

भारतीय प्रौद्योगिकी संस्थान ततरुपतत Indian Institute of Technology Tirupati Settipalli, Renigunta Road Tirupati 517506	दूरभाषसंख्या Phone no: 0877 – 2500335 ईमेल Email : govindak@iittp.ac.in
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Prof. T.S. Natarajan
 Registrar i/c

Date: 18.12.2017

Public Tender No: IITT/CIVIL/06/2017/27

Due Date: 18 -01-2018 at 3.30PM

Dear Sir/Madam,

On behalf of the **Indian Institute of Technology TIRUPATI**, sealed quotations are invited in two part bid system for supply of **the following items for for setting up of Civil Engineering Lab.** at IIT Campus near Merlapaka Village, Venkatagiri Road, YERPEDU Mandalam, Chittoor District, Andhra Pradesh.

S.No.	Item description	Unit	Quantity
1	Double beam UV-Visible spectrophotometer	No	01
2	BOD Incubator with shaker	No	01
3	Refrigerated centrifuge	No	01
4	Ultra-pure laboratory water purification system	No	01
5	Inverted LED microscope with EPI fluorescence and digital colour camera	No	01
6	Conductivity meter	No	03
7	pH meter with temperature sensor	No	03
8	Thermo reactor COD	No.	02
9	Jar Test apparatus	No.	02
10	Bio-logical safety cabinet	No.	01
11	Muffle furnace (50 to 1200 C)	No	01
12	Humidity Chamber	No	01

Specifications and compliance statement:

The detailed specifications of the equipment are given in the Annexure “A” and the compliance statement of specifications as per format (Annexure B) enclosed must be filled in item wise and signed with seal. The deviations if any from the tendered specifications should be clearly brought out in the statement. Technical literature/leaflet showing the compliance of the specification may also be attached with the quotation.

Please ensure that the specifications are basic essence of the product. It must be ensured that the offers must be strictly as per our specifications. At the same time it must be kept in mind that merely copying of our specifications in the quotation shall not make the parties eligible for consideration of the quotation. A quotation has to be supported with original catalogue (not of photo copy) of the quoted model duly signed by the principals and the same must be sent along with the technical bid.

The quoted model should not become obsolete for a minimum period of 10 years (This is for the availability of spares). Therefore the model quoted should invariably be highlighted in the leaflet/literature enclosed with the quotation. Non-compliance of the above shall be treated as incomplete/ambiguous and the offer can be ignored without giving an opportunity for clarification/negotiation etc. to the bidder.

The eligibility criteria for participation in bid are mentioned below:

a) The Bidder must be an Original Equipment Manufacturer (OEM) or his Authorized Dealer/ Channel Partner having a Direct Purchase and Support agreement with the OEM. In case, the Bidder is a Dealer, a valid LETTER OF AUTHORIZATION from Original Equipment Manufacturer should be produced along the bid.

b) The manufacturer or their authorised dealer should quote for their systems/equipment/accessories being manufactured. The manufacturer/dealer attempting to quote for the equipment for which they are not the OEM/authorised dealer, their offers will be rejected.

c) Performance Certificate:

The quoted system and accessories must have been supplied and installed at least 10 such similar system/equipment to any of the Central/State Govt./ PSUs/Universities/IITs/Autonomous bodies/any firm and proof of supply and its working condition in Civil Engineering Departments is a mandatory and must be produced along with the bid document.

I) Apart from the above, a list of present clientele with contact address and telephone numbers must be provided along with technical bid.

II) The bidder should be willing to arrange for a demonstration of the equipment offered at free of charge on mutually agreeable place and date prior to opening of price bids to ascertain their conformity with tendered specifications.

III) The selected bidder should demonstrate the test on various samples as per the requirement of the IIT Tirupati.

IV) Vendor shall possess ISO 9000 certification for Quality System implementation. Required evidence shall be provided along with offer.

1. The technical bid shall be evaluated for acceptability by the technical committee and may call the tenderers for discussion. If necessary, the committee may modify the technical specification to suit the requirement of IIT Tirupati. In such case the opportunity shall be given to the participating bidders for submitting the revised bid as per modified specifications, if any.

2. Bidder should be registered under **GST** Act with concerned State Sales Tax Authorities. The bidder should furnish along with the bid document, the relevant **GST** Registration Document and PAN / TAN copies.

V) Documentation: The successful bidder shall provide two sets of following documents in English:

- i) Comprehensive lecturer guide and student guide including theory, experiments and sample results
- ii) Programming and instruction manual
- iii) Operator's Instruction Manual.
- iv) Maintenance and spare parts manual as applicable
- v) Preventive maintenance check list, troubleshooting charts and guidelines.
- vi) Certificate of calibration and inspection
- vii) Current user's and performance certificate for a minimum period of 5 years and maximum 10 years.

The supplier should quote commercially proven model of equipment or control system. Prototypes are not acceptable.

The above mentioned basic eligibility conditions are broad guidelines for pre-qualification and the Director/Registrar, in-charge, IIT Tirupati hereby reserves the right to relax / alter / modify / add any or all the conditions.

Delivery schedule: The total system should be supplied within 2 months from the date of receipt of Purchase Order and installation and commissioning should be completed within 20 days from the date of supply of equipment..

The interested bidders are advised to go through the conditions envisaged for eligible criteria for participation in the bidding.

Instructions to the Bidder

- (i) **Preparation of Bids:** The bidders must ensure that bids are submitted in **two part bid system (i.e.) Technical bid and Financial bid in separate envelopes.**
- (ii) **Techno-commercial bid:** The technical bid should consist of all technical details/brochures along with commercial terms and conditions super-scribed as TECHNICAL BID with Tender No. and date and time of closing and the bidder's name and address. No prices should be included in technical bid.
- (iii) **Financial (Price) Bid** should indicate item-wise prices for the items with firm and fixed figures and words super-scribed with the Tender No. and date of closing of the Tender with name of supply/work and the bidder's Name and address. The price bid should not contain any conditional clauses. No price escalation for any reasons whatsoever is allowed. All prices should be given in Indian Rupees or USD or Euros only. The Indian bidders shall quote firm price fully in Indian currency only.
- (iv) The techno-commercial and the financial bids duly signed by the bidders or their authorised signatories with name and seal should be put in separate cover and sealed. Both sealed covers should be put into a bigger cover duly super-scribed with PT No. and due date/time with name of supply /work. **Technical bids must either be spiral bound / stapled together. No loose sheets will be accepted. All pages must be numbered.**
- (v) **Submission of the tender:** The complete sealed bids in all respects shall be sent to the following address well in advance either by post or by courier so as to reach this office on or before the due date and time specified in the Schedule. The bids received after closing date and time shall not be considered.

The Registrar I/C,

Indian Institute of Technology Tirupati,
Renigunta Road,
Settipalli Post,
Tirupati-517 506, Andhra Pradesh

While submitting the bids, the bidders must sign all the tender documents as a token of accepting of tender documents as well as terms and conditions stipulated therein. Tender documents without signature of bidders or their authorised signatories will be treated as invalid bids.

No conditional offer or terms and conditions will be entertained by the institute and such bids will be treated as invalid.

(vi) The tender documents can be down loaded from IIT Tirupati web site:<http://iittp.ac.in/tenders> on or after 22.12.2017

(vii) Bid Security (EMD): *EMD either in the form of Bank Guarantee or Demand draft at 2% of the quoted value initially valid up-to 90 days drawn in favour of Indian Institute of Technology Tirupati payable at Tirupati must be sent along-with the technical bid only. The technical bid without EMD would be considered as UNSOLICITED and will be REJECTED. Photo/FAX copies of the Demand Draft/Banker's pay orders will not be accepted. No interest will be paid for the EMD and the EMD (Bid Security) will be refunded to the successful bidder on receipt of Performance Security (Security Deposit) and in case of unsuccessful bidders, the EMD will be refunded on finalisation of tender.*

(viii) Bid security be forfeited without any intimation in such cases as below:-

- a) If a bidder withdraws its bid during the period of bid validity
- b) If a successful bidder fails to execute the awarded contract
- c) If a successful bidder fails to provide performance guarantee

(ix) Details of our Banker

Name of bank	State Bank of India
Address of bank branch	Settipalli Branch Renigunta Road, Tirupati
Bank Branch code	006677
IFS Code	SBIN0006677
Bank Account Number	35523338208

Modifications to bid:

- (x) The bidder shall make no modifications to the bids after the closing date unless specifically requested by IIT Tirupati. In case certain clarifications are sought by Institute after the opening of bid, then the reply of bidder should be restricted to the clarifications sought. Any bidder who modifies his bid having effect of altering the value of his offer after the closing date without specific reference by IIT

Tirupati shall make him-self liable to be debarred from this tender and forfeit the bid security amount.

xi) Modifications of specification:

The supply to be made by the Supplier under this Purchase order can be modified or changed by the request from the IIT Tirupati provided that for such modifications or changes the parties shall first agree to possible addition or reduction in cost, the delivery date and such other terms and conditions occasioned by or resulting from such modification or change. Such agreement shall be effected either by way of exchange of letters duly signed by authorised representatives of the parties or by signed change order form or by minutes of meeting signed by authorised representatives of the parties, which shall constitute the necessary amendments to the contract. Possible increase or decrease in the contract price shall be calculated in accordance with unit prices. The cost of such additional jobs should be reasonably fixed with reference to the quoted price for such or similar items.

(xii) Opening of the tender: The Technical Bids will be opened by the tender committee duly constituted in the presence of bidders or their authorised representatives on 18.01.2018 at 16.00 hours. **The technical bid without EMD will not be entertained and treated as invalid bid.** Then the bids will be evaluated by the Technical Evaluation Committee which will decide the suitability of the technical bids as per our requirement and terms and conditions. Once the technical evaluation is completed, the price Bids of only those bidders who are found technically acceptable will be opened in the presence of Authorized Representatives of such bidder(s), if any on a date and at a venue to be intimated by IIT Tirupati to the short listed bidders.

(xiii) The bidder shall note that any unsolicited post-tender reduction by them would disqualify them from participating from the bidding and forfeit the security bid.

(xiv) Incomplete bids are liable for rejection.

(xv) Prices: The price should be quoted on FOR: IIT, Tirupati. The bid should consist of basic price, P&F charges, freight, unloading charges, Installation and commissioning charges and applicable taxes.

The Contract will be awarded to single suitable party who quote for all items and meet all our specifications and stands as Lowest bidder.

The total landed cost will be calculated from the information provided by the bidder in their price bids. The bid conforming to the lowest cost would then be considered for award of contract.

(xvi) Annual Maintenance contract: Comprehensive AMC charges for a period of 3 years after expiry of warranty period should be quoted separately for the equipment wherever applicable which come into force after expiry of warranty/guarantee periods. The quote should contain details about free replacement of spares/accessories/software

during the currency of AMC and number of break down calls shall be attended and duration of time required for attending to emergent calls and details of essential spares which are to be supplied on chargeable basis also need to be mentioned in the quote. IIT Tirupati reserves the right to conclude Comprehensive AMC at appropriate time after expiry of warranty period depending upon the requirement.

IIT Tirupati reserves the right to split and award item-wise contract to the lowest bidder.

The custom duty if any applicable must be shown separately. It may be noted that IIT Tirupati is exempted from payment of custom duty and duty at concessional rate against duty exemption will be paid.

In case of import supply, the price should be quoted on EX-WORKS/FOB/CIP basis indicating the mode of shipment.

Offer validity: The offer must be valid for 90 days from the closing date in the case of indigenous supply and 120 days in the case of imported supply.. If the validity of offers for acceptance is less than 90 days 120 days as the case may be, the same will not be considered.

IIT Tirupati reserves the full right to accept / reject any tender or all tenderers at any stage without assigning any reason.

Yours sincerely,

Registrar, IIT Tirupati

Important Commercial terms and conditions:

- a) The due date for the submission of the tender is **18.01.2018 at 15.30 hours.**
- b) **Late offer:** The offers received after the due date and time of closing will not be considered. The Institute shall not be responsible for the late receipt of Tender on account of Postal, Courier or any other delay.
- c) **Performance Bank Guarantee:** Performance Bank guarantee for 5% of Purchase order value should be produced in the form of B.G from the nationalised /scheduled Bank valid till the completion of warranty / guarantee period plus sixty days as claim period. Where-ever installation/commissioning is involved, the guarantee/warranty period shall be reckoned from the date of completion of installation/commission. Failure to render contracted service during the warranty/guarantee period by the contractor, the performance bank guarantee will be forfeited. No interest is payable on the performance Bank guarantee amount.
- d) **Inspection Clause:** All major mechanical equipment will be inspected by a team of IIT Tirupati at Supplier's premises and after clearance in the form of report, the items shall be despatched to IIT Tirupati. Readiness of equipment shall need to be intimated well in advance for our inspection formalities.
- e) **Delivery Schedule:** Please note that delivery is the essence of the contract. In case there is any deviation in the delivery schedule, liquidated damages clause will be levied for the delayed period of supply. Therefore, it should be ensured that all the ordered items should be supplied within 6 weeks from the date of receipt of Purchase Order on door delivery basis at our Institute as per Purchase order terms with securely and sufficiently packed by following standard packing procedure to withstand transit damages. In case of import supply, the item should be delivered at the cost of supplier to our institution. The installation and commissioning should be completed as specified in our important terms and conditions.
- f) **Extension of time:** If the completion of stores is delayed due to reason of force majeure such as acts of God, acts of public enemy, acts of Government, fires, floods, epidemics, quarantine restriction, strikes etc., the contractor shall give notice within 15 days to Institute in writing of his claim for an extension of time. The Institute on receipt of such notice after verification, if necessary, may agree to extend the Contract delivery date as may be reasonable but without prejudice to other terms and conditions of the contract.
- g) **Liquidated damages:** If the Contractor fails to deliver the material within the time specified in the Contract or any extension thereof, the Institute shall recover from the Contractor as Liquidated Damages a sum of one-half of one per cent (0.5 per cent) of the Contract Price of the undelivered material for each

calendar week of delay. The total liquidated damages shall not exceed ten per cent (10%) of the Contract price of the unit or units so delayed. Stores will be deemed to have been delivered only when all their component parts are also delivered.

- h) **Guarantee/Warranty:** The Contractor shall guarantee that the material supplied shall comply fully with the specifications laid down, for material, workmanship and performance after acceptance of the material for a period of **two years**. The tenderer should clearly mention in the bid the period of guarantee/warranty offered by him. If any defects are discovered therein or any defects therein found to have developed under proper use arising from faulty stores design or workmanship, the Contractor shall replace the item/remedy/ relace such defective items at his own cost.
- i) The vendor should have competent and reliable service network in India for quick and necessary repair and maintenance of the equipment. The details of after sales service facilities to be provided and must the mentioned in the technical bid. The firm should commit to provide maintenance service and supply necessary spares for the equipment for at least 15 years after successful installation and commissioning. The details provided by the vendor in this regard should be convincing to IIT Tirupati. In case IIT Tirupati is not convinced of the nature of maintenance and service support to be provided by the vendor such offers will not be considered.

The Bidder should clearly categorize the Basic/Standard features as well as optional features of the system in order to have a clear cost comparison. Essential spares if any for maintenance to be quoted separately. The bidder should ensure continued supply of spares throughout the useful life of the equipment.

- b) **Insurance:** IIT Tirupati being a Central autonomous body under Ministry of HRD, Government of India, we will not insure our goods. However, to safe guard the ordered material from probable transit damage while in transportation the contractor may insure the goods at his risk and cost.
- c) **Payment terms:** No Advance payment will be made for Indigenous purchase. Our normal payment terms are 100% within 30 days after receipt of complete supply at our site and acceptance. However in case of high value Purchase Orders, as a special case, payment of 90% of Order value will be made based on pre-inspection of material at supplier's site and also on receipt of goods at our site and clearance by inspection team. Balance 10% of PO value after completion all inspection and acceptance formalities. For making payment original tax invoice in triplicate, Delivery Challan's, material test certificate, pre-inspection of material at factory, guarantee/warrantee certificates must be sent along with material.

In case of import supplies, our normal terms of payment are by Sight Draft. However, other terms of payment such as Letter of Credit also considered as agreed upon by opening LC for 100% in which case 90% payment will be released against proof of shipping documents and balance 10% after successful installation wherever the installation is involved/on receipt and acceptance of material at our site.

- d) Advance Payment:** No advance payment to indigenous supplies will be made. However in case of import goods, specific percentage of advance payment will be agreed upon for which, the Foreign Vendor has to submit a Bank Guarantee equal to the amount of advance payment and it should be routed through the Beneficiary Bank to the end user Bank. Otherwise, the Indian Agent of the foreign vendor has to submit a Bank Guarantee through a Nationalized Bank of India.

If an Indian agent is involved, the following documents must be enclosed:

Foreign principal's proforma invoice indicating the commission payable to the Indian Agent and nature of after-sales service to be rendered by the Indian Agent.

Copy of the agency agreement concluded with the foreign principal and the precise relationship between them and their mutual interest in the business.

Enlistment with DGS&D as Indian Agent of Foreign principals under the Compulsory Enlistment Scheme of Ministry of Finance.

- e) Agency Commission:** Agency commission, if any, will be paid to the Indian agents in Rupees on receipt of the equipment and after satisfactory installation. Agency Commission will not be paid in foreign currency under any circumstances. The details should be explicitly shown in Tender even in the case of 'Nil' commission. The tenderer should indicate the percentage of agency commission to be paid to the Indian agent. The foreign Principal should indicate about the percentage of payment and it should be included in the originally quoted basic price, if any.
- f) On-site erection and commissioning:** It is the responsibility of the Contractor to install and commission the equipment or machinery supplied by them within 20 days from the date of receipt of the item at the site of IIT Tirupati and demonstrate the performance of the system to the satisfaction of the users/concerned faculty members/committee in-charge at IIT Tirupati. In case the Contractor fails to carry out the erection as and when called upon to do so within the specified period by the Institute, the Institute shall have the right to get the erection work done through any source of his choice. In such an event, the Contractor shall be liable to bear any additional expenditure that the Institute is liable to incur towards erection.
- g) Training of End user:** The successful bidder shall provide comprehensive training at IIT Tirupati or at their principal or laboratory to IIT personnel on operation, programming, and maintenance at free of cost on all the items installed to the satisfaction of the IIT personnel. The expenses related to travel (to and fro) including local travel, stay, food and per diem and training have to be completely borne by the vendor.
- h) Do not quote the optional items or additional items unless otherwise mentioned in the tender documents / specifications.**

ARBITRATION CLAUSE: Arbitration in the event of any dispute or difference arising under these terms & conditions or any Condition contained in the Purchase Order or in connection with this contract (except as to any matter the decision of which is specially provided for by these conditions), the same shall be referred to the sole arbitration other person appointed by him and the dispute

further processed in terms of the Arbitration & Conciliation Act ,1996. There will be no objection that the arbitrator is a Government Servant that he deal with matter which the Contract relates to or that in the course of his duties as Government Servant has expressed views on all or any of the matters in dispute or difference .The award of the arbitrator shall be final and binding on the parties of this Contract.

If the arbitrator is the Registrar, IIT, Tirupati

- i. In the event of his being transferred or vacating his office by resignation or otherwise , it shall be lawful for his successor in office either to proceed with the reference himself for to appoint another person as arbitrator, or
- ii. In the event of his being unwilling or unable to act for any reason, it shall be lawful for the Registrar, IIT, Tirupati to appoint another person as arbitrator.

If the arbitrator is a person appointed by the Registrar, IIT, Tirupati – In the event of his denying or neglecting or refusing to act, or resigning or being unable to act, for any reason, shall be lawful for the Registrar, IIT, Tirupati to proceed with the reference himself or to appoint another person as arbitrator in place of the outgoing arbitrator subject, as aforesaid , to the Arbitration & Conciliation Act ,1996, and the rules there-under and any statutory modifications thereof for the time being in force shall be deemed to apply to the arbitration proceeding under the clause. The Arbitrator shall have the power to extend with the consent of the purchaser and the contractor the time for making and publishing the award. The venue of Arbitration shall be the place as the purchaser in his absolute discretion may determine work under the Contract shall, if reasonably possible, continue during Arbitration Proceedings.

All amendments, time extension, clarifications etc., if any will be uploaded in the website only and will not be published in newspapers. Bidders should regularly visit the above website to keep themselves updated. No extension in the bid due date/ time shall be considered on account of delay in receipt of any document by mail.

- i) **Acknowledgement:** It is hereby acknowledged that the tenderer has gone through all the conditions mentioned above and agrees to abide by them.

**SIGNATURE OF TENDERER
ALONG WITH SEAL OF THE
COMPANY WITH DATE**

ANNEXURE A

TECHNICAL SPECIFICATIONS

1. DOUBLE BEAM UV-VISIBLE SPECTROPHOTOMETER

PC controlled true double beam UV-Visible Spectrophotometer for solid and liquid sample analysis in reflectance /transmission and absorbance mode. The system should have the capability of analysing transition metal ions, highly conjugated organic compounds, and biological macromolecules precisely and accurately. The system should be quoted with below-mentioned specifications:-

- **Source: Pre-aligned** Tungsten & Deuterium lamp with automatic changeover.
- **Monochromator:** Blazed holographic grating with 1200 lines/mm or more, Czerny-Turner with 0.2 m focal lengths.
- **Detector :** Solid state detector - Si diodes Sample and Reference
- **Photometric System : True Double beam**
- **Wavelength range :** 190-1100 nm
- **Spectral Bandwidth :** Variable 0.5 to 20 nm or better
- **Wavelength Accuracy :** +/- 0.1 nm at D2 peak @ 656.1 nm, +/- 0.3 nm for full range
- **Wavelength Reproducibility :** +/- 0.1 nm
- **Photometric Range :** -4 to +4
- **Photometric Accuracy :** +/- 0.002A (0- .5 Abs) and +/- 0.004A (.5- 1 Abs)
- **Photometric Reproducibility :** +/- 0.001 Abs @ 0.5 Abs
- **Stray Light :** < 1.0% (198 nm KCL) , <0.02% (220 nm NaCl) and <0.02% (340 nm NaNO₂)
- **Baseline Stability :** < 0.0003 Abs/h (700 nm, < one hour warm up)
- **Baseline Flatness :** +/- 0.001Abs (< one hour warm-up)
- **Photometric Noise :** < 0.00005 Abs or better (at 700 nm, RMS)
- **Scan Rate :** 3000 nm/min or better
- **Maximum Slew Rate :** 6000 nm/min or better
- **Environmental Requirement :** Temperature: 15- 35 °C and Humidity: 30- 80% Non-condensing
- **Quartz Cuvettes:** 10 mm path length - 2 sets

- Cuvette must be supplied along with the system itself by the manufacturer and should not be quoted separately.
- **Software:** System compatible original Licensed Software should be quoted with following capabilities:-
 - a. Multi-component measurement - Software should measure Absorbance, Transmittance, and Reflectance at the full or selected wavelength with real-time spectral displays and live instrument and accessory status bar.
 - b. Software should have the facility to export data to Clipboard, CSV file, Excel file, BMP file, ASCII file, JCAMP file Zoom In / Out, Add / Edit Labels.
 - c. Windows-based operating Software is preferred. The software should enable recording, manipulation, and storage of spectral data. It should have complete control of instrument and accessories of spectrometers.
- **50 mm Integrating sphere** for transmittance/reflectance should be quoted in the main item. Integrating sphere should be quoted with proper reference material for background correction.
- Powder sample holder should be quoted for analysis of solid samples.
- Compliance statement along with every above-mentioned point should be submitted with relevant literature, specification sheets, and brochures. Any deviation from specifications should be clearly mentioned in compliance statement.
- Vendors should have Minimum 10 installation at National institutes like IIT, IISc, NIT, CSIR labs etc.

Documentation

- User/technical/maintenance manuals should be supplied.
- Certificate of calibration and inspection.
- List of equipment available for providing calibration and routine preventive maintenance support as per manufacturer documentation in service/technical manual.
- List of important spare parts and accessories with their part number and costing
- Compliance report to be submitted in a tabulated and pointwise manner clearly mentioning the page/para number of original catalogue/data sheet. Any point, if not substantiated with authenticated catalogue/manual, will not be considered

Computer

- A branded PC with i5 or i7 processor with minimum 8GB RAM, 2GB Graphics Memory, 1tb HARD Disk, minimum of two LAN ports, DVD/Blu-Ray, 21” LED Monitor,
- Reputed Branded colour Laserjet printer and automatic back to back should be provided

Warranty

- - Company’s standard warranty/guarantee from date of installation, against any kind of manufacturing defects. The warranty should be a part of the total ICP-MS system supply (including parts). The warranty should also cover all the consumables, autosampler, Chiller, exhaust system, UPS, and Computer, etc.
 - CMC: Post warranty CMC for three years is preferred.
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2. BOD INCUBATOR WITH SHAKER

- Benchtop shaking incubator with PID control for temperature and speed adjustment.
- The system should have the facility to control temperature uniformly and precisely.
- Brushless induction motors are preferred for stable shaking movement for long-term operation.
- The vertical staking facility for multiple units is preferred to save the lab space.
- A system with minimum footprint is preferred.
- The provision for controlling humidity and CO₂ is preferred.
- The equipment should also satisfy the following specifications:
- Digital display: Yes
- Light source: LED
- Timer 0 to 999
- Shaking speed: ≤ 30 to ≥ 300 rpm
- Speed accuracy: ± 2 rpm
- Shaking mode: orbital
- Noise level: ≤ 70 db
- Capacity: 150 - 250 L
- Temperature Range: 10 to 60 °C
- Temperature accuracy: ± 0.1 °C

Optional:

Humidity:	40 to 90% RH
Humidity accuracy:	± 1% RH
Temperature range:	15 to 50 °C
Photosynthetic lighting:	LED (~400 nm to 700 nm)
Light intensity:	13,000 lux (50% Red; 50% Blue)

Documentation

- User/technical/maintenance manuals should be supplied.
- Certificate of calibration and inspection.
- List of important spare parts and accessories with their part number and costing.
- Compliance report to be submitted in a tabulated and pointwise manner clearly mentioning the page/para number of original catalogue/data sheet. Any point, if not substantiated with authenticated catalogue/manual, will not be considered.

Warranty

- Standard company's warranty/guarantee from date of installation, against any kind of manufacturing defects. The warranty should also cover all the accessories.

3. REFRIGERATED CENTRIFUGE

- Microprocessor controlled refrigerated centrifuge for solid-liquid separation (biological samples, nanoscale materials etc.)
- The system should have microprocessor-controlled management systems for controlling and monitoring the performance.
- The system should qualify international safety standards for laboratory applications.
- The system should have low noise level and should be less than <60 dBA at maximum speed.
- The system should be user-friendly and should have easy and trouble free and rotor exchange mechanism.
- The system should be glove and detergent friendly.
- The refrigeration system should be CFC free.

- The system should be provided with rotors that can handle the different volume of samples.
- The system should allow pulse (short) run.
- The centrifugal chamber should be made of high-quality stainless steel and should have excellent chemical resistance and strength. The system should be durable, stable and reliable.
- In addition to the above mentioned condition, the system should also qualify the following technical specifications:
 - Max speed: ~20,000 -30,000 rpm
 - Max relative centrifugal force (RCF): $\geq 30,000 \times g$ or higher
 - Rotor capacity: 50 mL, 15 mL, 7 mL, and $< 2\text{mL}$
 - Min speed: ≤ 300 rpm
 - Maximum timer range ≥ 9 h continuous
 - Temperature range -10°C to 40°C
 - Drive: Direct, brushless induction

1. Documentation

- User/technical/maintenance manuals should be supplied.
- Certificate of calibration and inspection.
- List of equipment available for providing calibration and routine preventive maintenance support as per manufacturer documentation in service/technical manual.
- List of important spare parts and accessories with their part number and costing
- Compliance report to be submitted in a tabulated and pointwise manner clearly mentioning the page/para number of original catalogue/data sheet. Any point, if not substantiated with authenticated catalogue/manual, will not be considered
- Current user's and performance list to be provided minimum 10 nos. for quoted Model in India – Mandatory. Vendors should have Minimum 10 installation at National institutes like IIT, IISc, NIT, CSIR labs etc.

2. Warranty

- Company's standard guarantee/warranty from date of installation, against any kind of manufacturing defects. The warranty should also cover all accessories.

- 3. Compliance:** Compliance statement along with every above mentioned point should be submitted with relevant literature, specification sheets and brochures. Any deviation from specifications should be clearly mentioned in compliance statement.

4. ULTRA-PURE LABORATORY WATER PURIFICATION SYSTEM

The water purification system should have the capability to provide high purity water for critical laboratory application like reagent preparation. The equipment should be quoted with below-mentioned specifications:-

- Should produce Ultra-Pure water (Type- 1) from tap water for different laboratory applications.
- The system should be capable of delivering water with the following quality:-
 - The rate of production: >7 Litres/h. @ 25 °C and upgradeable to higher rate of production in future
 - Dispensing Rate: ≥ 1 L / min.
 - Inorganics: 18.2 M Ω - cm @ 25 °C
 - TOC: <3 ppb
 - Bacteria: <1 CFU/ml
 - Endotoxin: < 0.001 EU/ml
 - RNase: < 0.002 ng/ml
 - DNase < 20 pg/ml
 - pH: Effectively Neutral
- The system should have microprocessor-controlled management systems for continuous monitoring of purity of water.
- The system should be compact and easy to handle and integrated storage tank with the system is desirable to save the lab space.
- Should have the flexibility and provision to draw Type 3 water from the tank.
- The pre-treatment, R.O, D.I, and UV should be integrated into a single unit.
- It should have recirculation facility to maintain consistent peak water purity.
- The instrument should display water volume in reservoir and quality of water.
- The system should have cartridge change indicator.
- The system should have the facility to upgrade to high volumes in future.
- The production rate of the unit should be minimum 7 L/h to be upgradeable to 15 L/h and the dispense rate should be minimum 1.0 L/min.
- It should have dual wavelength UV (185/254 nm)

Documentation

- User/technical/maintenance manuals should be supplied.
- Certificate of calibration and inspection.
- List of equipment available for providing calibration and routine preventive maintenance support as per manufacturer documentation in service/technical manual.
- List of important spare parts and accessories with their part number and costing
- Compliance report to be submitted in a tabulated and pointwise manner clearly mentioning the page/para number of original catalogue/data sheet. Any point, if not substantiated with authenticated catalogue/manual, will not be considered
- Current users' and performance list to be provided minimum 10 nos. for quoted Model in India – Mandatory. Vendors should have Minimum 10 installation at National institutes like IIT, IISc, NIT, CSIR labs etc.

Warranty

- Company's standard guarantee/ warranty from date of installation, against any kind of manufacturing defects. The warranty should be a part of the total system including parts. The warranty should also cover all the consumables.

Compliance

Compliance statement along with every above mentioned point should be submitted with relevant literature, specification sheets and brochures. Any deviation from specifications should be clearly mentioned in compliance statement.

5. INVERTED LED MICROSCOPE WITH EPI FLUORESCENCE AND DIGITAL COLOR CAMERA

- Inverted Phase Contrast Microscope LED illumination with a lifetime of > 50,000 hours and provision for uniform distribution of light for Digital Imaging.
- The microscope should be with infinity optics with anti-fungus treatment.
- **Eyepiece Tube:** Binocular or Trinocular Type and preferably Siedentopf Design with Pupillary distance adjustment from 50 to 70 mm or higher.
- Eyepiece with F.O.V. 22 mm and Diopter adjustment facility on both the eyepieces.

- **Diascopic illumination:** High luminescent white LED illuminator, Built-in Fly eye lens.
- **Episcopic illumination:** LED illuminator with different wavelengths of 385, 455, 470, 505, 525, 590, and 625 nm.
- Quintuple nosepiece to accommodate 5 objectives at a time.
- Manual Focusing with Coarse motion torque adjustable & Fine stroke: 0.2 mm per rotation.
- **Stage:** Attachable Mechanical Stage with Universal holder. The holder should have the capability to mount different adapters like Slide, Terasaki, Petri Dish, etc.
- Epi-Fluorescence attachment with four position assembly built-in noise terminator and LED units for 385 nm & 470nm, and provision for Uniform distribution of light for Digital Imaging.
- **Slider:** Precentered or Centering PH Slider, 10x, 20x, 40x or better Objectives.
- Scientific Digital Colour Camera 5.5 or more Mega Pixels
- Computer: i3 processor or higher, 4GB RAM, 18.5" Monitor, 500GB HDD, 1 GB Graphics Card and UPS.
- Microscope, Digital Camera, and Image Analysis should be quoted from single manufacturer only. This is for better synchronization and better service support.
- **Optional:** Documentation software, Measurement acquisition, 3D capability, Z stacks, Time Lapse experiments, Multi Points, Image stitching, Annotations, ND Viewer, Large format, Macro, Report Generator, Vector layer and Multi-Dimensional. File format (ND format)

6. MICROPROCESSOR BASED CONDUCTIVITY METER

The conductivity meter should have the capability to measure conductivity, TDS, and salinity precisely and accurately. The equipment should be quoted with below-mentioned specifications:-

- The equipment should be a microprocessor-based conductivity meter with graphics display & electrodes for measurement of conductivity.

- The equipment should also have the facility to measure TDS, salinity, and temperature.
- The conductivity meter should have the following measurement range and accuracy:
 - a. Conductivity measuring range: 0 to 500 mS, with a measurement accuracy of $\pm 0.5\%$.
 - b. ISE: 0 to 19999 ppm, with a measurement accuracy of $\pm 0.5\%$.
 - c. ISE Resolution: 0.001 ppm; 0.001 molar
 - d. Min TDS: 0 to 500 ppt
 - e. Min Salinity: 0 to 80 ppt, with salinity accuracy $\pm 0.5\%$ FS
 - f. Temperature range: 0 to 100
- The equipment should have the memory for storing measured values.
- The equipment should have an interface to connect PC or Printer.
- It should also have the provision to save the recorded data using suitable data management software.
- The equipment should have automatic monitoring of calibration intervals to check the calibration due of conductivity cell.
- The equipment should have a built-in rechargeable battery so that it can be used in the field also.
- The equipment should be provided along with all the necessary accessories required for conductivity measurement.
- The system should also have a complete accessory case for outdoor use.
- The facility to enter the sample ID for identification purpose is desirable.
- The equipment should be provided along with all the necessary accessories required for conductivity and TDS measurements (electrodes, calibration standards, batteries, filed carrying case, etc.).
- The equipment should meet all the performance criteria prescribed by competent authorities (IES/ISO/NIST).

Documentation

- User/technical/maintenance manuals should be supplied.
- Certificate of calibration and inspection.
- List of important spare parts and accessories with their part number and costing.
- The equipment should meet all the performance criteria prescribed by competing authorities. (IEC/ISO/NIST).
- Compliance report to be submitted in a tabulated and pointwise manner clearly mentioning the page/para number of original catalogue/data sheet. Any point, if not substantiated with authenticated catalogue/manual, will not be considered
- Current user's and performance list to be provided minimum 10 nos. for quoted Model in India – Mandatory. Vendors should have Minimum 10 installation at National institutes like IIT, IISc, NIT, CSIR labs etc.

Warranty

- Company's standard guarantee/ warranty from date of installation, against any kind of manufacturing defects. The warranty should also cover all the consumables and accessories.

Compliance

- Compliance statement along with every above-mentioned point should be submitted with relevant literature, specification sheets, and brochures. Any deviation from specifications should be clearly mentioned in compliance statement.

7. PH METER WITH TEMPERATURE SENSOR

The pH meter should have the capability to measure pH, and Temperature precisely and accurately. The Equipment should be quoted with below mentioned specifications:-

- The equipment should be suitable for measurements in the laboratory and for mobile use and should have optional battery operation facility.
- The equipment should be a microprocessor based pH meter with graphic display & electrodes for accurate measurement of pH.
- The equipment should have the facility to perform pH calibrations with minimum of 3 different buffer solutions. It should also have the automatic buffer recognition facility and the possibility to store the calibration data with the electrode identification.
- The equipment should have the facility to simultaneously display pH value and the temperature.
- The pH meter provided should have the following Measurement Range:
 - pH Range : 0.0 to 14.0
 - Potential : -1200 mV to + 1200 mV
 - Temp Range: 0 °C to 100.0 °C or better
- The pH meter should have the following resolution:
 - pH : 0.001
 - mV: 0.1 mV
 - Temperature: 0.1 °C
- The equipment should have the memory for storing measured values.
- The equipment should have an USB/ mini USB interface to connect PC or Printer.
- The equipment should have the facility to enter the sample ID for identification purpose.
- The equipment the date and time display is preferred.
- The equipment should have automatic monitoring of calibration intervals to check the calibration due of electrodes.
- The equipment should have a built in rechargeable battery, so that it can be used in the field also.

- The equipment should have a suitable software option to save the data that is generated for online monitoring.
- The equipment should be provided along with all the necessary accessories required for pH measurement including electrodes, buffer, etc.

4. Documentation

- User/technical/maintenance manuals should be supplied.
- Certificate of calibration and inspection.
- List of important spare parts and accessories with their part number and costing
- Compliance report to be submitted in a tabulated and point wise manner clearly mentioning the page/para number of original catalogue/data sheet. Any point, if not substantiated with authenticated catalogue/manual, will not be considered
- Current user's and performance list to be provided minimum 10 nos. for quoted Model in India – Mandatory. Vendors should have Minimum 10 installation at National institutes like IIT, IISc, NIT, CSIR labs etc..

5. Warranty

- Company's standard guarantee/ warranty from date of installation, against any kind of manufacturing defects. The warranty should be a part of the total UV-VIS system supply (including parts). The warranty should also cover all the consumables and the computer.

- 6. Compliance:** Compliance statement along with every above mentioned point should be submitted with relevant literature, specification sheets and brochures. Any deviation from specifications should be clearly mentioned in compliance statement.

8. THERMO REACTOR COD

- A thermo-reactor for thermal digestion of samples up to 170°C.
- The system should have fixed and user-defined programs to set temperature and digestion time.
- The system should have the capability to hold minimum 2 x 8 standard cuvette shafts.
- Reaction time setting: 20 min, 30 min, 60 min, 120 min (via fixed programs), and
- The system should have alarm and automatic shutdown facilities to indicate end of the digestion cycle.
- It should have good temperature stability (± 0.5 K or better).
- Temperature range: 25 to 170°C with a regulating accuracy of $\pm 1^\circ\text{C}$ or better.
- All accessories including cuvettes, external temperature sensor, cranks for heavy metal digestion and nitrate degradation for total nitrogen analysis should be provided with the system.

Warranty

- Company’s standard gurarantee/warranty from date of installation, against any kind of manufacturing defects. The warranty should also cover all the accessories.

Compliance

- Compliance statement along with every above-mentioned point should be submitted with relevant literature, specification sheets, and brochures. Any deviation from specifications should be clearly mentioned in compliance statement.



9. JAR TEST APPARATUS

- The equipment should be a microprocessor-based unit with a digital display.
- The equipment should be waterproof and chemical proof.
- The equipment should be a bench-top type with six-paddle.
- The instrument should have an adjustable paddle and should provide a wide range of velocity gradient for mixing and flocculation.
- The paddle should be made of stainless steel or better material.
- Instrument should be rugged and built on a powder-coated steel uniframe chassis
- The instrument should have fine speed controller, time, alarm, and status display facility.
- The Instrument with programmable flocculation stages is preferred.
- Should have water resistant independent digital displays.
- 1L jars clear polycarbonate injection molded square jars are preferred.
- Built-in fluorescent lamp floc illuminator is preferred.
- The lighting may be arranged such that the dispersion should not get impacted by heat.

Warranty

- Company’s standard guarantee/warranty from date of installation, against any kind of manufacturing defects. The warranty should also cover all the accessories.

Compliance

- Compliance statement along with every above mentioned point should be submitted with relevant literature, specification sheets and brochures. Any deviation from specifications should be clearly mentioned in compliance statement.

10. BIOLOGICAL SAFETY CABINET (BSC)

- The safety cabinet should ensure the protection of sample, person, and environment by preventing diffusions of toxic and contaminated particulates during the operation.
- The system should have the facility to protect the operator from working hazard.
- The cabinet should be compact and the length should be below <1.2 m.
- The system should have the facility to avoid cross-contamination of the samples being handled inside the cabinet.
- The system should have constant velocity control to avoid possible gas leakage.
- The system should have pre-warning and alarm indicate the health of the filter unit.
- The filter should be capable of removing > 99.999% contaminants ≥ 0.1 microns in size.
- The exhaust filter efficiency should be more than 99.99% for particles of 0.3 microns.
- A display unit showing the air quality, HEPA filter running status, velocity etc. is desirable.
- The working platform should be made of durable and easily cleanable material.
- All duct fitting should be provided along with the cabinet to remove the exhausted gas.
- The cabinet window should be UV radiation proof and should be safe enough to avoid any glass explosive accident.
- The system should have illumination intensity ≥ 600 Lux.

Warranty

- Company's standard guarantee/warranty from date of installation, against any kind of manufacturing defects. The warranty should also cover all the accessories.

Compliance

- Compliance statement along with every above-mentioned point should be submitted with relevant literature, specification sheets, and brochures. Any deviation from specifications should be clearly mentioned in compliance statement.

Documentation

- User/technical/maintenance manuals should be supplied.
- Certificate of calibration and inspection.
- List of equipment available for providing calibration and routine preventive maintenance support as per manufacturer documentation in service/technical manual.
- List of important spare parts and accessories with their part number and costing.
- Compliance report to be submitted in a tabulated and point wise manner clearly mentioning the page/para number of original catalogue/data sheet. Any point, if not substantiated with authenticated catalogue/manual, will not be considered.

11. MUFFLE FURNACE (50 TO 1200 C)

- Temperature programmable Muffle Furnace for heating samples at elevated temperature as high as 1200 °C.
- The system should be compact and bench-top type.
- The footprint should not be more than $< 0.2 \text{ m}^2$
- The furnace should have robust safety features including door safety switch, over temperature protection, temperature alarm, and thermocouple break protection.
- A port in chamber rear for monitoring temperatures with independent measuring devices is preferred.
- The system should have the facility to control the heating rate and heat distribution in the chamber must be uniform.
- A display unit to show both setpoint and actual furnace temperatures in °C.
- The system should have temperature ramping facility to vary the heat-up rate and dwell cycles.
- In addition, the furnace should have the following features:
 - Capacity = 3 to 4 L
 - Internal Dimensions of the furnace (Depth × Width × Height) in mm : (~250×250×200)
 - maximum Temperature: 1200 ° C or better
 - Temperature Accuracy: $\pm 2^\circ \text{ C}$ or better
 - Temperature Control: Through microprocessor-based PID controller
- Accessories including stainless Steel Tongs (15-20 Inch, 2 nos.) and furnace gloves (2 pairs) should be provided with the system.

Warranty

- Company's standard guarantee/warranty from date of installation, against any kind of manufacturing defects. The warranty should also cover all the accessories.

Compliance

- Compliance statement along with every above-mentioned point should be submitted with relevant literature, specification sheets, and brochures. Any deviation from specifications should be clearly mentioned in compliance statement.

Documentation

- User/technical/maintenance manuals should be supplied.
- Certificate of calibration and inspection.
- List of equipment available for providing calibration and routine preventive maintenance support as per manufacturer documentation in service/technical manual.

- Compliance report to be submitted in a tabulated and point wise manner clearly mentioning the page/para number of original catalogue/data sheet. Any point, if not substantiated with authenticated catalogue/manual, will not be considered.

12. Environmental Chamber with Humidity Control:

- The equipment should be compact and a benchtop model is preferable.
- The system should have the facility to control temperature and relative humidity uniformly and precisely.
- A system with minimum footprint is preferable.
- Programmable ramp and soak cycle for temperature and relative humidity (RH).
- The system should be compatible with corrosive samples.
- The system should have the ability to monitor temperature and RH on a real-time basis.
- The system should have the facility to collect and record RH and temperature on a continuous basis.
- The system should have an alarm (audible/visible) to show any deviation from the set values.
- The equipment should also satisfy the following specifications:
 - Digital display: Yes
 - Maximum Capacity: 100- 200 L
 - Temperature Range: 0 to 60 °C or better
 - Temperature accuracy(±): < 0.1 °C
 - Humidity: 20 to 80% RH or better
 - Humidity accuracy: ± 1% RH
 - Controller : Microprocessor, PID or better
 - Noise level <60 dB
 - Refrigerant: Non CFC
 - Defrosting: Yes (Manual/Automatic)
 - Shelves: Yes (Adjustable)
 - Construction material high quality stainless steel with powder coating
 - Computer interface Yes
 - Data acquisition software Yes

Documentation

- User/technical/maintenance manuals should be supplied.
- Certificate of calibration and inspection.
- List of important spare parts and accessories with their part number and costing.

- Compliance report to be submitted in a tabulated and pointwise manner clearly mentioning the page/para number of original catalogue/data sheet. Any point, if not substantiated with authenticated catalogue/manual, will not be considered.

Warranty

- Company's standard guarantee/warranty from date of installation, against any kind of manufacturing defects. The warranty should also cover all the accessories.

ANNEXURE B

FORMAT OF COMPLIANCE STATEMENT OF SPECIFICATIONS

S.No	Name of specifications/ part / Accessories of tender enquiry	Specifications of quoted model/ Item	Compliance whether "YES" or "NO"	Deviation, if any, to be indicated in unambiguous terms	Whether the compliance/ deviation is clearly mentioned in technical leaflet/ literature
1	2	3	4	5	6

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