



Fakir Mohan University

Vyasavihar, Nuapadhi, Balasore, Odisha-756089

Tel: 06782-275787 Email: registrarfmuniversity@gmail.com

Website: www.fmuniversity.nic.in

No. FMU/OHEPEE/CoE/04/2023/ 11207

Date: 14-12-2023

CORRIGENDUM

In Continuation to this tender Call Notice No- **FMU/OHEPEE/CoE/04/2023/10194 Dt 08.11.2023**, it is notified to all such concerned that the last date of Receipt of tender paper is 26.12.2023 by 5.00 PM instead of 13.12.2023 by 5.00 PM. The Technical bid of the tender paper shall be opened on 27.12.2023 at 11.30 AM instead of 14.12.2023 at 11.30 AM.

All the terms and conditions of the referred tender document shall remain intact. The tender papers along with the details of make and model, specifications, terms and conditions are available in the University website www.fmuniversity.nic.in. The authority reserves the right to cancel any/all the quotation(s) without assigning any reasons thereof.


14/12/2023
Registrar

Memo No. 11208

Date: 14-12-2023

Copy forwarded to:

1. The Advertising Manager, The Samaj, Balasore (All Odisha Editions)/The Times of India (Bhubaneswar, Edition) for information and necessary action. They are requested to publish the Tender Call Notice in their esteemed daily ODIA/ ENGLISH newspaper (one issue) at I&PR rate by **Dt. 15.12.2023** with a size confined to 08 cm × 05 cm. and the bills in triplicate may be furnished to the undersigned for payment.
2. The copy of this Corrigendum along with the copy of the Tender Papers are forwarded to the website In-Charge for information and necessary action. He is requested to publish the Tender Call Notice and Tender papers in the University website by **Dt. 15.12.2023**.
3. P.A to V.C. for kind appraisal of the Vice-Chancellor/ P.A. to Registrar/ Comptroller of Finance/ Coordinator, OHEPEE/ Nodal Officer, CoE/ Notice Board/ e-dispatch, F.M. University for information and necessary action.


14/12/2023
Registrar



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Date: 8.11.2023

Indicative Notice Inviting Tender

Sealed quotations are invited from interested Dealers/ Suppliers/ Manufacturers having valid GSTIN certificate, PAN card and authorized dealer certificate for supply of "**Lab equipment**"; and supply of "**Chemicals, Glassware, Plastic ware and miscellaneous lab items**" to Fakir Mohan University, Balasore for the Center of Excellence under OHEPEE. The quotations completed in all respect should reach to the Office of the Registrar, F. M. University, Vyasa Vihar, Nuapadhi, Balasore-756089 by Regd. / Speed Post (Indian Post only) on or before **Dt. 13.12.2023 by 4.00 PM**. The tender papers will be opened on **Dt. 14.12.2023 at 11.30 A. M.** in the office chamber of the undersigned. The tender papers along with the details of make and model, specifications, terms and conditions are available in the University website **www.fmuniversity.nic.in**. The authority reserves the right to cancel any/all the quotation(s) without assigning any reasons thereof.


Registrar

GENERAL TERMS AND CONDITIONS

1. Submission of quotation/ tender/ bid in Two Bid System

The Bid/ Tender/ Quotation shall be submitted in two-bid system, i.e., Technical Bid & Financial Bid. Technical and Financial bid of the quotation should be separately sealed in two envelopes and it must be clearly mentioned on the top of the envelopes as Cover-A (Technical Bid) and Cover-B (Financial Bid). Both the sealed envelopes (A & B) should then be put in one outer cover indicating thereon:

- i) **Reference No. of Tender (in Capital letter on the top of the envelope):**
- ii) Tender regarding (in Capital letter on the top of the envelope as **Lab equipment/ “Chemicals, Glassware, Plastic ware and miscellaneous lab consumables”**)
- iii) Due date for submission of Tender:
- iv) Name and Address of the firm:

The technical bids are to be opened by the Purchase Committee for evaluation. In the second stage the financial bids of only the technically acceptable offers be opened for further evaluation, scrutiny and ranking for awarding the Work Order/ Supply Order/ Contract.

****Financial bids of different items (instruments/glassware/plastic ware/ miscellaneous lab items) should be placed in different sealed envelopes (Marked as Financial Bid for _____) and all these financial bid envelopes should be placed in a single large envelope marked as Cover-B (Financial Bid).**

1.1. Technical Bid Should Contain the Following Documents:

- a) The firm, desirous of quoting equipment whose price is more than Rs. 10 lakhs, must have annual turnover of Rs.1.00 crore or more for the financial year 2022-23 and quoting equipment whose price is less than Rs. 10 lakhs, must have annual turnover of Rs. 50 lakhs or more for the financial year 2022-23. A declaration in this regard should be submitted along with supporting documents.
- b) The detailed specifications of the equipment along with make and model with respect to the specification specified by the University should be submitted as per the format enclosed in Annexure V. List of other miscellaneous items including Plant Tissue Lab racks are enclosed in Annexure VI.**
- c) Technical Literature in support of the Lab equipment
- d) Copy of Valid GSTIN Registration Certificate.
- e) Copy of PAN.
- f) Copy of Audited Balance Sheet for last 03 years.
- g) The authorisation certificate of OEM/ authorised Manufacturer/ Distributor/ Dealership Certificate for respective Equipment/Furniture/Chemical or other consumable items
- h) EMD @ 2% (only for lab equipment) of quoted amount in the shape of Bank Draft drawn in favour of **F.M. University Development Fund-II** payable at Balasore with three-months validity.
- i) Non-refundable tender fee.

1.2. Financial Bid Should Contain the Following Documents:

- a) Break up price as per format (Annexure-II or Annexure III as the case may be)
- b) Total Price must include all admissible taxes including transportation charges, delivery and installation charges at the Centre of Excellence building of the University trial operation,

comprehensive training and clearance charges. **The University will make necessary payment in Indian currency only.**

- c) No conditional price will be taken into consideration. No escalation of the price in later stage is acceptable.
- d) Warranty period details should be clearly mentioned
- e) **Percentage discount for chemicals/glassware and plastic ware against the catalogue price be mentioned as per Annexure III and the price list should also be submitted along with the quotation.**

NB: The Percentage discount quoted for chemicals/glassware and plastic ware should be valid for one year.

2. Goods Eligibility:

ISI, CE, ISO, US FDA/ IEC 60601 or equivalent certificate

3. Other Terms and Conditions:

- i) The cost of the tender is **Rs. 5,000/- (Non-refundable).**
- ii) Submission of quotations without tender cost, EMD along with the Technical Bid and received after due date and time will be summarily rejected.
- iii) The quotations completed in all respect should reach to **the Office of the Registrar, F.M. University, Vyasa Vihar, Balasore-756089 by Speed/Regd. Post (Indian Post) only** on or before **Dt. 13.12.2023 by 4.00 PM.** The quotations received after due date or incomplete in any respect shall summarily be rejected. The tender papers will be opened on **Dt. 14.12.2023 at 11:30 AM** in the Office Chamber of the Registrar, F. M. University, Vyasa Vihar, Nuapadhi, Balasore-756089. The quotationers or their authorized representatives may remain present during the opening of the tender papers.
- iv) The supplier must be either manufacturer of the equipment or the authorized agent/ dealer of the manufacturer.
- v) The price should be quoted in the Indian currency only.
- vi) **The bid should remain valid for a period of 180 days from the date of opening. In case your offer has a different validity period that should be clearly mentioned in the quotation.**
- vii) The successful bidders should supply the equipment within a period of 4-6 weeks from the issuing date of purchase order by the competent authority of Fakir Mohan University and shall be delivered to the Person concerned at the Centre of Excellence building of the University that will be mentioned in the supply order.
- viii) The EMD of the successful bidders will be refunded after the supply and installation of the equipment, on completion of warranty period.
- ix) The EMD of the unsuccessful bidders will be returned as such to the concerned quotationer immediately after finalization of the tenders by Regd. Post.
- x) Documents such as operation manual and other technical specifications of the equipment should be supplied by the successful bidders along with the equipment.
- xi) A warranty certificate for the period of **minimum three years** or as specified in annexure V from the date of installation should be provided. Thus the basic price of all instruments should be quoted along with the warranty period covered.
- xii) Inspection certificates of the equipment inspected by the qualified engineer of the manufacturer.

- xiii) During the warranty period or later whenever the firm is called upon to attend for the rectification of the defects/ faults in the consignments, the firm shall attend to the repair of instrument within 48-96 hours. They should render timely back up service whenever called upon. A certificate to that effect should be attached along with the invoice or delivery challan
- xiv) The invoices should be submitted in triplicate in the name of “**The Registrar, Fakir Mohan University, Vyasa Vihar, Balasore-756089**” for pass and payment. The payments will be made only after successful installation/ Training/ Demonstration of instruments in CoE Building supported with a certificate by the concerned member(s) of the Centre of Excellence (CoE).
- xv) The University authority reserves the right to refuse payment in the event of unsuccessful installation and the non-submission of the installation certificates.
- xvi) The authority of the F.M. University, Balasore reserves the right to accept/ reject any part or all quotations; and also increase or decrease the number of individual items to be procured; or cancel the entire procurement process without assigning any reason thereof.
- xvii) Once the rate is approved by the Purchase Committee and supply order is placed to the successful bidder and in the event of failure on the part of the bidder for supply of the equipment on any account, the authority reserves the right to forfeit the EMD.
- xviii) The rates/ price should be quoted in Indian currency only and payment shall be made in Indian Currency. The price shall be inclusive of all taxes (Rate & Taxes should be mentioned separately), Transportation cost and Cost of Installation and Commissioning, trial operation, comprehensive training and clearance charges.
- xix) The quotationers are required to quote separately for different items of the categories as mentioned below. However, the quotationers have to pay the tender value once, which is non-refundable.
- Instruments
 - Chemicals
 - Glassware and Plastic wares
 - Miscellaneous items
- xx) Dispute, if any, with regard to the tender/ quotation shall be settled within the jurisdiction of Balasore Court, Odisha only.


Registrar
Fakir Mohan University

Annexure I

(For Technical Bid of Equipment)

1. Name of the Instrument:

i. Make:

ii. Model:

iii. Matching specifications and deviations

Parameters and specifications specified by the University	Matching parameters specified by the bidder	Remarks if any
1.		
2.		
3.		

iv. Additional features not specified by the University

Annexure II

(For Financial Bid of Equipment)

Sl. No	Name of the Equipment/ Furniture/ Computer/Printer	Make and Model	Quantity	Price per unit (excluding tax in Rs.)	Tax per unit (in Rs.)	Total amount per unit (in Rs.)	Total amount (in Rs.)	Warranty (in year)

Annexure III

(For Financial Bid for Consumable items- Chemicals/Glass wares/Plastic wares items)

Sl. No	Make of Chemicals/Glass wares/ Plastic wares	Percentage Discount Offered on products	Tax in percentage
1.	Borosil Glassware		
2.	Rivera Glassware		
3.	Tarsons Plastic ware		
4.	Polylab Plasticware		
5.	SRL		
6.	HIMEDIA		
7.	Sigma Aldrich/ MERCK		
8.	MERCK India		
9.	Qualigens		
10.	Santa Cruz Biotechnology		
11.	ThermoSci		
12.	MSE suppliers		
13.	Thermo Fisher		
14.	Alfa Aeser		

N.B Percentage discount for different product categories of a single company (e.g. Himedia-Chemical, Himedia-Culture media, Himedia-Plasticware, etc.) may be quoted separately.

Annexure IV

(For Financial Bid for Miscellaneous items)

Sl. No	Items	Make/Cat No. (if any)	Specifications if any	Actual Price	Quoted Price after Discount	Quoted Price including tax
1.						
2.						
3.						

The Instruments to be procured for CoE with their Specifications

These are guideline specifications only. Minor variations from these, but fulfilling functional requirements will be accepted.

The supplier should provide technical specifications compliance sheet against tender's specifications as per Annexure I.

1. BET SURFACE AREA ANALYZER

Features	Specifications
Analyzer	The system should be completely automatic and capable of carrying out physisorption of various gases and should have features to measure the adsorption/desorption isotherms, surface area, pore size, pore volume, pore distribution of powder and porous materials.
Analysis Capability	Surface Area by single and multi-point BET, DR micro pore and mesopore volume/ surface area, Surface Area by Single and multi-point Langmuir, Total pore volume, Total micro pore volume and area by T-Plot method. Analysis log, Horvath-Kawazoe data reduction, BJH pore size distribution using adsorption and desorption isotherm.
Analysis Gases	The system should have the facility to use Nitrogen, Hydrogen, Argon, Carbon dioxide and any other inert gases.
Operating Specification	Surface Area Range: 0.01 m ² /g or better Pore Diameter Range: 3.5- 5000 Angstroms or better Micropore Volume: Detectable within 0.0001 cc/g The system should have minimum one sample station and minimum three degassing station.
Pressure Range	0-0.13 Mpa or better
Minimum Pressure Resolution	6 x 10 ⁻⁵ mm Hg or better
Minimum relative (P/P ₀) Resolution	6 x 10 ⁻⁸ mm Hg or better
Pressure Transducers	Adsorption and desorption isotherms measured using 1000 torr pressure transducer. Transducer accuracy shall be at least ±0.10%
Vacuum System	The vacuum system should be capable of degassing the sample upto a vacuum level of 1 x 10 ⁻³ Torr or better.
Cryogenic System	Dewar Volume: 2.0L or more Holding Time: 30 hours or better
Software Features	The software should be an original licensed copy software with specific part number mentioned in the offer with integrated database. No pirated version of the software will be allowed and if found the offer will be strictly rejected. Periodical updates of the software should be provided free of cost for a period of five years. The system should have the suitable software with user interactive data analysis tools for analyzing the captured data and automatic report generation. The software should be capable of performing the following analysis tasks: BET surface area (Single & multi point), Langmuir surface area, Dubinin-Radushkevich

	<p>micropore and mesopore volume/ surface area, total pore volume/ average pore radius, mesopore volume, size distribution by BJH and DH models, t-method micropore analysis by deBoer and Hasely equations, alphas method and fractal analysis. The data analysis software should be unkeyed or multi-user licensed, to allow installation at minimum 2 PCs.</p> <p>The software should have the data handling features like user defined report generation , data/ figures export to spread sheets (ASCII files import/ export, word/ excel compatibility, pdf formats) and offline data processing etc.</p>
Essential Accessories	<p>i) Sample holder/ tubes: Variable IDs (inner diameter) of sample tubes/ holders to be supplied so that the sample with various geometries with irregular dimensions could be accommodated for the measurements and analysis (Total thirty numbers; ten numbers each in three different types of holders with suitable capacity). Sample holder for fine powders should have the provision to vacuum seal.</p> <p>ii) Surface area reference material with details should be supplied.</p> <p>iii) Ultra high pure Nitrogen and Helium filled cylinder (7 cm³ with double stage SS gas regulator, connectors, PTFE/SS gas tube, nuts, ferrules, tubes, has to be supplied and those have to be connected and integrated with the main unit.</p> <p>iv) 25L Liquid nitrogen container with liquid nitrogen transfer device should be supplied.</p> <p>v) Electronic weighing balance capable of measuring weight with an accuracy up to 0.1mg level having maximum weighing accuracy of 200gm or better (one Number) should be supplied from reputed manufacturer preferably from Sartorius or Mettlor.</p> <p>vi) Physisorption operating supplies Kit: Physisorption operating supplies Kit including ferrules, O-rings, jackets, gaskets, maintenance parts should be supplied.</p> <p>vii) Recommended spares and consumables that should be required for a period of three years for the equipment should be supplied.</p>
Computer & Printer	A suitable branded computer for system control & data acquisition. It should have following minimum specs: i5 processor, 4GB RAM, 1 TB HDD or above, DVD combo drive, 2 USB Ports, 19" TFT/LED Color Monitor, Keys Keyboard, Optical mouse, with original operating system, HP or any standard brand Laser Jet Printer with scanner.
UPS(Optional)	Suitable 5KVAonline UPS having at least 2 Hour battery backup should be supplied.
Manual	One set of manual and service manual (both hard and soft copy in English) should be supplied with the equipment.
Pre installation Requirements	Complete technical details of pre-installation requirements should be furnished along with the technical bid. Fakir Mohan University, Balasore will only provide the installation room, air-conditioning units and required electrical outlets. Vendors are expected to supply all other installation accessories, infrastructures, facilities and services required for successful installation and smooth operation of the equipment. Vendors may conduct the site survey before installation at no additional cost.
Training	The manufacturer / supplier of instrument should provide three days onsite training in both hardware and software to the laboratory personnel in the

	installation, operation and maintenance of the instruments. The supplier or manufacturer should also provide three days applications training.
Warranty	<p>Minimum warranty of 36 months should be quoted with main system. The supplier should provide comprehensive warranty for three years for all components without any additional cost to the purchaser from the date of satisfactory commissioning of equipment. Components include all parts (accessories/ consumables / spares parts) of the equipment. All accessories/ consumable/ spare parts replaced shall be from OEM/ Supplier of same model or higher version. If within a period of three years after commission, any accessory / consumable/ spare part is proved to be defective then such product shall be replaced by the manufacturer / supplier. Such replacement shall be sole obligation of manufacturer / supplier, Including payment of charges for freight delivery, custom duty and transportation, if any. In case of breakdown during the warranty period, a competent Service Engineering of the supplier should make as many visits as are required to rectify the problem and replace the faulty parts, without any liability of cost.</p> <p>AMC post 03 years warranty should be quoted optionally.</p>

2. DOUBLE BEAM ATOMIC ABSORPTION SPECTROPHOTOMETER

Optics	<p>True double beam optics with aberration corrected Czerny-Turner monochromator mounting. Electronically double beam or Single beam or stockdale optics will not be accepted.</p> <p>High resolution grating with 1800 lines/mm and 300 mm or more focal length for high energy throughput</p> <p>Wavelength Range- Complete measuring wavelength range from 185 nm to 900 nm</p> <p>Bandwidth selection: 6-step or more bandwidth selection with automatic switching from 0.1 to 2 nm (0.1,0.2,0.4,0.7,1.0,2.0 nm)</p>
Detector	High sensitivity Photo-Multiplier Tube (PMT) detector for complete wavelength range or Solid state Detector
Motorized turret	<p>8 lamps or more turret, controlled through software with 2 lamps simultaneously lit, one for measurement and other for warm up for the next measurement</p> <p>In built power supply for minimum 2 numbers of High-performance boosted lamp/ Super lamp/EDL must be there in the system</p> <p>Dual background correction as standard - High speed dual frequency simultaneous measurement D2 background correction and high-speed Self Reversal background correction.</p>
Burner	<p>System must be supplied with 100 mm Air-C₂H₂ solid Titanium burner as standard for automatic ignition and extinction of flame</p> <p>High efficiency nebulizer with chamber made of engineering plastic, Platinum-Iridium orifice and Ceramic impact bead resistant to strong acids including HF Fully computerized gas flow control system with automatic setting of optimum fuel and oxidant flow rates</p>

	Automatic/computer controlled burner height adjustment
Performance Guarantee	System must provide Greater than 0.7 abs for 5 mg/L copper solution with an RSD of less than 0.5%. All the safety functions must be provided as standard including Leak Check; Flame Monitor; Gas Pressure Monitor; Interlock for wrong burner head use; Auto switch-over between Air-C ₂ H ₂ / N ₂ O-C ₂ H ₂ flame with flow rate monitoring using optical sensor; Drain Tank Level Monitor, Automatic flame extinction during power sudden power interruption, Vibration sensor for auto flame extinction; Internal fan stop sensor and flame retardant body
Automatic Gas Flow Control:	The system must have automatic searching for optimal fuel gas flow rate which optimizes the gas flow rate by measuring the changes in absorbance between a blank and a standard sample. The difference between the two must be displayed on the screen. The gas flow rate achieving the highest sensitivity must be detected and this value must automatically set as the gas flow rate value.
Software operation	Software operation on Windows 7 / Windows 10 Professional for complete instrument control, data acquisition and processing Software includes strengthened QA / QC functions; Hardware Validation functions and Comprehensive data management system as standard
Single Hollow Cathode Lamps for elements	Single Hollow Cathode Lamps for elements for Lead, Cadmium, Chromium, Copper, Nickel, Zinc, Cobalt, Iron, Arsenic, Mercury, must be supplied along with the system
All Pre installation requisites (PIR) are to be supplied by the vendor.	All Pre installation requisites (PIR) are to be supplied by the vendor. Utilities required for AAS operation like Branded i3 PC, Exhaust hood assembly, Double stage SS C ₂ H ₂ Regulator, one time filled Acetylene Gases Cylinder, Oil free air compressor, 5 KVA Servo Voltage Stabilizer etc.
Warranty	Warranty must be 36 months from the date of installation. Installation & training should be provided at our lab free of cost Delivery must be within 10 weeks after placing of Purchase order Manufacturer or their Authorized channel partner must provide User list in India Manufacturer or their Authorized channel partner/Indian Agent can participate in this tender. If Manufacturer wants to participate in this tender directly then Manufacturing certificate needs to submit for the quoted model mentioned positively otherwise their tender will be cancelled. If Indian agent quoting on behalf of OEM then quoted model details must be available in OEM website otherwise their bid will be cancelled. Authorisation letter from OEM need to be submitted along with the offer AMC post 03 years warranty should be quoted optionally.
Quoted as optional	Hydride vapour generator: party must offer continuous flow Hydride vapour generator along with main system. Used with the AAS, Hydride vapour generator permits the rapid and accurate quantitation of elements such as As, Se, Sb, Sn, Te, Bi and Hg at several-ppb levels. Specification: Measurement method: continuous flow

	<p>Sample consumption: 0 to 7 mL/min, variable</p> <p>Reagent consumption: 0 to 2.5 mL/min, variable</p> <p>Atomizer: Heated absorption cell (heated by Air-C₂H₂ flame in standard system)</p> <p>Carrier gas: Ar pressure: 0.32 MPa, consumption: 70 mL/min</p> <p>Power requirements: 240 VAC, 50/60 Hz absorption cell, Reagent bottles, gas hose, drain tube, etc. must be supplied with Hydride generator as standard</p>
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3. FTIR Spectrophotometer

FTIR Spectrophotometer	FTIR should be High-end advanced PC based system for operation on 220V / 50Hz.
Technical specification :	<p>It must have following minimum technical specification:</p> <p>Full mid-IR wave number range from 7,500cm⁻¹ to 350 cm⁻¹ or better</p> <p>Michelson's interferometer with 30° incident angle, completely sealed and desiccated optics</p> <p>frictionless Flexible moving mirror mechanism for smooth moving mirror motion and high quality IR spectra</p> <p>spectral resolution of 0.9 cm⁻¹ or better .</p> <p>Signal to Noise Ratio should be 30,000: 1 or higher (4 cm⁻¹ resolution, 1 min scan, around 2,100 cm⁻¹, peak-to-peak). Signal to noise ratio must be achieved without any mask or apodisation.</p> <p>Ge coated KBr / ZnSe beam splitter with moisture resistant coatings on surfaces</p> <p>Must have high intensity long life Ceramic IR source.</p> <p>Should have DTGS / DLATGS detector</p> <p>Data sampling should be done by stable He-Ne laser</p> <p>Must have built-in validation software conforming to ASTM and European Pharmacopoeia.</p> <p>System must be supplied with 64-bit Windows 10 based FTIR software for complete instrument control full data processing including Arithmetic calculations; Dynamic spectral subtraction; Peak detection; Baseline correction; Normalization; Derivatives etc.</p> <p>Must be supplied with advanced data processing capabilities include Full Quantitation; Spectrum search; Private library search; Multi-linear regression; Deconvolution; Kubelka-Munk conversion; Kramer-Kronig Analysis; ATR-correction; JCAMP conversion; ASCII conversion; Contaminant / Foreign Material Analysis Program and Pharma Report Program etc.</p> <p>Should have built-in atmospheric correction function for automatic elimination of water vapor and CO₂ peaks</p> <p>Should have Automatic accessory recognition (ATR recognition) function with optional Quick-Start accessories</p> <p>Should have Built-in self diagnostic function for checking, logging and status monitoring of interferometer conditions and key components in the interferometer & sequential display of result</p> <p>Must have USB interface for PC connectivity</p> <p>Instrument must withstand humidity of 20-90% with no condensation</p> <p>Full system should be cover under warranty for minimum period of 3 years from the date of</p>

	<p>installation.</p> <p>Installation & training must be provided to user upto their satisfaction at lab</p> <p>Following must be quoted with the main instrument:</p> <p>Branded i3 PC with Original Windows 10 Professional must be supplied along with Main system</p> <p>Single-reflection Diamond ATR- Qty 1</p> <p>Which covers application of measurement of Powders, moldings, thin films, films, liquids, rubber etc without sample preparation.</p>
Warranty	<p>Full system will be cover under warranty for minimum period of 36 months from the date of installation.</p> <p>Installation & training must be provided to user upto their satisfaction at lab</p> <p>AMC post 03 years warranty should be quoted optionally.</p>

4. Slurry coater with drying

Automatic Film Coating Machine with dryer	This product is widely used in various kinds of high temperature coating research, such as ceramic film, crystal film, battery material film, special nano film;
Source Voltage :	AC 220V-50 Hz (Indian Standard)
Features	<p>Adopt large area uniform heating to ensure high precision uniform temperature in cavity.</p> <p>Flat plate coating, motor driven scraper coating, coating speed is stable and adjustable.</p> <p>Film speed adjustable, vacuum aluminium plate can be quickly placed or removed copper foil, aluminium foil, etc., built-in vacuum pump</p> <p>Provision for access to external vacuum source, substrate adsorption without deformation.</p> <p>Standard preparation of film: coating precision, coating thickness adjustable.</p> <p>Control parameters are easy to set.</p>
Coating Speed -	0-100 mm/sec adjustable Accuracy 10 mm/sec
Stroke length	About 10-250 mm or more adjustable using position switch
Max Coating dimension	180mm x 250 mm
Film Thickness Range :	About 0.01-3.5mm (adjustable)
Vacuum platform	Aluminium alloy flat plate with built in vacuum chuck
Vacuum pump	Must be included and compatible
Compliance	CE, UL, MET and CSA certificate
Warranty	<p>Warranty must be 36 months from the date of installation.</p> <p>Installation & training should be provided at our lab free of cost</p> <p>Delivery must be within 10 weeks after placing of Purchase order</p> <p>Manufacturer or their Authorized channel partner must provide User list in India</p> <p>Manufacturer or their Authorized channel partner/Indian Agent can participate in this tender. If Manufacturer wants to participate in this tender directly then Manufacturing certificate needs to submit for the quoted model mentioned positively otherwise their tender will be cancelled.</p>

	If Indian agent quoting on behalf of OEM then quoted model details must be available in OEM website otherwise their bid will be cancelled. Authorisation letter from OEM need to be submitted along with the offer
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5. Roll Press Machine

General Description	Roller press used for lithium electrode film rollProcess.
Working Speed	0-1.5 m/min (Adjustable)
Working width	0-300 mm
Roll surface quenching depth	5mm
Warranty	36 Months Comprehensive Warranty

6. Punching Machine

General Description	Used for electrode, copper foil, aluminium foil and battery separator punching to disc pieces
Operation	Manual
Die Model	18mm, 20 mm, 12mm, 15mm, 16mm, 19mm
Punching Stroke	25mm
Punching Thickness	0.005-0.5 mm
Warranty	36 Months Comprehensive Warranty

7. Coin cell crimper

General Description	Hydraulic (Manual)
Standard Crimping Die	1 One set of crimping die for CR2032, CR2025,and CR2016 3 PTFE Anti-Corrosion Core prevents coin cells from being short circuited
Rocker Pressure	<6kg/cm ²
Max Pressure	200kg/cm ² (The hydraulic drive pressure up to 8T, the battery sealing no vibration, no leakage)
Working Pressure	80-100kg/cm ²
Warranty	One Year limited warranty with lifetime support
Accessories	CR2032 coin cell case and cap: Number :100 each Material 304ss Coin cell spacer: Number :100 Size 15.8*1mm, Material 304ss Wave Spring (Belleville Washers): Number 100 Size 14.5*1.42mm, Material 304ss Sealing gasket Number :100 Standard for CR2032
Warranty	36 Months Comprehensive Warranty

8. 6 KVA online UPS

General Description	On-line UPS, 6000VA
Make	Make: APC
Specification	<p>I. High quality, Double-conversion On-line UPS designed for power protection even in the most unstable power conditions</p> <p>II. Input voltage: 230V, 50 Hz</p> <p>III. Output voltage: 230V, 50 Hz</p> <p>IV. Rated power: 6000 VA</p> <p>V. Output connection type: 3 pin or with attachment (Indian)</p> <p>VI. UPS type: Double conversion online</p> <p>VII. Wave type: sine wave</p> <p>VIII. Battery cables and connectors</p> <p>IX. Other cables provided with the item</p> <p>X. Stabilization or mounting feet</p> <p>XI. Warranty: 3 years replace or repair</p> <p>XII. Certification: BIS</p>
SMF Battery, 12 V, 65AH (price quote separately) Make: Exide Number of batteries: 16 or as required	<p>I. Exide Power Safe Plus EP100- 12</p> <p>II. Technology: Seal Maintenance Free or VRLA</p> <p>III. Dimension: (L*W*H) - 407*173*235 in mm or similar</p>
Battery rake and Battery links	<p>Suitable rack for above 16 nos batteries.</p> <p>Made from galvanized Iron and properly welded and coloured.</p>
Installation	Complete installation by the supplier
Warranty	36 Months Comprehensive Warranty

9. Batteries for 10 KVA UPS

Specifications	<p>I. 12 V, 42AH</p> <p>II. Sealed Lead Acid Battery</p> <p>III. Preferably Exide powersafe plus or similar</p>
Number of batteries:	16
Installation	Complete installation by the supplier
Warranty	36 Months Comprehensive Warranty

10. Multistage RF and DC magnetron sputtering unit

General Description	Thin film deposition system
RF Power Supply	<p>600 Watt</p> <p>Automatic Matching Network</p> <p>0.1Watt Resolution or better</p>
Power Supplies	<p>DC PowerSupply:1</p> <ul style="list-style-type: none"> - Power Rating: 1000Watt or similar - Output Voltage:-50to-1000VDC or any - Current:0 to 1A or similar

	<p>DC PowerSupply:1</p> <ul style="list-style-type: none"> - Power Rating: 2000Watt or similar - Output Voltage:-50to-2000VDC or any - Current:0 to 1A or similar <p>Bias Power Supply</p> <ul style="list-style-type: none"> - Power Rating: 500 Watt or similar - Output Voltage:-50to-500VDC or any - Current:0 to 1A or similar
Vacuum Chamber	<p>SS 304 or better chamber having dimension minimum of 350mm(W) x 350mm (D) x 450mm (H) approx.</p> <p>A front door opening</p> <p>Toughened glass viewport</p> <p>Chamber should have provision for ports to connect Turbo pump, rotary pump, evacuation, Gas feedings and vacuum gauges.</p> <p>Topportsare required to mount Sputter gun to deposit from top to bottom (sputter down)in sequential and should be in confocal manner.</p>
Chamber Gadgetry	<p>Sputtering Cathodes: 3 nos</p> <ul style="list-style-type: none"> • 3 number of indirectly water-cooled flex mount magnetrons with confocal arrangement, suitable for 2 inch or similar diameter targets should be provided. • Magnetrons should have capability of accommodating 1-5 or similar mm thickness targets. • Height adjustment facility to vary the distance between target & substrate and to tilting facility for focusing plasma. • Vacuum: Ultra High Vacuum (UHV) • Back out Temperature: Standard 180°C • Magnets: Standard Nd FeB • Source shutters with rotary shaft seal should be incorporated in the chamber. <p>Substrate Heater</p> <ul style="list-style-type: none"> • From RT to a temperature of 600°C with PID controller with digital display. <p>Substrate Rotation assembly</p> <ul style="list-style-type: none"> • Rotatable substrate holder capable of holding substrate from less or equal to 5 mm dia. to greater or equal 75 mm dia. and speed of less or equal to 40 rpm. <p>Bias Electrode</p> <ul style="list-style-type: none"> • High voltage feed through with Teflon insulated rated for 500W
Mass Flow controllers	<p>Gases: Argon -1 no, Oxygen -1 no, Nitrogen -1 no</p> <ul style="list-style-type: none"> • Range: 0-100Sccm • Accuracy: 1.5% of full scale • optimum inlet pressure: 1.4 bar • optimum differential pressure: 3.4 bar
Vacuum Pumping System	<p>a. Two Stage Rotary Vane Vacuum Pump: 1 no</p> <ul style="list-style-type: none"> • Capacity (LPM) : Greater than 200 • Ultimate vacuum (mbar) : $>1 \times 10^{-3}$

	<p>b. Turbo Molecular Pump: 1 no Pumping speed (for N2): 400 l/s or better Rotational speed: 52000 +/- 2% or better Ultimate pressure: < 5x10⁻⁸ mbar</p> <p>c. HIGH VACUUM VALVE</p> <p>d. Valves (Throttle valve & Backing and roughing valves)</p> <p>e. COLLAR: 2 nos</p> <p>A collar is made out of SS304 material, finely ground and electro-chemically polished. Ports are provided for connecting the vacuum gauges, which will be connected in between High Vacuum Valve and the Chamber.</p> <p>A collar is made out of SS304 material, finely ground and electro-chemically polished. Having DN 160 ISO K at one end and on the other side Which will be connected in between Turbo pump and Gate Valve.</p> <p>PLUMBING LINES</p> <ul style="list-style-type: none"> • Plumbing lines of 1" NB to incorporate 02 Nos for both backing and roughing operation. <p>Vacuum Measuring Gauges.</p> <ul style="list-style-type: none"> • Digital Pirani Penning Gauge covering the range of 0.5 mbar to 10⁻⁶ mbar. Specification of Digital Pirani Gauge: <ul style="list-style-type: none"> - Measuring range: 1x10⁻³ mbar to 999 mbar. (N2 equivalent) - Operating range: 15 - 50 °C or similar - Electrical power (VAC) : 230 VAC • Digital Penning Gauge to measure high vacuum in the range of 1x10⁻³mb to 1x10⁻⁶mbar. Specification of Digital Penning Gauge: <ul style="list-style-type: none"> - Pressure range : 10⁻³ to 10⁻⁷ mbar. - Construction : Metal construction. - Response time : 0. 5 Sec or better
Water Chiller	<p>A suitable chiller of reputed make for water cooling of various parts of the unit should be provided with the following features:</p> <ul style="list-style-type: none"> -ON/OFF Control and indication - Digital display controller - Display of water temperature - Capacity: As per requirement -Power supply: Single phase -Temperature controller PID with SSR or any -Accessories: Complete in all respect for the setup
MOUNTING:	<p>All the above components should be compactly and Aesthetically housed in a state of the art frame made out of MS material. The front panel should be provided for mounting vacuum gauge. The pump should be connected to the main unit through a vibration damping flexible corrugated bellow (SS304) of convenient length. The pump exhaust should be terminated at the back of the unit so that it can be connected to a point outside the room if necessary. Anti-vibration mounts for rotary vacuum pump should be provided for the</p>

	reducing the vibrations.
Thickness monitor	High accuracy
Water circulation unit	Complete set-up as per requirement
Warranty	36 Months Comprehensive Warranty

11. Glove box (complete setup for Li Battery fabrication)

Number of Chamber	Single chamber
Design	Modular design
Inside dimensions	About 1200(W)X900(H)X750mm(D)
Shell Construction	SS Steel
Window	Safety Glass window
Leak rate	<0.05vol%/h
Window	Safety Glass window
Leak rate	<0.05vol%/h
Interior finish	Brushed, Anticorrosive coating and scratch resistant.
Exterior finish	Coated, white(RAL9003)
Stand	Powder coated, leveling feet & Castors
Electrical feed	DN40
Electrical Outlet	Six position power strip
Electrical Feed Through	One number
Gas Feed Through	Three Blank
Shelves	Three Shelves, height adjustable, SS 304(non-corrosive in chemical like sulfur environment)
Glove ports	220MM diameter, chemical resistant, O-ring sealed
Numbers of Glove	Two Numbers
Gloves	Thick butyl rubber of 0.4 mm thickness
Window	Scratch resistant polycarbonate window
Lightning	Internally mounted
Gas Purification system	Full system installed with glove box with necessary gas
Moisture sensor	High sensitivity with digital display (0-100%)
Humidity sensor	(0-100)ppm Level
Antechamber	Two numbers (made of MS with brushed interior finish, each with separate doors operated manually having spindle locks) (I) Cylindrical shape, 350mm (ID)X450mm(L) [Big enough to transport a weighing micro-balance] (II) Cylindrical shape, 150mm(ID)X150mm(L) (III) Gas Lines with dual control valves will be given for purging purposes.
Vacuum System	(i) Vacuum Pump: High speed rotary vacuum pump (ii) Pumping capacity:200liters/m (iii)Vacuum gauge: Digital gauge (iv)Vacuum level : Rough Vacuum

Working Gas	(i) Full size cylinder with gases (Argon, Nitrogen and oxygen) (ii) Gas regulators (Argon, Nitrogen and oxygen) indicating pressure of both cylinder pressure and line outlet. (iii) Connecting piping: 304 Stainless steel (iv) Main chamber (box) pressure control: Foot switch for increasing and decreasing pressure.
Gas Purification System	Optional H ₂ O/O ₂ single (sp) / double (dp) column inert gas purifier Attainable purity level H ₂ O < 1 ppm, O ₂ < 1 ppm Rotary pump Auto regeneration Removal capacity 36 l O ₂ & 1300 g H ₂ O Multiple speed blower w/ frequency controller Stainless steel 1.4301 (US Type 304) piping Flow rate up to 88 m ³ /h
Humidity and Oxygen Sensor	Range: (0-100)ppm 1. Measuring Ranges : 5 Modes: 0- 10ppm, 0-100ppm, 0-1000ppm, 0-1 %, and 0-25% 2. Display: Large colour screen with backlight 3. Response Time(T90): 10 seconds 4. Alarms: High / Low programmable limits with Delay 5. Power input: 100 - 240VAC
Operation	PLC with Color Touch Panel System
Power Supply	220 - 240VAC, 50/60Hz, Single Phase
Warranty	At least three years AMC post 03 years warranty should be quoted optionally.
Pre Installation requirements (if any)	

12. Magnetic stirrer with hot plate

Stirring Capacity (Ltrs)	5
Heating Capacity	500 watts
External Dimensions (W x D x H) mm	200 x 225 x 185
Stirring Paddle (PTFE Coated)	Q-20A
Model (length)	13 x 50 mm
Stirring beads	Different sizes (Teflon coated)
Warranty	At least three years

13. Vacuum Oven

Description	<p>Fitted with highly accurate controller that allows gentle drying of heat sensitive materials avoiding damage due to rapid temp. overshooting</p> <p>" Dries faster than the conventional oven</p> <p>" Separate vacuum release valve releasing vacuum by gentle turn of the knob</p> <p>" Separate vacuum connection valve preventing oil spilling in the oven</p> <p>" The interior chamber is made of stainless steel with one rack</p> <p>" The exterior body is made of MS Powder Coated</p> <p>" The door provided with silicon gasket & positive latch to maintain seal at all vacuum levels " Door with glass window for viewing of the sample inside the chamber " Heater mounted below the tray, ensures rapid and equal heating without any thermal loss " Visual alarm for temp. deviations, set table temp. deviation alarm limit</p>
Capacity (Metric)	30 L or above
Gas flow connector	Provision of Feed through for gas flow to chamber
Temperature (Metric)	Temperature range – Room temp. to 300°C, (Resolution ~ 0.2°C or better), Accuracy ± 2°C or better
Type	Shelf-Heating with Digicon Multi-channel Controller
Electrical Requirements	230 V 50/60 Hz
Voltage	230 V
Frequency	50/60 Hz
Vacuum Pump with gauges	<p>Oil free, Portable vacuum pump. Diaphragm type Oil free air compressor. Made from Special grade Aluminum light weight and good strength.</p> <p>Built in Micro suction filter, with 2-play nylon reinforced neoprene rubber diaphragm.</p> <p>Special sealed bearing to eliminate lubrication.</p> <p>Moisture trap & pressure regulator with pressure gauge.</p> <p>Perfect for stack or ambient gas sampling. Built-in thermal protection device to shut off the pump automatically when overheated and then restart it when the temperature cools down.</p> <p>Max. Vacuum : Ultimate 33mbar (-735mmHg)</p> <p>Max. Flow Rate : 40 l / min</p> <p>Vacuum Regulator : Yes</p> <p>Overflow Protection : Yes</p>
Warranty	36 Months Comprehensive Warranty

14. Table top centrifuge

Max. Speed (rpm)	5000-6000
Max. Capacity (ml)	400
Rotor Capacity (ml) :	6x50 ml Angle Rotor Head
Digital timer range (min)	0-99
Noise	≤ 60 dB
Warranty	36 Months Comprehensive Warranty

15. Bench top refrigerated centrifuge

Centrifuge design	Bench Top
Weight including Rotor	70-100 kgs
Maximum RPM	14000 with no load
RPM setting accuracy	plus minus 5% or better
Type of Motor	Brushless(without carbons)
Type of lid lock	Electronic lid locking with automatic lid opening at end of run
Maximum Noise level	≤55 db when working at 1 meter distance
Ambient operating Temperature and Humidity range	0 to 50 °C and 15 to 90% RH
Timer Setting	Programmable from 50 to 200 Seconds in Interval of 5 Seconds Maximum timer set point should be- 99 minutes
Speed Controller	Microprocessor controlled pre programmed speed controller which can control RPM as well as RCF. Speed Control tolerance in case of set speed (Plus minus RPM) in percentage- 1
Temperature Setting	Micro processor based PID Digital temperature controller cum Indicator, (With LCD Display) to control the Temperature from +40° C up to -8°C or better Temperature control accuracy- ± 2°C
Temperature of refrigerator	Ambient up to -20°C
Display Type	LCD
Parameters to be displayed the digital display	RPM, RCF, Set time, Run time, Rotor running indication, imbalancing if any
Configuration of Rotor to be supplied with centrifuge machine	Fixed angle rotors should be quoted separately for 1.5ml, 15ml and 50ml tubes Autoclavable Rotor @121 Degree Celsius Maximum RCF 20000xg or better
Power supply	220 Volts 50 Hz AC ± 10%
Power consumption	1400-1800 Watts
Refrigerant	should be CFC free
Safety features	Should detect Rotor imbalance and automatic stop if required. Number of acceleration and deceleration profiles in built for rotor speed while automatic braking Compressor cooling arrangement Auto cut off
Material Specifications	Assembly Material for manufacture of Centrifuge- Die cast Aluminum, Aluminum sheet, Stainless Steel, CRC Steel, Plastic and Rubber "Lid Material of Centrifuge"- CRC Steel finish with powder coating or stove painting or ABS Plastic of injection moulding Body material of Centrifuge-C.R.C Steel Finish with Powder Coating/ Stove Painting. Front Panel of centrifuge-CRC Steel finish with powder coating or stove painting or ABS Plastic of injection moulding

	Centrifuge Bowl material in Centrifuge- Stainless steel bowl Material of Rotor- Aluminium or Carbon Fiber
Additional Parameters	The Equipment shall be installed and demonstrated before payment
Reports	Certifications of Manufacturer- At least ISO 9001:2015/CE Copies of all certifications and reports to be provided to buyer on demand at time of supplies.
Accessories	Spanner to tight or loose Nut of Rotor on Motor shaft head puller, spare rotor nuts, fuse-2, Instruction Manual Book ,installation CD
Warranty	Warranty period for equipment & Rotor (on site and comprehensive warranty) in years:3

16. Ultrasonic cleaner

Tank Capacity	11lt or above
Ultrasonic Power	300W or better
Tank Drain	Drain Valve
Time Setting	1-99 min.
Display	Digital
Frequency	40kHz or better
Lid Material	SS 304
Inner Tank Material	SS 304
Outer Tank Material	SS
Power Supply	AC 220V / 50 Hz
Warranty	36 Months Comprehensive Warranty

17. pH Meter

Parameter	pH, ORP
Channel	Single-channel
pH measuring range	-2 – 20
pH resolution	0.01 or better
pH accuracy (±)	0.02
mV resolution	0.1
mV accuracy (±)	0.1
Temperature Range	-30 °C – 130 °C
Temperature resolution	0.1 °C
Temperature accuracy (±)	0.1 °C
Memory size	250 analyses (20.000 data points)
Display Type	Color TFT Touchscreen
Meter Type	Benchtop Single-Channel
mV measuring range	-2,000.000–2,000.000
Dimensions	235 x 188 x 75 mm or similar
Warranty	36 Months Comprehensive Warranty

18. Analytical Balance

Maximum Capacity	220 g/121 g
Readability	0.01 mg 0.005 mg
Minimum Weight (USP, 0.1%, typical)	7 mg
Repeatability, typical	0.005 mg
Display	Bright LED/LCD display
Adjustment	Internal (automatic/FACT)
Dimensions (HxWxD)	453 mm x 195 mm x 485 mm or similar
Typical Repeatability, automated (at 5% load) – with closed doors	0.004 mg
Linearity deviation	0.1 mg
Compliance Options	Data Integrity Log history (21 CFR Part 11 Compliant) Password protection Alibi Memory Log history (Basic Metadata)
Approved Balance	Yes
Power Supply	Single phase AC 220V/50 Hz and if necessary DC Adapter will be provided by supplier
Balance Type	Automatic Balances
Warranty	At least three years

19. COD with Digester and Reagents

Description	Double wavelength, automatic wavelength selection, direct reading colorimeter
Accuracy	3% Full Scale
Cuvette Details	16 mm COD Digestion Tubes
Test Method	Dedicated Chlorine Colorimeter
Photometric Accuracy	3% FS
Photometric Resolution	0.01A
Wavelength Range	430, 610 nm
Wavelength Accuracy	±0.01
Light Source	2 x LED
Display	Backlit LCD
IP Rating	IP67
Additional items	The supply should include COD Digester and COD reagents
Specification of Digester:	
Accuracy	±0.2 end of scale %
Frequency	50/60 Hz
Heating Block	±0.5°C

Temperature Homogeneity	
Heating Block Temperature Stability	±0.5°C
Over-Temperature Protection	Yes
Safety Cover	Clear plastic, hinged to flip up for loading and unloading
Temperature Probe Calibration	Automatic by software
Temperature Selection	100, 120, 150, 160 or 165°C
Thermo regulator	PID microprocessor
Time Selection	30, 60, 120 min. or continuous
Wattage	400 w
Voltage	100/200 V
COD Reagents	COD test kit, low range 0-150 ppm, 150 tests & COD test kit, high range 0-15000 ppm, 150 tests
Certification	CE

20. BOD System

Description	Instrument should have the options of direct sample selection; direct display of BOD values in mg/l; Manometric measurement system; Selectable measuring period 1 - 28 days (BOD5, BOD7, OECD...); Result memory for up to 28 days; Measuring ranges from 0 - 40 mg/l to 0 - 4000 mg/l; Interface RS232; BOD CM Tablets which can be used to verify the validity of results, shall also be supplied. The measuring system should record a measurement once every hour, independent of the length of the measuring period so that the quality of the series of measurement can be evaluated in an early stage. There should be a control on remote operation.
Technical Specifications:	
Result display	BOD [mg/l]; 4 – digits. 7 - segment LED backlit.
Measurement parameter display	BOD-range, volume, duration, time of measurement
Measurement period	User-selectable, between 1 and 28 days
Auto result storage	Up to 28 results, depending on measurement period
Storage interval	hourly (1 day); - every 2 hours (2 days); - daily (3-28 days)
Interface	SD Card & USB
Clock	Real-time clock
Protection class	IP 54 (sensor head)
Supply should include :	Main instrument along with BOD base unit with integrated bottle rack, 6 x BOD sensor, 6 x BOD bottles, 6 x seal cup, 6 x magnetic stir bar, batteries, retaining tube for batteries, maintenance free stirrer drive, mains adapter + primary adapter plug, Y-cable, USB cable, nitrification inhibitor, potassium hydroxide solution (KOH solution), overflow volumetric flasks (157 ml, 428 ml), Allen key, remote control

	unit & operating manual
Incubator Specification	
Temperature range	15 - 45 deg. Centigrade
Capacity	90 BOD bottles
Electrical specification	200-240 volt/50 hz

21. Portable Multiparameter pH /Conductivity/Salinity/TDS/Dissolved Oxygen/Ion Meter

pH	Range : -2.000 to 20.000, Resolution : 0.001, Relative Accuracy : ± 0.002
Conductivity	Range : 0.001 μ S to 3000 mS , Resolution : 0.001 μ S minimum; Relative Accuracy : 0.5 % reading ± 1 digit
Salinity	Range : 0.01 to 80.0 ppt NaCl equivalent
TDS	Range :1 to 200 ppt ;Resolution: 4 significant digits ;Accuracy: $\pm 0.5\%$ of reading
Dissolved Oxygen	Concentration – Polarographic : Range 0 to 90 mg/L , Resolution : 0.01, Accuracy : ± 0.2 Concentration – RDO : Range 0 to 50 mg/L, Resolution : 0.01, , Accuracy : ± 0.1 mg/L .
ISE	Range :0 to 19999, Resolution :Up to 3 significant digits, Relative Accuracy : ± 0.2 mV or ± 0.05 % of reading whichever is greater , Units : ppm, M, mg/L, %, ppb.
ORP	Range: ± 2000 mV
Temperature	Range : -5 to 105 °C.
Datalogging	Memory : Minimum 5000 with time and date stamp
Power	4 Nos. AA Batteries / Optional facility to operate with Universal AC Adapter, 100-240 VAC
Calibration	Calibration Points : Up to 5; Calibration Editing : Yes
Certification	CE & TUV with IP67
Output	RS232,USB
Warranty (For Meter)	3 Years
Warranty (For all Electrodes)	1 Year.

22. Horizontal Laminar Air Flow Cabinet

Description	<p>Cabinet should have High Efficiency Particulate Air (HEPA) of 0.3μm with an efficiency of 99.97% removal.</p> <p>Cabinet should have -pre-filter (10) of dry fiber (washable) with the frame on all the sides.</p> <p>Velocity at the output of HEPA is 90 + 20 FPM.</p> <p>The front and side panels should be of 4mm thick and made up of transparent glass (Polycarbonate/tuffen).</p> <p>Instrument should be equipped with Digital Manometer and Gas cock.</p> <p>Lighting in the chamber should include Fluorescent and U. V. Light.</p> <p>Laminar should have statically balanced motor blower assembly (Heavy Duty).</p> <p>Working area size (In Ft.) 3' X 1.5' X 1.5', Stainless steel (approximate).</p> <p>The total cabinet should be mounted on heavy duty solid adjustable legs (duly epoxy powder coated).</p>
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	Power requirements 230V, 1 Phase, 50 HZ, AC supply. Should Conform to International Standard /ISO/ or similar standards.
Warranty	At least three years

23. Vertical Laminar Air Flow Cabinet

Description	<p>Cabinet should have High Efficiency Particulate Air (HEPA) of 0.3µm with an efficiency of 99.97% removal.</p> <p>Cabinet should have -pre-filter (10) of dry fiber (washable) with the frame on all the sides.</p> <p>Velocity at the output of HEPA is 90 + 20 FPM.</p> <p>The front and side panels should be of 4mm thick and made up of transparent glass (Polycarbonate/tuffen).</p> <p>Instrument should be equipped with Digital Manometer and Gas cock.</p> <p>Lighting in the chamber should include Fluorescent and U. V. Light.</p> <p>Laminar should have statically balanced motor blower assembly (Heavy Duty).</p> <p>Working area size (In Ft.) 3' X 1.5' X 1.5', Stainless steel (approximate).</p> <p>The total cabinet should be mounted on heavy duty solid adjustable legs (duly epoxy powder coated).</p> <p>Power requirements 230V, 1 Phase, 50 HZ, AC supply. Should Conform to International Standard /ISO/ or similar standards.</p>
Warranty	At least three years

24. Bacteriological Incubator shaker

Description	<p>Inner chamber Stainless steel - Micro-computer control system with PID program - Over temperature protection - Auto-power break-off.</p> <p>Temperature Range Ambient + 5 to 65 °C - Temperature Resolution 0.1 - Temperature Uniformity + 0.5 - Working temperature 5 to 40°C - Heating Power 500 W</p> <p>Outer dimension should not exceed (WxDxH) 60 x 70 x 100 cm</p> <p>Should have capacity to accommodate flasks of 25 mL to 2 Flasks of 2000 mL</p> <p>Should have additional Adjustable shelves to incubate Petri dishes</p> <p>Speed: 40 to 300 RPM (at 60 Hz)</p> <p>Digital timer 1-9999 min</p> <p>Power Supply 220V-230V /50HZ</p>
Warranty	At least three years

25. Fraction Collector

Capacity:	Up to Eighty 13 x 100 mm glass, polypropylene, or polystyrene test tubes, With micro tube adaptor for 1.5 ml microtubes
Collection Basis:	1-999 drops in 1 drop increments, 0.05-9.99 min in 0.01 min increments, 10.0-99.9 min in 0.1 min increments
Operating temperature:	4-40°C (Ice bath, cold room compatible)

Safety:	Should meet IEC 61010 and CSA 22.2 certification
Warranty	Standard comprehensive warranty and support should be three year without any additional cost to the purchaser from the date of satisfactory commissioning of the instrument.

26. Horizontal Gel Electrophoresis system

Specification:	<p>Cell size (W x L x H): 9.2 x 25.5 x 5.6 cm</p> <p>Gel tray sizes (OD) (W x L): 7 x 7 cm, 7 x 10 cm</p> <p>Sample throughput: 8–30</p> <p>Base buffer volume: ~270 ml</p> <p>Buffer recirculation: No</p> <p>Bromophenol blue migration: ~4.5 cm/hr (at 75 V)</p>
Warranty	3 year

27. Vertical Gel Electrophoresis system

Specification:	<p>Dimensions (W x L x H): 14.4 x 22.3 x 19.5 cm</p> <p>Weight: 0.8 to 1.0 kg</p> <p>Should be able to run two gels simultaneously of gel size (W x L x thickness) 13.3 x 8.7 x 0.1 cm</p> <p>maximum buffer holding capacity should be 1 L</p> <p>Typical running conditions: 200 V constant</p> <p>Locator slots should be there on tank walls to easily and quickly slide cassettes into position</p> <p>Built-in wedge on the lid to open gel cassettes</p>
Warranty	3 year

28. Power Pack Apparatus

Specification:	<p>Output specifications: 500 V, 2.5 A, 500 W</p> <p>Output range should be programmable in following manner-</p> <p>10–500 V, fully adjustable in 1 V steps</p> <p>0.01–2.5 A, fully adjustable in 0.001 A steps</p> <p>1–500 W, fully adjustable in 1 W steps</p> <p>Type of output: Constant voltage, constant current, or constant power with automatic crossover</p> <p>Output terminals</p> <p>4 pair recessed banana jacks floating in parallel</p> <p>Timer control: 1 min–99 hr 59 min, fully adjustable</p> <p>Volt-hour control: 99,000 V-hr</p> <p>Should have Pause/resume function and can store 5 programmable methods each with up to 9 steps</p> <p>Should have Real-time clock and automatic recovery after power failure</p> <p>Should have LCD Display of at least 128 x 64 pixel,</p> <p>Should have Safety compliance at least EN61010 and TÜV EMC certification</p> <p>Should have Safety features such as No-load detection, sudden load change detection,</p>
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	<p>ground leak detection, overload/short circuit protection, overvoltage detection, input line protection, auto power-up after power failure</p> <p>Input power (nominal) 100–120/220–240 VAC, 50/60 Hz, auto switching</p> <p>Operating conditions 0–40°C, 0–95% humidity in the absence of condensation</p>
Warranty	3 year

29. Ultrasonic Probe Sonicator

Specification:	<p>System with microprocessor based Control</p> <p>Automatic tuning and frequency control</p> <p>Option to set the time and amplitude</p> <p>Should capable of simultaneous monitoring and controlling of both the temperature of the sample and the amount of energy that is being delivered</p> <p>Pulse mode with full function ON and OFF cycle. Continuous mode up to 30 minutes or preferably more.</p> <p>With sound abating enclosure and jack stand</p> <p>Ultrasonic Power: 500 W or better, Frequency (KHz): 20 or better</p> <p>Processing Capacity: up to 1000 ml</p> <p>Digital amplitude / Intensity control: Output amplitude can be set from 10 to 100%</p> <p>Display: Energy monitor, Watt meter, Amplitude, Time indicator, Pulser and Temperature.</p> <p>Probe: Titanium Probe, suitable for processing volume 5 ml to 500 ml</p> <p>Probes of different diameter (for different processing volumes) and multiple sample processing probes can be quoted optionally</p> <p>Set of standard tool kits to be provided with Ultrasonic Processor</p>
Warranty	3 years

30. Vacuum concentrator

Specification:	<p>Should be able to hold 40-50 reaction vessels of 1.5/2 ml capacity,</p> <p>Should be able to work in 3 operation modes (vacufuge, centrifuge, and desiccator)</p> <p>Should be compatible for three application modes (aqueous, alcohol or high vapor pressure) to correspond with sample solvent</p> <p>Rotor speed should be at least 1600 RPM,</p> <p>Complete system with an integrated solvent-resistant, maintenance and oil-free PTFE pump, and condensation trap</p> <p>thick-walled vacuum tubing, cutter, clamps and fittings</p>
Warranty	At 3 year

31. Ultrapure water purification system

Specification:	<p>System should produce ASTM TYPE I [Ultrapure grade] &Analytical grade water directly from Potable tap water feed (as per WHO, EC, EPA and ISO) -</p> <p>Conductivity: < 2000 µS/cm @ 25°C</p>
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	<p>pH: 4 to 10</p> <p>Temperature: 5 to 35 °C</p> <p>Free Chlorine: < 3 ppm</p> <p>System should include an OEM made pre-filter to take care feed water with TDS as high as 5000 ppm & SDI up to 50.</p> <p>Main System should have a pre-treatment cartridge with silver imprinted activated carbon & anti-scaling compound to protect the RO membrane against oxidation, scaling and plugging.</p> <p>High flux thin film composite polyamide RO membrane (MW>200 Dalton) with 95- 99% rejection</p> <p>Conductivity cells before and after the RO Membrane and should have high recovery loop with capillary tube and diaphragm valve to reduce the wastage of feed water to comply National Green Tribunal (NGT) notifications.</p> <p>Auto regenerated Electro deionization module with Carbon beads at cathode.</p> <p>EDI (Electro-deionisation) module should not require softening pre-treatment.</p> <p>To avoid maintenance errors and to improve traceability, the internal water purification cartridges should have a built-in RFID [Radio Frequency identification] tag. Large display with Auto diagnostic facility ensures real time Error Number/Code for complete traceability.</p> <p>30L or more reservoir with air sanitization kit to store product ensuring the water quality</p> <p>OEM should have min 50 Installation in the Same State with a dedicated engineer.</p> <p>OEM should have CE, ISO- 9001 & ISO-14001 certification</p> <p>Cartridge must attach to the water system without treaded fittings, screws, clamps, or locking tabs</p> <p>Point of delivery unit with the polishing filters at the point of use. Final Filters Options: Pharmaceutical grade, final filter with 0.22micron membrane filter in stack disc configuration,</p> <p>Specific filter to remove volatile organics.</p> <p>Specific filter for trace organic applications.</p> <p>Product water quality [ASTM Type I]</p> <p>Resistivity : 18.2 MΩ·cm @ 25° C</p> <p>TOC : <10 PPb</p> <p>Product water delivery : >1.5 L/min</p> <p>Bacteria : < 0.1cfu/ml</p> <p>Pyrogen Levels (EU/mL) :<0.001</p> <p>RNase Level (ng/mL) :< 0.01</p> <p>DNase Level (pg/μL) :< 4</p> <p>Product water quality [TYPE II] (Analytical Grade):</p> <p>Resistivity : > 5 MΩ·cm at 25 °C (typically 10-15 MΩ·cm @ 25° C)</p> <p>TOC : <30 PPb</p> <p>Product water delivery : 3 L/hr</p> <p>Mandatory Requirement:</p>
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	a. Minimum 10 appreciation letters from any government organization in India. b. Minimum 50 Installation in the Same State.
Warranty	At least three years

32. Vortex Meter

Description	Speed- 0 to 3000rpm, Orbital diameter- 6mm, Motor type- AC motor, Operation mode- Touch, stand-by &Continuous mode, Feet-Four suction cups, Time setting & Display- Preferable, Power- upto 60 W, Current-1A
Warranty	At least three years

33. Upright Research Microscope with imaging system

Specifications for Microscope	<ol style="list-style-type: none"> 1. Microscope stand should be rugged & transmitted & fluorescence/DIC with 6xH DIC encoded system- lower stand part with dovetail illumination interface - transmitted-light illumination with white LED 10W and also compatible for Halogen 100W - dovetail mount for attachable stage carriers - 24 mm focus lift, adjustable focus stop - auto mechanical safety shutter - 6-position filter wheel for dia. 36 mm filters - mount for 2-position filter slider 14x40, d=36 mm - CAN port for LED/Metal halide - integrated 24V DC 60W power unit, stabilized 100...240V AC/ 50...60Hz - country-specific power cable - ECO mode facility and light management control button –direct capture supports on cameras–USB 2.0 to PC - dust cover - filter holder in TL - upper stand part with dovetail interface for reflected illumination HAL 100 /HBO /HXP /Colibri – bright field/dark field reflected light illuminator LED 10w white - nosepiece 6xH DIC coded - dovetail mount for coded changeable reflector turrets and reflector slider - mount for luminous-field diaphragm slider - mount for aperture stop slider or FL attenuator - mount for adjusting aid for HBO 2. Long lasting (at least 50000 hrs.) 10-watt white light LED transmitted white light with option for 100-watt halogen lamp illumination for observation and photomicrography under bright field, phase contrast, DIC application. 3. Microscope should have ECO mode facility for illumination for energy saving & light intensity management control integrated into the stand, 4. Binocular phototube head with light distribution for 100/0:0/100 for fluorescence work & also better ergonomic 20°for long strain free work with 10x eyepieces with field of view should be 23-25 better for microscopic observation. 5. Microscope accommodate more than 6-position filters wheel for transmitted light filters for contrast enhancement & provision for 6-position reflector turret for fluorescence filters 6. 6- position encoded revolving nosepiece with high quality Infinity color contrast
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	<p>corrected optical system based objective 5x, 10x Ph1, 20x/0.45 Ph1, 40x/0.75 Ph2 (FWD=0.71mm), 100x/1.25 Ph3 Oil (FWD=0.20mm), 20ml and high performance, CG=0.17mm, box with 100 pc, should be DIC and fluorescence application.</p> <p>7. Universal Turret Condenser, achromatic-aplanatic 0.9 H D Ph DIC with front lens switchable on the left and right. 5- position modulator disk. 4 centerable positions with Ph1, Ph2, Ph3 and dark-field stop 0.75. 1 bright-field position with aperture stop. Alternative use of up to 4 DIC prisms / slit-diaphragms DIC possible instead of the Ph/D stops. For objectives 1.0-100x, WD=1.0mm</p>
Photography system/Camera and Imaging software	<p>8. High resolution color ultra HD camera with minimum 8.3 megapixel & pixel size should be minimum 1.85μm \times 1.85μm with high sensitivity & automatically adjustable exposure & gain. Standalone camera should be capable of capturing good quality image without need of any PC & frame rate should be without 30 fps, exposure range 0.06 ms up to 1s. System should have automatic exposure and gain regulation at Ultra HD resolution (4K), auto white balance, fast live image under low light conditions.</p> <p>Camera Imaging software for measurements & color adjustments, scaling, multi focusing/extended focus module, intensity measurement, annotation, add channel merging option for fluorescence etc.</p> <p>Image acquisition and processing software for extensive acquisition and analysis facilities etc.</p>
Specification of Desktop	<p>Complete with Desktop computer of 20" LED display resolution, 8 GB RAM, 512 SSD</p> <p>HD, o/s windows 10/11, 64 bit, supplied with antivirus, battery, viz. HP/DELL/Lenovo.</p>
Warranty	Three years warranty from the date of supply/installation from the manufacturer

34. Refrigerator

Specification:	<p>Make: SAMSUNG/LG/Hair</p> <p>Refrigerator Type: Double Door, Top Freezer Refrigerator</p> <p>Defrosting Type: Frost Free</p> <p>Compressor Type: Inverter Compressor</p> <p>Capacity: 250L-275 L</p> <p>Star Rating: 3 and above</p> <p>Built-in Stabilizer: Preferable</p> <p>Shelf Material: Toughened Glass</p>
Warranty	<p>Warranty: At least 1-year comprehensive warranty on product, 10 years on compressor</p> <p>Warranty Service Type: Door step technician Visit</p>

35. Double Distillation Plant

Specification:	<p>Output Capacity : 2.5 lit / hour</p> <p>Type: Vertical or Horizontal , Double distillation, demountable boiler series</p> <p>All quartz, with Built-in-heater,</p> <p>Distillation Apparatus power supply : 220-240 VAC, Single Phase</p> <p>Distillate water quality specifications</p> <p>It should be free from pyrogen and organic matter</p> <p>Conductivity<math>1 \times 10^{-6}</math> S/cm</p> <p>Total Solids< 0.1 mg/l</p>
Warranty	At least three years

36. Desktop PC and UPS

Specification:	<p>PC should be of standard make DELL / HP</p> <p>Memory and storage: 8GB RAM and 1 TB internal HDD</p> <p>Operating System: Microsoft Windows 10 Professional x64 with life time Licensed Microsoft® Office for windows</p> <p>PORTS: HDMI, DVI, Parallel port, VGA should be available.</p> <p>USB Port 3.0 - 4 Nos.</p> <p>USB Port 2.0 – 2 Nos.</p> <p>With DVD ROM</p> <p>Monitor: 20" or better LCD monitor of same make as PC</p> <p>KEYBOARD : Standard USB Keyboard of same make as PC</p> <p>MOUSE : USB Optical Mouse of same make as PC</p> <p>UPS: compatible UPS</p>
Onsite Warranty	3 years

37. Laser printer (black and white)

Specification:	<p>should be of standard make HP</p> <p>Printer Type - LaserJet ;</p> <p>Functionality - Single Function (Print Only);</p> <p>Printer Output - Black & White only</p> <p>Connectivity - USB</p> <p>with Black LaserJet Toner Cartridge;</p> <p>Page Yield - 1000 pages or better</p> <p>Print resolution - Up to 600 x 600 x 2 DPI (1200 DPI effective output)</p>
Warranty	1 year

1. Setting a Culture Room (Plant Tissue Culture)

Item	Specification	Nos
Tissue Culture Racks	<p>Height: 5'8" , Width : 4'2" , Shelves: 5; Lighting facility in 4 shelves, Shelves to shelf distance:16" , Shelf: 50" x 18" 3 mm thick hylem sheet in each shelf, 4 x 40 watts fluorescence light (Note: Fluorescence light for carbon fixation and night break technique by providing natural spectrum of light intensity covering 380 nm to 780 nm wave length as per DIN and IEC standards). Tubes in all shelves with individual off/on switch. Light intensity 3 K lux 5 cm above the shelf surface and 10 K Lux at source. Total of 16 electronic solid state ballast in each rack to drive the fluorescent light. Frame: mild steel 25 x 25 cm CRC Sq pipe with anticorrosive, humidity resistant powder coated. Square M.S. PIPE should confirm to IS 1239-1979 specifications. ECG should meet with basic requirements of compatibility with lamp, EMC, reliable operation and long life, Semen's gray structure shade. Mobile rack with 4 nos. of caster wheels with locking facility. Low self-warming < 30-degree C. Input: 240 volt, 50 Hz. Timer for light regulation required.</p>	07

2. List of Miscellaneous Lab Consumables

Sl. No.	Item	Make/Cat No. (if any)	Specifications if any	Actual Price	Quoted Price after Discount	Quoted Price including tax
1.	Absorbent Cotton					
2.	Aluminium Foil					
3.	Aluminium foil: Purity > 99 %, thickness 15-20mm (for device electrode preparation)	Any	~ 5 kg			

4.	Antibiotic disc					
5.	Autoclavable Bags		11"(h) x 7"(b), 1.0 kg			
6.	Brush					
7.	Butter paper	Any	1-3 roll			
8.	Carbon Paper: Purity > 99.9%, thickness 0.1mm	Any	100 g			
9.	Centrifuge tube	Any	50 Pcs			
10.	Coin cell spacer: Size 15.8*1mm, Material 304ss	Any	Number :100			
11.	Copper Foil: Purity > 99.9%, thickness 9 mm, polished one side and matt finish one side	Any	~ 3 kg			
12.	Cotton (Absorbant)		500gm			
13.	Cotton (Non-absorbant)		500gm			
14.	CR2032 coin cell case and cap: Material 304ss	Any	Number:100 each			
15.	Crucible tongs					
16.	Disposable sterile		250ml			
17.	Filter paper					
18.	Glassy Carbon Working electrode (3mm)	Any		2		
19.	Gloves		Medium			
20.	HiIndicator pH Paper		Range : pH 1 to 14			
21.	Homogenizer with serrated		30 ml			
22.	Inoculation Loop					
23.	Litmus paper					

24.	Media Bottles - 250ml					
25.	Metalloop -SS-2*		2.2 mm dia.			
26.	Mortar pestle		170mm			
27.	Nickel foam: Purity > 99.9%(anti-corrosive), thickness ~1.6mm, porosity ³ 95	Any	100 g			
28.	Nickel foil: Purity > 99.9% (anti-corrosive), thickness 0.03mm,	Any	~ 200g			
29.	Nitrile gloves:	Any	Number :100			
30.	Parafilm		2" x 250' on 1" dia. core.			
31.	Triangular S. S. Spreader		3mm da.			
32.	Sealing gasket: Standard for CR2032	Any	Number :100			
33.	SelfAdhesive Tape		19mm×50m			
34.	Spatula		200mm			
35.	Sterile, Disposable Forceps		12.5 cm,			
36.	Thermometer		-20 to +150°C			
37.	Tissue paper					
38.	Titanium foil: Purity > 99%, thickness 0.25mm	Any	100 g			
39.	Wave Spring (Belleville Washers): Size 14.5*1.42mm, Material 304ss	Any	Number :100			
40.	Whatmann filter paper No.1					