integrated laser distance meter, tilt compensation, digital controller with keypad and display, supporting data storage.</li> <li>b. Data retrieval and communication unit .</li> <li>c. Tripod for the total station.</li> <li>d. Prism poles with associated tripods for prism assemblies.</li> </ol> </li> <li>• The laser output power shall be eye safe.</li> </ul> |     |
|      |      |                            | <p>The total station shall be supplied with the accessories as needed for effective deployment.</p> <ul style="list-style-type: none"> <li>• All materials of the total station exterior shall be non-corrosive.</li> <li>• All enclosures, cables and connectors shall be sturdy and water resistant.</li> <li>• The total station shall be a rugged design that can cope with the prevailing shock and vibration as experienced in surveying operations and transport by jeep in rough terrain.</li> <li>• The total station shall have an expected technical lifetime of not less than 10 years.</li> <li>• Operator's and technical manuals, related to the type and model of the total station and the accessories shall be part of the delivery.</li> <li>• Power consumption shall be small, to be derived from batteries integrated and/or External batteries.</li> <li>• The batteries shall be rechargeable and assembled in packages</li> <li>• The connectors and electrical cables associated with the total station shall be reliable and sturdy.</li> <li>• The total station shall have Visible Laser Pointer.</li> <li>• Date &amp; Time is recorded while modifying or creating a file.</li> <li>• On Board pre-loaded graphical software Power Topo Lite or equivalent including Area Perimeter, Volume (Cut/fill) and Licensed copy of Auto Plotter Civil</li> </ul>   |     |

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| S.No | CODE | NAME OF EQUIPMENT          | DETAILS OF SPECIFICATION  | Qty |
|------|------|----------------------------|---|-----|
|      |      | Total Station<br>(cont...) | The total station shall comprise.<br>a. Theodolite with integrated laser distance meter, tilt compensation, digital controller with keypad and display, supporting data storage.<br>b. Data retrieval and communication unit .<br>c. Tripod for the total station.<br>d. Prism poles with associated tripods for prism assemblies.<br>• The laser output power shall be eye safe.<br>• Operational training shall be part of the delivery.<br><b>If any accessory is required , Quote them under the heading of extra but essential</b> |     |

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HOD Civil

Engg. Deptt.

  
22/9/2015

**INSTITUTE OF TECHNOLOGY, KORBA**  
**Schedule of Requirements, Civil Engg. Deptt.**

Name of Lab :- Fluid Meachnics

| S.NO | CODE    | EQUIPMENT REQUIRED                                  | DETAILS OF SPECIFICATION  | QUANTITY |
|------|---------|---|---|----------|
| 1    | C_FM_01 | Cut Section Model of Hydraulic accumulator          | Cut Section Model of Hydraulic accumulator as per IS specification          | 1        |
| 2    | C_FM_02 | Cut Section Model of Hydraulic Intensifire          | Cut Section Model of Hydraulic Intensifire as per IS specification          | 1        |
| 3    | C_FM_03 | Cut Section Model of Hydraulic Crane                | Cut Section Model of Hydraulic Crane as per IS specification                | 1        |
| 4    | C_FM_04 | Cut Section Model of Hydraulic Lift                 | Cut Section Model of Hydraulic Lift as per IS specification                 | 1        |
| 5    | C_FM_05 | Cut Section Model of Hydraulic Ram                  | Cut Section Model of Hydraulic Ram as per IS specification                  | 1        |
| 6    | C_FM_06 | Cut Section Model of Hydrolic Jet and Air lift pump | Cut Section Model of Hydrolic Jet and Air lift pump as per IS specification | 1        |
| 7    | C_FM_07 | Fluiding devices Analog & digital                   | Fluiding devices Analog & digital as per IS specification                   | 1        |

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CIVIL Engg. Deptt.



| S. NO. | CODE     | NAME OF PRACTICAL  | NAME OF EQUIPMENT                                | TECHNICAL SPECIFICATION  | QTY. |
|--------|----------|--|--|--|------|
| 1      | SEA_A_01 | To determine the flexural rigidity (EI) for a given beam | Elastic properties of beam apparatus             | A mild steel beam 2.5 cm x 3 mm in cross section and 100 cm long is pinned to two supporting 70cm one of the beam can be fixed or given a known slope by applying a known moment at the end with the help of suspended load at the other end also a known moment can be applied at various points along the pan of the beam. A dial gauge with 25mm travel (with a magnetic base) is supplied with the apparatus.supplied with the apparatus.With all accessories and anti vibrating mounting pad and ,as per I.S standards.<br><b>If any necessary is required , Quote them under the heading of extra but essential</b>  | 1    |
| 2      | SEA_A_02 | To verify the Maxwell's theorem of reciprocal deflection | Maxwell's law of reciprocal deflection apparatus | Apparatus consisting of a beam 100 cm long and 12.5 cm x 5 mm in cross section with graduations every 70 cm apart with a 30 cm over hang on the one side a dial guage with base should also be A dial gauge with 25mm travel (with a magnetic base) is supplied with the apparatus.supplied for measurement the deflectionWith all accessories and anti vibrating mounting pad and ,as per I.S standards.<br><b>If any necessary is required , Quote them under the heading of extra but essential</b>   | 1    |
|        |          |  | I. Universal frame with variety of curved bars.  | T electro-mechanical universal testing machines are used in a wide range of applications in strength of materials for static tests. The test machines accept many types of materials and components as well as complete assemblies and structures.<br>The EMI100 is an industrial design electro-mechanical testing machine with a capacity of 100 kN in traction and compression, adapted for the particular needs of engineering colleges, research and quality control.<br>Tests may be carried out as a function of speed, stress or strain.<br>The analogue/digital interface and the software provided with the EMI100 form a complete package allowing control, data acquisition and analysis using a PC. The advanced, user-friendly software is presented in toolbox form that demands no particular programming knowledge.<br>Data analysis and presentation can be effected off-line. Data from current and previous runs may be transferred as ASCII files for use with spreadsheet and other software.<br><br>The universal test machine allows a wide range of tests, including :<br>- Tension, compression and bending<br>- Cycling up to 1 Hz<br>- Fretting and fatigue<br>- Standard specimen testing<br>- Creep testing<br>- Assembly and structure tests<br>Fully computer-controlled via PC<br>- Specific interface :<br>4 channels<br>Acquisition and control : 12 bits<br>- Force range : 0 to 100 kN Traction and Compression | 1    |

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|   |          |  |   |  |   |
|---|----------|--|---|--|---|
| 3 | SEA_A_03 | To determine the vertical deflections of a variety of curved bars.                                     | <p>UNIVERSAL FRAME WITH Variety of Curved bars.</p> | <ul style="list-style-type: none"> <li>- Strain gauge load cell Capacity <math>\pm</math> 100 KN - grade 1 (other on special requirement)</li> <li>- Display of the de strength and the displacement on screen</li> <li>- Extensometer input compatible with all LVDT or strain gauge extensometers</li> <li>- Conform to EMC regulation.</li> </ul> <p>EQUIPMENT PACKAGE</p> <p>Standard equipment for EM1100</p> <ul style="list-style-type: none"> <li>- Universal test machine of 100 kN capacity</li> <li>- Analogue/digital interface</li> <li>- Control and acquisition software</li> <li>- Technical manul</li> </ul> <p>1180 x 800 x 2200 mm</p> <ul style="list-style-type: none"> <li>- 380 V three phase, 50 Hz, 3.5 kW</li> <li>- Personal computer, IBM compatible with RS232 free port</li> </ul> <p>Additional required equipment :</p> <ul style="list-style-type: none"> <li>- Strain-gauged load cells with capacities 100 kN or others ref EM6110</li> <li>- We can offer the following precision extensometers:</li> </ul> <p>LVDT induction extensometer Lo 25 to 200 mm dL 10 mm ref V25/10</p> <p>Strain gauge extensometer ref EI602</p> <p>Other extensometers may be adapted for particular requirements</p> <p>One set of wedge grip 100 kN, Ref. TH109-100</p> <p>One set of flat jaws 1x45° pyramid 0-20 mm, Ref. TH109-EBP20</p> <p>One set of jaws for samples <math>\varnothing</math> 5-20 mm, Ref. TH109-EBV20</p> <p>Dial gauges for measuring deflections.</p> <p>Weights and hangers to apply loads</p> <p><b>If any necessary is required , Quote them under the heading of extra but essential</b></p> |   |
| 4 | SEA_A_04 | To obtain the horizontal deflection and deformed shape of portal frames with different end conditions. | variety of portal frames                            | <p>Apparatus consists of 4 panels of a PRATT truss, each panel being 40cm in horizontal direction and 30cm in vertical direction. Load can be applied on each panel point. All tension members are provided with detachable springs so as to obtain appreciable deformation of the member. Direction of the diagonal members may be changed . Apparatus can be used to illustrate visually the nature of forces set up in various members of the Truss. Apparatus is supplied complete with a supporting stand and a set of weights.</p> <p><b>If any necessary is required , Quote them under the heading of extra but essential</b></p>  | 1 |

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|   |          |   |                          |  |   |
|---|----------|---|--------------------------|--|---|
| 5 | IEA_A_05 | To determine the strain in an externally loaded beam with the help of digital strain indicator. | Digital Strain Indicator | <p>Digital Strain Indicator - Multi Channel 10 Channel Digital Strain Indicator<br/>         Digital Strain Indicator - Multi Channel 10 Channel Digital Strain Indicator</p> <p><b>SPECIFICATIONS</b></p> <p>Range : 0 to <math>\pm 19999</math> microstrains directly using 4 ½ digit panel meter.<br/>         Frequency Response: DC to 10,000 Hz<br/>         Accuracy: +/- 1 Digit.<br/>         Input configurations 1, 2, and 4 arms strain gauge networks. (quarter, half and full bridge networks).<br/>         Resistance of Strain Nominal 120 Ohms, 300 Ohms. 600 Ohms in 1,2,4 gauge usable arm active networks and other values in 2&amp;4 arm active network.<br/>         Bridge Balance Ten Turn Potentiometer permits to get bridge balanced against difference in gauge resistances used upto <math>\pm 1.5\%</math>.<br/>         Calibration and A calibration switch and circuit is provided either to calibrate or compensate a preload. This circuit produces signal<br/>         Compensation Facility equivalent to 10000 microstrains. This also facilitates the user to study a very small dynamic strain over and above large static strain level.<br/>         Bridge Excitation 5 Volts DC Stabilized.<br/>         Gauge Factor Adjustment 1.5 to 4.5 continuous.<br/>         Indication Digital Panel Meter - 4 1/2 digit.<br/>         Power Supply 230 Volts. 50Hz AC</p> <p style="text-align: right;">Mains measuring</p> <p>systems and graphical menu driven software with data logging, data storage, real-time data display, real-time plotting, data retrieval, data analysis, graphing features. Almost all of our strain measuring systems can be computerized supply With all accessories and anti vibrating mounting pad and ,as per I.S standards. computerized strain`</p> <p><b>If any accessory is required , Quote them under the heading of extra but essential</b></p> | 1 |
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INSTITUTE OF TECHNOLOGY, KORBA  
 Schedule of Requirements, Civil Engg. Deptt.  
 Name of Lab:-Geotech Engg.-II

| S.NO | CODE        | NAME OF PRACTICAL  | EQUIPMENT REQUIRED                              | DETAILS OF SPECIFICATION   | Qty |
|------|-------------|--|---|--|-----|
| 1    | C_GEO-II_01 | Determination of bearing capacity of soil by plate load. | Plate Load Test Apparatus with full accessories | <p>Plate Bearing Test Apparatus : IS 1888, BS1377,ASTM D1194,D 1196.</p> <p>Specifications :</p> <p>The basic outfit consists of :</p> <p>50 Tone Hydraulic jack with separate pumping unit fixed to it a 0 -500 KN. x 0.5 KN Pressure gauge and flexible metal pipe 5 meter long- 1 No. Special ball and socket arrangement between the jack and the bearing plate -1 No Extension rod 12mm. diameter x 25cm. long for taking dial gauge readings -16 Nos Magnetic base with female thread on top for holding extension rod 4 Nos Top end plate, 50mm, diameter with male thread for fitting onto the extension rods and Positioning the dial gauge plunger - 4 Nos Column 15cm. diax25cm long with flanges complete with four bolts and nuts -2 Nos Column 15cm. diax50cm long with flanges complete with four bolts and nuts -1 Nos Bridge support of welded steel angle construction, 5 meter span and stands approximately 30cm, high. Fitted with two quick release clamps for positioning and holding the dial bracket-2 Nos Plane MS Plate 60cms x 60cms. square x 25mm thick Plane MS Plate 45cms x 45cms. square x 25mm thick Plane MS Plate 30cms x 30cms. square x 25mm thick Dial Gauge 0.01mm x 25mm.- 4 Nos</p> <p>Accessories :</p> <p>Plane M.S. Plate 75cm x 25mm thick Plane MS Plate 50cm x 25mm thick Grooved MS Plate 60cms x 60cms x 25mm. thick Grooved MS Plate 45cms x 45cms x 25mm. thick Grooved MS Plate 30cms x 30cms x 25mm. thick Grooved MS Plate 75cms x 75cms x 25mm. thick</p> <p>If any accessory is required , Quote them under the heading of extra but essential</p> | 1   |

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| S.NO | CODE        | NAME OF PRACTICAL | EQUIPMENT REQUIRED                 | DETAILS OF SPECIFICATION  | Qty |
|------|-------------|-------------------|------------------------------------|---|-----|
| 2    | C_GEO-II_02 |                   | flase and firepoint appratus       | <p>Flash and Fire Point Apparatus:<br/> Flash &amp; Fire Point Apparatus / Pensky-Martens Apparatus IS: 1209, IS1448 (Part 21), ASTM D 93, BS:2839 For determining the flash point of fuel oils and lubricating oil, bitumen other than cutback bitumen and suspension of solids in liquid, having a flash point above 49°C. The oil cup is made of brass, fitted with a thermally insulated lifting handle. The cup lid, with insulated handle, is fitted with two opposite wedge cams, which engage under pillars secured to the cup flange. This feature facilitates easy removal of the lid by rotating the handle a few degrees to disengage the cams. The shutter opening mechanism is designed for smooth operation and is operated by a spring handle with a knuled knob. A flame exposure device (Gas test jet assembly) is mounted over the lid. The manually operated stirrer has flexible has a flexible shaft. The cup assembly is positioned in a cast iron air bath, fitted with a chrome plated brass top. The air bath is mounted on an upright which serves as a gas manifold. Valve controlled supply With all accessories and ,as per I.S standards. lines for adjustable flames are provided with pilot and test flames. An additional line with control valve supplies gas for use with open flash clip, in accordance with IS: 1448 (P:66), IS: 1209, A ring support is provided for the lid when not in use. Electrical heating, with gas test jet and electric heater with energy regulator. 220V, 50 Hz, Single Phase, AC.,as per IS standard.&amp; ISI mark.<br/> Note: Materials are required for conducting the practical : Flash and Fire Point Test.<br/> If any accersary is required , Quote them under the heading of extra but essential</p> |     |
| 3    | C_GEO-II_03 |                   | Consolidation apparatus electronic | <p>Consolidation apparatus electronic:IS:2720(P-xv, IS: 12287; BS: 1377, ASTM D2435,D4546,AASHTOT216 The standard outfit comprises of a fixed ring type of Consolidometer Cell for testing specimens of 60 mm dia x 20 mm thick, but the unit is so designed that specimens of varying sizes from 50 mm dia to 100 mm dia can also be tested. Besides, the same loading ring can be used with floating ring Consolidometer cells, which can be supplied at extra cost. The standard outfit is supplied with a set of weights to give a total pressure of 10 kg/cm. sq. (besides a seating load of 0.05 kg/cm. sq. on the specimen), but an additional set of weights are required to reach the full capacity of 20 kg/cm. sq. Complete with Dial gauge 0.002 mm. Accessories: Additional set of weights.Consolidation apparatus electronic.t withDigital Indicator, Plug in transducer, Transducer. Consolidation apparatus 3 gang. With all accessories and anti vibrating mounting pad and, as per I.S standards.<br/> If any accersary is required , Quote them under the heading of extra but essential</p>   | 1   |

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| S.NO | CODE        | NAME OF PRACTICAL | EQUIPMENT REQUIRED                                   | DETAILS OF SPECIFICATION  | Qty |
|------|-------------|-------------------|--|---|-----|
| 4    | C_GEO-II_04 |                   | Swell Pressure Test Apparatus(electrically operated) | <p>Swell Pressure Test Apparatus</p> <p>With the help of our state-of-the-art infrastructure and experience of our experts, we have been able to manufacture a wide range of Swell Pressure Apparatus, which is provided with high sensitivity proving ring, 2.5 KN or 5 KN fitted with 0.002 mm dial gauge with certificate in a nice wooden carrying case. These are catering to the requirements of construction, defense and agriculture industries.</p> <p>Specifications: Consists of one Load Frame, electrically operated for 220V 50HZ Single phase 50 KN one swell mould, 100mm dia x 127.3 mm ht x 1000c.c. volume with base plate and collar., one Perforated Swell Plate 100 mm dia x 16 mm thick, one spacer 100 mm dia x 12.7 mm thick, two porous stones, one transfer bar, one steel ball and one Soaking Tank, 250 mm dia x 210 mm high. Without dial gauge and proving ring. Accessories: High sensitivity proving ring, 2.5 KN or 5 KN fitted with 0.002 mm dial gauge with certificate in a nice wooden carrying case. Dial gauge 0.01 mm x 25 mm travel. With all accessories and anti vibrating mounting pad and, as per I.S standards.</p> <p>If any accessory is required ,Quote them under the heading of extra but essential</p> |     |

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| S.NO | CODE        | NAME OF PRACTICAL | EQUIPMENT REQUIRED   | DETAILS OF SPECIFICATION  | Qty |
|------|-------------|-------------------|--|---|-----|
| 5    | C_GEO-IL_05 |                   | Digital Triaxial machine (performing laboratory CBR, Marshall stability and Quick undrained triaxial tests)<br>Apparatus with full accessories | Digital Triaxial machine (performing laboratory CBR, Marshall stability and Quick undrained triaxial tests)<br>BS 598, 1377, 1924; ASTM D3668, D1883; AASHTO T193<br>_ Large on-board LED screen display<br>_ Fully variable speed, 0.5 to 50 mm/minute<br>_ Rapid and momentary approach of platen<br>_ Mechanical or electronic measurement<br>_ Triaxial samples up to 100 mm diameter<br>This 50 kN capacity machine has been designed primarily for performing laboratory CBR, Marshall stability and Quick undrained triaxial tests on one load frame. It is particularly suitable for those laboratories carrying out a mix of these tests, e.g. for road construction. The compact bench mounting design comprises a Specification<br>Dimensions (l x w x h) 550 x 400 x 1470 mm<br>Maximum vertical clearance 800 mm<br>Horizontal clearance 265 mm<br>Platen diameter 133 mm<br>Platen travel 100 mm<br>Platen speed range 0.5 to 50.0 mm/min<br>Rapid approach speed 40 mm/min<br>, mechanical load frame supplied complete with CBR stabilising bar.<br>EL25-3700/01 for 220 – 240 V AC, 50 – 60 Hz, 1ph<br>Accessories<br>Electronic Control and Readout Unit<br>CBR Stabilising Bar<br>Platen Adaptor<br>Platen Adaptor<br>If any accessory is required , Quote them under the heading of extra but essential | 1   |

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**INSTITUTE OF TECHNOLOGY, KORBA**  
**Schedule of Requirements, Civil Engg. Deptt.**  
**Name of Lab :-Engineering Geology**

| S.No. | CODE    | NAME OF EQUIPMENT                               | DETAILS OF SPECIFICATION  | Qty |
|-------|---------|---|---|-----|
| 1     | C_EG_01 | Crystallographic Model                          | Crystallographic Model AS PER IS SPECIFICATION                          | 1   |
| 2     | C_EG_02 | Wooden Cabinet                                  | Wooden Cabinet AS PER IS SPECIFICATION                                  | 1   |
| 3     | C_EG_03 | Axis of symmetrical of 6 System                 | Axis of symmetrical of 6 System AS PER IS SPECIFICATION                 | 1   |
| 4     | C_EG_04 | Planes of symmetrical of 6 System               | Planes of symmetrical of 6 System AS PER IS SPECIFICATION               | 1   |
| 5     | C_EG_05 | Crystallographic Axis & Centre of System        | Crystallographic Axis & Centre of System AS PER IS SPECIFICATION        | 1   |
| 6     | C_EG_06 | Collection of Minerals                          | Collection of Minerals AS PER IS SPECIFICATION                          | 1   |
| 7     | C_EG_07 | Hardness Testing Knife                          | Hardness Testing Knife AS PER IS SPECIFICATION                          | 5   |
| 8     | C_EG_08 | Model Showing Strike, Dip, Pitch                | Model Showing Strike, Dip, Pitch AS PER IS SPECIFICATION                | 1   |
| 9     | C_EG_09 | Symmetrical Anticline Showing Axis-Axial Plane  | Symmetrical Anticline Showing Axis-Axial Plane AS PER IS SPECIFICATION  | 1   |
| 10    | C_EG_10 | Asymmetrical Anticline Showing Axis-Axial Plane | Asymmetrical Anticline Showing Axis-Axial Plane AS PER IS SPECIFICATION | 1   |
| 11    | C_EG_11 | Isoclinals Anticline & Syncline                 | Isoclinals Anticline & Syncline AS PER IS SPECIFICATION                 | 1   |
| 12    | C_EG_12 | Recumbent Fold                                  | Recumbent Fold AS PER IS SPECIFICATION                                  | 1   |
| 13    | C_EG_13 | Fan Fold  | Fan Fold AS PER IS SPECIFICATION  | 1   |
| 14    | C_EG_14 | Model of Normal Fault                           | Model of Normal Fault AS PER IS SPECIFICATION                           | 1   |
| 15    | C_EG_15 | Model of Reverse Fault                          | Model of Reverse Fault AS PER IS SPECIFICATION                          | 1   |
| 16    | C_EG_16 | Ridge & Trough Fault                            | Ridge & Trough Fault AS PER IS SPECIFICATION                            | 1   |
| 17    | C_EG_17 | Step Fault                                      | Step Fault AS PER IS SPECIFICATION                                      | 1   |
| 18    | C_EG_18 | Wooden Specimen Tray                            | Wooden Specimen Tray AS PER IS SPECIFICATION                            | 20  |

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| S.No. | CODE    | NAME OF EQUIPMENT                  | DETAILS OF SPECIFICATION  | Qty |
|-------|---------|------------------------------------|---|-----|
| 19    | C_EG_19 | Polarizing Petrological Microscope | <p>polarizing microscope includes the following:</p> <p>Objective Lenses: DIN Infinity Corrected Optical System (ICOS) Strain Free Plan 4x, 10x and s40x mounted in smooth-operating, ball bearing mounted, quintuple nosepiece.</p> <p>Viewing Head: Siedentopf-type binocular head or trinocular head for camera integration. Each head has the eyetubes inclined at 30° with the left eyetube having graduated diopter settings. The interpupillary distance is adjustable between 53mm - 75mm. An 80/20 beamsplitter for the trinocular tube can be engaged for photo work. (100% to eyetubes or 80% to phototube &amp; 20% to the eyetube.) 30mm ID eyetube.</p> <p>Eyepieces: One KHW10xCP Focusing eyepiece with guide pin and cross-line reticle and one widefield compensating eyepiece F.N. 20 are standard with a 21mm reticle mount. Tube O.D. 23.2mm.</p> <p>Total Magnification: 40x, 100x, 400x.</p> <p>Specimen Stage: Ceramic-coated 360 degree rotatable fully indexed stage with vernier and stage clips. Stage is 175mm in diameter.</p> <p>Illumination: Transmitted Koehler 6v 30w halogen illumination.</p> <p>Condenser: Strain Free Abbe N.A. 1.25 condenser with iris in dovetail mount.</p> <p>Focusing: Ergonomically low positioned coaxial focusing controls allow the operator to work with their forearms relaxed on the working surface. Range of travel is 23mm. Rotation of fine focus is 0.2mm per revolution.</p> <p>Included: Microscope includes Mica 1/4 wave plate, first order red plate, dust cover and operations manual.</p> | 1   |

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| S.No. | CODE    | NAME OF EQUIPMENT | DETAILS OF SPECIFICATION   | Qty |
|-------|---------|-------------------|--|-----|
| 20    | C_EG_20 | Resistivity meter | Resistivity Meter, depths to 200m Features:<br><ul style="list-style-type: none"> <li>• Measures voltage &amp; current simultaneously</li> <li>• 200 W new Output Power</li> <li>• 1200 V Peak to Peak</li> <li>• 2.5 A Maximum Current</li> <li>• Automated Electrode Switching System Available</li> <li>• 20 Bit A/D Converter</li> <li>• Chargeability / IP Measurements</li> <li>• Resolution: 10µA</li> <li>• Accuracy: 0.3%</li> <li>• Max. Output Current: 2.5 A</li> <li>• Max. Output Power: 200 W new</li> <li>• Maximum Output Voltage: 600V (1200V peak to peak)</li> <li>• Pulse Duration: 0.5s, 1s and 2s</li> </ul> Receiver:<br><ul style="list-style-type: none"> <li>• Voltage Measurement Specifications:</li> <li>• Resolution: 1 µV after stacking</li> <li>• A/D Converter: 20 Bit</li> <li>• Accuracy: 0.3%</li> <li>• Output Impedance: 10 MOhms</li> <li>• Input over voltage protection</li> <li>• Input Voltage Range: ± 10V</li> <li>• Automatic SP Bucking: (±10V) with linear drift correction (up to 1 mV/s)</li> <li>• 50Hz and 60Hz power line rejection</li> <li>• Continuous Digital Stacking : Up to 250 stacks</li> </ul> Miscellaneous:<br><ul style="list-style-type: none"> <li>• LCD display of 2 lines, 20 characters</li> <li>• Weather resistant case</li> <li>• Dimensions: 21 x 31 x 21 cm</li> <li>• Weight: 9.5kg, including battery</li> </ul> internal 12V 7AH Rechargeable battery & external 12V<br>Operation Temp rang -20 C to +70 Centigrade |     |

Prepared by

Checked by

HOD CIVIL

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