

**Centre for Renewable Energy and Materials
University of Kerala,
Kariavattom, Thiruvananthapuram-695581**

(Through Open Tender)

Last date of submission -05/02/2024

Ref: Tender. No/CREM/Equipment/PUR/2024

Sealed Quotations are invited from reputed manufacturers/authorized dealers for the supply and installation of the following item mentioned below:

Item No: 1

Equipment Name: Benchtop pH meter (Quantity: 2 Nos.)

Technical Specifications

- pH Range: 0.00 to 14.00 or better
- Resolution: 0.1/0.01 pH
- Accuracy: ± 0.01 pH and ± 0.2 mV
- Cal. Points: 5 pts minimum
- Resolution: 0.1 or better
- Off set/ slope: should be displayed
- Memory: 100 data set minimum
- Buffer pH 4.01, 7.00, 10.01 or equivalent (min. 100 mL each should be provided along with instrument)
- Provide min. 100 mL Electrode filling solution
- Double-junction glass electrode
- ATC probe
- Two extra pH electrodes
- Warranty: minimum 1 years from date of installation

Item No: 2

Equipment Name: Magnetic stirrers with temperature sensing (Quantity: 4 Nos.)

Technical Specifications

- Heating plate Material: Ceramic
- Dimension: minimum 11.6 x 16.7 x 4.5 in. / 29.6 x 42.5 x 11.5 cm or above

- Platform: minimum 26 x 26 cm
- Temperature range: Ambient ± 5 to 400 °C
- Stirring speed range: minimum 1500 rpm in step of 10 rpm or better
- Stir capacity: 15 litre or more
- External temperature probe with display
- Warranty: minimum 1years from date of installation

Item No: 3

Equipment Name: Analytical Electronic balance (Quantity: 2 Nos.)

Technical Specifications

- Readability: 0.1 mg
- Repeatability (std deviation): + 0.1 mg
- Linearity: +0.2 mg
- Max. weighing capacity: Upto 220 g or better
- Tare Range (Subtractive): Full of capacity
- Calibration: Built in calibration/ Fully Automatic
- Weighing plate: Non corrosive diameter with glass windshield
- Glass chamber: accessed from top and/ both sides through sliding doors
- Operating temperature: +10°C to + 40°C or better
- Warranty: minimum 2 year from date of installation

Item No: 4

Equipment Name: Zero resistant ammeter (Quantity: 1 No.)

Technical Specifications

- Multi range
- 1 nA~100mA
- Digital display unit
- Warranty: minimum 1 year from date of installation

Item No: 5

Equipment Name: Hydrothermal autoclave (Teflon) with accessories (Quantity: 3 Nos.)

Technical Specifications

- Inner Teflon Liner Capacity 100mL- 1 no
- Teflon Lined SS Hydrothermal Reactor 100mL- 1 no
- Teflon Lined SS Hydrothermal Reactor 150mL -1 no
- Material: Shell made of high-quality stainless steel
- Inner PTFE (Teflon Liner) Chamber
- Warranty: minimum 1 year from date of installation

Item No: 6

Equipment Name: Agate Mortar with Pestle (Quantity: 2 Nos.)

Technical Specifications

- Capacity: 200-225 mL approximately
- Top OD: 135-140 mm approximately
- Pestle length: 125-130 mm approximately
- Color: Gray
- Diameter: minimum 5 inch

Item No: 7

Equipment Name: Microfiltration setup with accessories (Quantity: 1 No.)

Technical Specifications

- Filtration unit: Filter Holder Assembly with funnel, fritted-base & cap
- Clamp: 47 mm
- Ground joint flask: 1L
- Funnel capacity range: 200-500 mL
- Oil free Vacuum Pump: Portable with gauge
- Silicon Tubing
- Maximum pressure: 35-40 psi
- PVDF membrane filter, 0.45 micro meter pore size
- Warranty: minimum 1 year from date of installation

Item No: 8

Equipment Name: Cooling centrifuge (Quantity: 1 No.)

Technical Specifications

- Variable speed from 500 or below to 15000 or more RPM
- Angle rotor head :15 and 50 mL or better
- Brushless DC motor
- Single equipment for different work protocols with appropriate choice of rotors
- Drainage line to remove accumulated condensed water
- Detachable rotor head
- Warranty: minimum 2 year from date of installation

Item No: 9

Equipment Name: Fuel Cells with accessories (Quantity: 1 No.)

Technical Specifications

- 5 cm² PEM Fuel Cell Hardware-1
- MEA-1 No
- Acrylic Rotameter type flow meter for hydrogen and oxygen-1 No
- Load box manual type-1 No.
- Digital Volt meter-1 (Voltage 20V)
- Digital ammeter-1 (Current: 20A)
- Front display for the voltage and current
- Warranty: minimum 2 year from date of installation

Item No: 10

Equipment Name: Microbial fuel cells with accessories (Quantity: 1 No.)

Technical Specifications

- 100 cm² MFC 2 Cell Type-2 No
- Channel Data Logger-1
- Load Box Manual -2 Nos
- Titanium Mesh Electrode 300 x 300 mm-3 Nos
- Carbon Felt Electrode 400 X 400 mm -2
- Peristaltic pump 0.02-199.9 mL-2 Nos
- Carbon Fiber brush electrode-3 Nos
- Warranty: minimum 2 year from date of installation

Item No: 11

Equipment Name: Solar radiation measurement equipment's (Pyranometer) (Quantity: 1 No.)

Technical Specifications

- Response time (95 %) < 30 s
- Calibration uncertainty < 1.8 % (k = 2)
- Calibration traceability to WRR
- Spectral range 285 to 3000 x 10⁻⁹ m
- Sensitivity (nominal) 15 x 10⁻⁶ V/(W/m²)
- Rated operating temperature range -40 to +80 °C
- Temperature response < ± 3 %
- Warranty: minimum 2 year from date of installation
- AMC: yes

Item No: 12

Equipment Name: Solar panels and related accessories (Quantity: 1 No.)

Technical Specifications

- Solar Panel, Platform and electric motor with a demonstration vehicle
- 24 V/ 250 watt or more solar photovoltaic Module.
- 100 Ah EV tubular batteries -4 nos.
- 48V/ 10 Amp Controller
- 24Vto 12V DC to DC converter
- 240V/ 48V charger 15Amp
- Harness
- Motor 1200 Watt/48v
- Throttle
- Indication lights. 4 nos
- Head light. 15 Watt
- Iron frame for body
- Accelerator
- Copper cables
- Housing to fit tyres
- Tyre Rim. 3 or 4 no.s
- Differential
- Traction converter
- Warranty: minimum 2 year from date of installation

Item No: 13

Equipment Name: Hall Effect Apparatus (Quantity: 2 Nos.)

Technical Specifications

- Hall Probe (Ge Crystal - n type)
- Hall Probe (Ge Crystal - p type)
- Hall Probe Multipurpose Stand
- Hall Effect Set-Up
- Electromagnet
- Constant Current Power Supply
- Digital Gaussmeter
- Warranty: minimum 1 year from date of installation

Item No: 14

Equipment Name: PEM electrolyser/ Hydrogen generator (Quantity: 1 No.)

Technical Specifications

- Bag for hydrogen storage Nonreturnable valve
- Moisture trap
- Panel Safety switch – Emergency stop Specifications.
- H₂ production cell using water
- CORE component: PEM type
- Cell current range: 10A or more
- Electrode Area: 2.2 X 2.2 cm or more electrode active area
- water requirement: pure water / De-Ionised water
- H₂ Purity: 99.99%
- Non corrosive/push fitting included
- Safety arrangement
- Electrolyzer Membrane Electrode Assemblies type electrolyzer
- Warranty: minimum 2 year from date of installation
- AMC: yes

Terms and Conditions

1. Incomplete & conditional quotations and quotations received after the due date will be summarily rejected without assigning any reasons thereof.
2. The Bidder shall quote the price in clear terms and the specification of items. The rates quoted must be inclusive of all taxes, cost of supply at the site, warranty, and installation charges etc.
3. Pre-installation requirements should be correctly mentioned and a user list should be provided.
4. **Documents to be Submitted:** Data sheet of the items and Compliance statement, Details of warranty, Address and details of the firm, financial bid, and any other relevant information. All the documents mentioned above shall be submitted without fail. A document should be produced stating that the firm is the original manufacturer/authorized dealers for each item.
5. **Validity:** The Bid will be valid for 120 days from its date of opening. Further extension can be done by mutual consent.
6. **Delivery:** The item should be delivered at the Centre for Renewable Energy and Materials, (Room No: 45; CLIF Buildings) University of Kerala, Kariavattom Campus.
7. **Installation and commissioning:** The items shall be installed and commissioned at the Centre for Renewable Energy and Materials, (Room No: 45; CLIF Buildings), University of Kerala, Kariavattom Campus. All incidental expenses should be borne by the supplier.
8. **Payment:** The University will release the payment only after inspecting the item and satisfy that the supply is as per the requirements. The payment will be made after successful completion of the supply and producing invoice in duplicate.
9. **Warranty/Guarantee:** The supplier shall guarantee to repair/replace the items or its part –if found defective within the warranty period. The entire expenditure for repair/replace of the item in this regard shall be borne by the supplier.
10. **Service facility:** Supplier should mention their details of service setup and manpower who are responsible for after sales service.
11. In case of the dispute arises, the decision of University authority shall be final and binding on bidders.

12. The undersigned reserves the right to reject or accept any or all the tenders received fully or partly without assigning any reason thereof.
13. General rules relating to the purchase of items will also applicable to this tender.
14. Those who are interested should send their bid in separate sealed covers superscribed with “**Tender Ref No: (.....), Item No: (.....), Instrument name: (.....)**” addressed to Hon. Director, Centre for Renewable Energy and Materials, (Room No: 45; CLIF Buildings), University of Kerala, Kariavattom Campus, 695581, Thiruvananthapuram, Kerala. Email: crem@keralauniversity.ac.in
15. Those firms who are interested to quote more than one item should sent individual quotations for each item separately.
16. The bids shall be opened at the Centre for Renewable Energy and Materials, (Room No: 45; CLIF Buildings), University of Kerala, Kariavattom Campus on the Date mentioned below. If the date of opening tender happens to be on a holiday or due to any other valid reason, the tender opening process will be done on the next working day or the day fixed by the undersigned.
17. Intending tenders may submit the quotations on their own papers. Late Quotations will not be accepted. The quotations will be opened in the presence of such tenders or their authorised representatives and officials who may be present at that time.

Last Date of Receiving Tender/Bid Closing : 05/02/2024, 12.00 pm
Date and Time of Opening Tender : 05/02/2024, 3.00 pm

Sd/-
Hon. Director
Centre for Renewable Energy and Materials