

**INDIAN INSTITUTE OF PLANTATION MANAGEMENT (IIPM) BENGALURU**  
(An Autonomous Organization of the Ministry of Commerce and Industry-GoI)  
**JNANA BHARATHI CAMPUS, POST. MALLATHALLI, BENGALURU 560 056**

No. IIPMB/DBT/NER/SQ-2021/

Date: 15<sup>th</sup> April 2021

**Notice Inviting Quotations**

Sealed Quotations are invited from reputed Manufacturers/Authorized Dealers/Suppliers for Supply, Installation, Testing & Commissioning, at Indian Institute of Plantation Management, Jnana Bharathi Campus, Post. Mallathalli, Bengaluru-560 056 as per particulars mentioned at **Annexure-I**. The quotations will be received by the Institute on or before 30<sup>th</sup> April 2021 up to 2:00PM and will be opened on the same date at 3:30PM.

**Warranty:**

1. Installation, F.O.R Destination should be at Indian Institute of Plantation Management Bengaluru (IIPMB), Karnataka - 560056
2. Minimum one year against all manufacturing defects from the date of installation.
3. Maintain two sealed quotations (Technical and Financial).
4. Warranty and maintenance service should be provided.
5. AMC for 2 years after warranty should be included.

**Delivery:**

1. Within 6 weeks from the purchase order received date.
2. GST as per GOI norms.
3. Inclusive of all prices up to IIPMB campus.

**General terms & conditions:**

1. No separate tender paper will be issued from the office; one should only download the specifications from the website.
2. The quotation should be addressed to "The Director, Indian Institute of Plantation Management, Jnana Bharathi Campus, Post. Mallathahalli, Bengaluru – 560 056" super scribing the quotation Notice Number on the envelope.
3. The suppliers must have proper PAN/GST No. and the same shall to be enclosed with quotations.
4. The rates should be preferably quoted in Indian Rupee and for IIPMB Campus, Bengaluru, Karnataka – 560056 basis. Charges for clearing and transportation should be incurred by the supplier.
5. Quotations should be accompanied by i) An EMD (in the form of Demand Draft) of Rs. 10,000/- (Rupees Ten Thousand) only drawn/pledged in favour of Indian Institute of Plantation Management, payable at Bangalore.
6. The final price should be inclusive of taxes and applicable tax % should be clearly indicated.
7. Authorized distributor/supplier certificate should be provided.
8. Quoted rates should be valid at least for a period of 01 year.
9. The rates should be quoted along with supporting documents of specifications and technical features and list of users.

10. The system must be installed at the laboratory, and after installation a basic training must also be provided by the supplier or their Indian counterpart without any additional costs.
11. All the quotations must be accompanied with supporting documents and / or literature.
12. Demonstration may be sought from the vendors for authentication of quoted specification.
13. Details of availability of after sales support will have to be furnished. After sales support directly from manufacturer and from Bengaluru will be preferred.
14. The Institute is exempted from paying Custom and Excise duty.
15. Proprietary items should be quoted with sole Manufacturer/Distributorship certificate.
16. Warranty/Guarantee period should be specifically mentioned in the quotation.
17. Payment will be maximum within 30 days from the date of successful delivery, installation and commissioning of goods at IIPMB Campus, generally through NEFT/RTGS/A/C payee cheque. In case payment is to be made by DD, the draft commission will be deducted from the bill amount. Part payment for part delivery will not be allowed.
18. No Advance payment will be made.
19. In case of equipment worth above Rs. 20 lakhs the successful bidder is to furnish an unconditional Performance Bank Guarantee (PBG) valid till 60 days after the warranty period from a scheduled Bank for 10% of the Purchase Order value within 20 days of placement of order Or else 10% of the total bill amount will be deducted as Security deposit failing which the contract shall be deemed as terminated. The security deposits do not bear any interest and shall be released after expiry of warranty period of the items.
20. Items of Foreign origin should have Insurance up to installation on site.
21. The University reserves the right to accept or reject any or all the quotations without assigning any reason.
22. Quoted price should be inclusive of essential accessories and should be IIPMB Campus.
23. Applications for release of EMD should be submitted to the Director, IIPMB.
24. Quotation should be submitted on or before at 02.00 PM on 30<sup>th</sup> April 2021 and open at 03.00 PM on same day, addressed to The Director, Indian Institute of Planation Management, Jnana Bharathi Campus, Post. Mallathalli, Bangalore, Karnataka -560 056
25. The Quotation Notice No. and date should be clearly superscripted in the envelope/packet containing the quotation.

sd/-  
DIRECTOR

Copy to:

1. DBT Project File
2. IIPMB Website
3. Office File
4. Project PI - Dr. Vivek Kambhampati, Assistant Professor

**ANNEXURE - I**

**TECHNICAL SPECIFICATIONS**

Sl.No	Name of equipment/machinery	Technical Specification	Quantity
1.	Vacuum freeze drier	<p>Microprocessor based with Touch panel. Condenser temp (°C) : -50 to 60 Vacuum Degree (Pa) : &lt;10 Condenser volume (L) : 22 to 25 Ice condenser capacity (Kg/24h): 5 to 6 Qty. of shelf : 4 to 5 Material loading capacity/shelf (ml): 450 to 500 Material loading capacity (ml) : 1300 to 1350 Freeze drying area (m2) : 0.125 to 0.135 Freeze drying time (h) : 24 Manifold : 6 to 8 pieces With USB Interface option Drying Chamber(standard) : Transparent acrylic Vacuum Pump(standard) : Speed: 2L/S Power supply (V/Hz) : 220V/50Hz,60Hz</p> <p>Accessories: Branded refrigerator (210 Ltrs), Blast freezer with Temperature range: + 70 deg. C to - 35 deg. C Inner Dimension in mm: W 575 X D 385 X H 360 No of Shelves: 3 Digital temp Controller with temperature probes, Coil temp, Cabinet temperature and product temperature Type of Insulation: Puf Compressor make: Branded like (Emerson / Danfoss/Tecumseh) and handheld colorimeter which can measure L,a,b values. Should be supplied with Vacuum Pump, port Manifold and top-press drying cabinet, Drying bottles and valves. Display the product samples temperature, cold trap temperature and vacuum etc., in digital and curve.</p> <p>Applying firm should have turnover of more than Rs. 1 Cr/year.</p>	1
2.	UV spectrometer (Double beam)	<p>Double beam UV-VIS Spectrophotometer with Wi-Fi connectivity, built in software, printer and branded laptop with i5 processor.</p> <ul style="list-style-type: none"><li>• 1 Pair Glass Cuvette</li><li>• 1 Pair Quartz Cuvette</li><li>• USB Data Cable</li><li>• Ethernet Data Cable</li><li>• Software CD</li><li>• Dust Cover</li><li>• User Manual</li><li>• Extra Fuse</li></ul>	1

		<p>Blazed concave holographic grating with 1200 lines per mm in Czerny-Turner configuration paired with dual Silicon photo detector.  Scan wavelength from 0.1nm to 20 nm/min for accurate/faster analysis.  Large sample compartment to accommodate various path length cuvettes.  Pre-aligned optics.  Analysis applications supports the following modes:</p> <ul style="list-style-type: none"> <li>• Photometric Absorbance</li> <li>• Quantization for concentration</li> <li>• Multi-wavelength for Absorbance</li> <li>• Scan Spectrum for Lambda max.</li> <li>• Time scan Kinetics</li> <li>• DNA/Protein analysis</li> </ul> <p>Perform analysis on Android based mobile/tablet using Bluetooth.  Wavelength range: 190.0 nm up to 1,100.0 nm  Spectral bandwidth (Fixed - 1 nm)  Wavelength setting: 0.1nm increments  Wavelength slew rate: About 6,000 nm/min  Wavelength scanning speed: 3,600 to 2 nm/min  Lamp interchange wavelength: Automatic changeover of wavelength with configurable wavelength.  Photometric system: Double beam Optics.  Photometric readability range: Absorbance: -4.00 to 4.00 Abs Transmittance: 0% to 400%.  Photometric accuracy: ±0.002 Abs at 0.5 Abs  ±0.004 Abs at 1.0 Abs, ±0.006 Abs at 2.0 Abs.  Baseline stability: Less than 0.0002 Abs/Hr @ 700 nm (one hour after light source ON).  Noise level: Less than 0.00005 Abs (700 nm)  Light source: Plug- in pre-aligned Halogen lamp and UV Deuterium lamp.  Detector: Dual Silicon photodiode sourced from Hamamatsu Photonics.  Software: Compatible to PC  Validation: Automatic measurement and pass/ fail evaluation and printing of results.</p> <p>Applying firm should have turnover of more than Rs. 1 Cr/year.</p>	
3.	Laminar air flow chamber	<p>Dimension: 4 x 2 x 2 ft (W x D x H)  MOC: Outer GI Powder coating body with working table SS 304  Cleanliness level: Class ISO 5 as per ISO 14044 – 1 (Class 100 as per Fed. Std. 209E)  Airflow: Horizontal  Pre-filter: TRI-DEK efficiency 95% for particles down to 5 Micron.</p>	1

		<p>Filter: HEPA Box Type, efficiency 99.97% for particles down to 0.3 Micron.</p> <p>Motor / Blower Dynamically balanced blower / motor assembly with spring suspension With feature touch display.</p> <p>Accessories:</p> <ul style="list-style-type: none"> <li>i) Inclined Tube Manometer gauge (0-25 min)</li> <li>ii) Tube light with diffuser</li> <li>iii) 15 Amps socket</li> <li>iv) Electrical controls for blower and light fixtures</li> <li>v) Lifting type from Polycarbonate sheet cover With counter weight Castor wheels and levelling jack.</li> <li>vi) Branded precision weighing balance with 0.001 g readability, Operating Temperature: 10-40 °C, Response time: 3-4 sec. Dimensions-360x260x355 mm, Weight 3.5 kg, Design Overload Protection Design, Repeatability-0.001 g, Capacity 300 g, Voltage 220 V AC, Frequency-50-60 Hz</li> <li>vii) Digital pH meter Microprocessor based pH meter range 0 to 14 pH with 3 point calibration, LCD display shows mode indicators and help messages. Calibration with auto-buffer recognition. Selectable pH buffer standards and temperature units. Supplied with pH electrode and temperature probe and buffers</li> <li>viii) Digital refractometer Measurement Range: Brix 0.0 to 53.0% Resolution: Brix 0.1% Accuracy: Brix ±0.2% Measurement Temperature: 50°F - 212°F (10°C - 100°C) (Automatic Temperature Compensation) (High temperature samples can be measured during heating or cooking. The measured Brix value will stabilize after taking a few repeated measurements). Ambient temperature: 50°F - 104°F (10 - 40°C) Power supply: 2 x AAA Batteries International protection class: IP65 Dimension/Weight: 2"x1.2"x4.25"/3.52oz. (5.5x3.1x10.9cm/100g.)</li> <li>vii) Centrifuge (6x50ml) High Speed Research Centrifuge with Programmable Advanced Microcontroller with soft touch key pad for setting speed 500 RPM to the maximum of the rotor, operation time to 99 mins, rotor selection, acceleration time range 30 to 300 seconds. LCD Display of set and working parameters, Display of RCF Value, Safety Lid switch Solenoid lock, Lid with gas spring for easy operation. Imbalance detection and safety cut off mechanism .Last used program memory. Sturdy and safe metal fabricated body. Max. Capacity 400ml.</li> </ul>	
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4.	Autoclave	<p>Type: Vertical  Provided with Pressure Gauge, Release Valve, Safety Valve, Temperature Indicator cum controller and timer, Pressure Switch, loading basket  Operating Pressure:-20 psi (Adjustable)  Temperature range: 5°C above ambient to 150°C.  Control unit: Micro process or based PID temperature controller with air out, water.  Temperature Resolution: 0.1°C controller and timer control connected with PT-100 sensor  Temperature Accuracy: ±1°C.  Power Supply 230 Volts Single Phase 50Hz, AC supply.  Power Supply 440 Volts Three Phase 50Hz, AC supply.</p>	1
5.	Incubator cum shaker	<p>Cooling incubator  Chamber Design: Double walled  Inner Chamber: Made of stainless steel 304 Grade  Outer Chamber: Made of mild steel and finished with powder coated.  Insulation: Insulation between inner and outer chamber is filled with high grade glass wool with a gap of 65 mm thickness, to withstand maximum Temperature of 60°C  Wheels: Unit should be mounted on a sturdy steel frame with cast  Iron wheels for easy movements to higher capacity 6, 10, 12 CFT only.  Conditioning system: Triple walled with air circulation fans.  Air Circulation Fan Motor:  The chamber should be equipped with a vertical recirculating conditioning stream of air sucking from the top of the inner chamber and allows passing through the back side of the inner chamber duct and carrying heating/cooling/humidity which enters from the bottom of the chamber this process.  Cooling: An energy efficient cooling unit should be installed. Sealed compressors. Should be noise free, vibration free and air cooled Compressors start in sequence to protect the unit from overloading. CFC free.  Inner and outer Glass Doors with rubber gasket.  Temperature Range 5°C to 60°C  Temperature Controller Microprocessor based PID temperature controller with dual display (Process value and set value), low and high limit setting.</p>	1

		<p>Temperature Resolution 0.1° C.  Temperature Accuracy ±2°C.  Inner viewing light and Chamber Illumination: Cyclic  Timer with florescent tube/LED light.  Additional:  Digital Orbital Shaker</p> <ul style="list-style-type: none"> <li>• MS Powder coated platform</li> <li>• Size ; 15”x 15”</li> <li>• Mounted on studs</li> <li>• Digital Speed controller</li> <li>• No of conical flasks 12 x250ml</li> <li>• 6. Adjustable Clamps provided for 100ml,500ml and 1000ml</li> </ul>	
6.	Kjeldahl apparatus	<p>Automatic Digestion System</p> <ul style="list-style-type: none"> <li>• Six Place 250 ml capacity PC Compatible Block Digestion System with all essential accessories</li> <li>• TFT Graphic Touch Screen Display with unique wireless mouse to operate Touch screen directly without connecting to PC.</li> <li>• Integrated auto sequencing time/temperature domain with interface for PC Compatibility.</li> <li>• Temperature Controller should be isolated separately in a control tower to protect electronics from digestion heat zone and acid reaction zone</li> <li>• Temperature Control Range: Room temperature to 450 ° C, Temperature Accuracy : ± 0.5 ° C</li> <li>• All essential accessories like Digestion Tubes, SS Inert Rack, Exhaust Manifold.</li> <li>• Suction Assembly wall mounted on rear side of unit for safe removal of acid fumes &amp; easy access to drain area.</li> </ul> <p>Automatic Scrubber System</p> <ul style="list-style-type: none"> <li>• Four stage acid neutralization scrubber.</li> <li>• First stage: Condensation with water condenser, Second Stage: Neutralization in Alkali, Third Stage: Neutralization in Water, Fourth Stage: Dissolution of air free of acid fumes in raw tank water.</li> <li>• Recirculation Pump: Non corrosive centrifugal inbuilt magnetic suction pump for water recirculation in 8 litres tank avoids requirement of running water during digestion.</li> <li>• Non Corrosive submergible pump for condenser water recirculation.</li> <li>• Fibre Reinforced plastic Tank of capacity 8 litres</li> <li>• Automatic Water level indicator to view water level in FRP tank externally</li> <li>• Containers for Alkali and Water, Electrical Requirement: 230v/50Hz Mains.</li> </ul>	1

		<p>Automatic Touch Screen Distillation System,</p> <ul style="list-style-type: none"> <li>• Auto sequencing Programmable Microprocessor based Distillation with inbuilt software, Colour Touch Screen high resolution TFT LCD Display,</li> <li>• stainless steel non corrosive steam generator, expansion vessel and water condenser with safety sensors</li> <li>• Auto Intelligent run of programmable steps includes Addition of Boric Acid, Dilution, KMNO<sub>4</sub> Addition for Available Nitrogen, Alkali Addition, Steam Processing, Residue Removal, Process over indication with alarm with inbuilt delay time features, Automatic Titration Connectivity feature for online titration, Aspiration of Receiver Residue, Automatic calculation of results,</li> <li>• The suction module of waste residue should be door mounted for easy serviceability.</li> <li>• Provision for direct calculation of results in LCD touch screen with user programmable formulae for direct reading of protein/Nitrogen/Available Nitrogen, etc. with inbuilt software,</li> <li>• Auto calculation of results on feeding of titre value with built in formula includes Pre-programme data of all parameters including program numbers, Total Nitrogen by direct titration method, Total Nitrogen by back titration method, Protein percentage by direct titration method, Protein percentage by back titration method, Ammonical Nitrogen, further formulas customizable , All above parameters can be viewed directly in touch screen</li> <li>• Flow diagram display to show live auto sequencing steps at each stage of process, Data Logging, password protection for user safety</li> <li>• Data table export to excel, Upgradeable Ethernet connectivity,</li> <li>• Facility to program and control distillate volume for determination of available nitrogen</li> <li>• Auto sensing of “NO WATER” condition in condenser &amp; steam generator with alarm &amp; signal to alert user.</li> <li>• Auto deactivation of operation after warning on no water condition in case of user non availability</li> <li>• Enables Automatic monitoring and measuring of high temperature in distillate with alarm &amp; warning signal.</li> <li>• Continuously measured temperature is displayed digitally.</li> <li>• Auto door open warning indication, Auto tube insert error indication. Auto deactivation of System on error diagnosis, Adjustable steam power, Auto</li> </ul>	
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		<p>online water saving mechanism, Auto reagent Level Sensor with Alarm for Reagents,</p> <ul style="list-style-type: none"> <li>• Reagent tanks to be wall mounted for easy handling and users visibility.</li> <li>• Should have facility to record and store statistical data of Total running cycle of pumps, Total running time of pumps, Total number of distillation completed, with LCD display of all parameters.</li> <li>• Standard Data processing system for 2 way communication to equipment for PC Compatibility with Printer.</li> <li>• The control panel unit along with inbuilt temperature controller, timer, mother board and SMPS should be isolated in separate compartment to protect electronics from wet chemistry &amp; acid/alkali process area for longevity and safety of all electronic components.</li> <li>• Nitrogen level : 0.1 to 200 mg Nitrogen (Min / Max Detection Limit)</li> <li>• Nitrogen Reproducibility: <math>\pm 0.1\%</math> RSD , Nitrogen Recovery : &gt; 99.5%</li> <li>• Electrical Requirement: 220-230V single phase 50Hz A.C</li> </ul> <p>Refrigerated Water Cooling Circulating system</p> <ul style="list-style-type: none"> <li>• SS Tank, Submergible pump for recirculation, Over load protection, MS powder coating housing</li> <li>• The original Manufacturers of laboratory equipment's should have at least Rs. 2 crore per annum turnover in the past 3 years towards financial capability.</li> <li>• The company should have proof of at least 25 installations of long term users using equipment's for a period of 10 -15 years showing longevity of operations</li> </ul> <p>The company should be reputed with at least 200-300 installations with proof of user list and reference for Protein Estimation system Accessories with Branded Colour Printer.</p> <p>The original Manufacturers of laboratory equipment's should have at least Rs. 2 crore per annum turnover in the past 3 years towards financial capability.</p> <ul style="list-style-type: none"> <li>• The company should have proof of at least 25 installations of long term users using equipment's for a period of 10 -15 years showing longevity of operations</li> <li>• The company should be reputed with at least 200-300 installations with proof of user list and reference for Fibre Estimation system</li> </ul>	
7.	Crude fibre apparatus	<p>Automatic PC Compatible Fibre Estimation System</p> <ul style="list-style-type: none"> <li>• Automatic Four Place PC Compatible Auto sequencing Fibre Estimation System for determination of Crude fibre, NDF, ADF, ADL,</li> </ul>	1

		<p>Cellulose, Hemicelluloses, Lignin with all essential accessories and furnace chamber</p> <ul style="list-style-type: none"> <li>• Ceramic Infrared Heater.</li> <li>• Sample Size : 0.1 to 4 gms</li> <li>• TFT Graphic Touch Screen Display with unique wireless mouse to operate Touch screen directly without connecting to PC.</li> <li>• Integrated auto sequencing time/temperature domain with interface for PC Compatibility.</li> <li>• Temperature Range: Ambient to 500° C (Continuously variable), Temperature Accuracy / Precision : + 0.5° C</li> <li>• Temperature Controller should be isolated separately in a control tower to protect electronics from heat zone and acid reaction zone</li> <li>• Measuring Range: 0.1 to 100%</li> <li>• Repeatability : ±1 % relative at 5% - 30% fiber level</li> <li>• Reagent Preheating time: 15 - 20 min</li> <li>• Preheating hot plate for acid / alkali made of Casted aluminum alloy heater with Digital PID Control</li> <li>• Electrical Requirement: 220v/50Hz. AC Mains.</li> <li>• The original Manufacturers of laboratory equipment should have at least Rs. 2 crore per annum turnover in the past 3 years towards financial capability.</li> <li>• The company should have proof of at least 25 installations of long term users using equipment for a period of 10 -15 years showing longevity of operations</li> <li>• The company should be reputed with atleast 200-300 installations with proof of user list and reference for Fibre Estimation system</li> </ul>	
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