DOCUMENT

Open Competitive Bid (OCB)

For

Supply and Installation of Equipments to the Environmental Lab of Civil Engineering Department. At the three campuses of Rajiv Gandhi University of Knowledge Technologies

Proprietary & Confidential

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES
Ground Floor, Vindhya C4 Building,
IIIT-H Campus, Gachibowli
HYDERABAD- 500 032
Phone: 040-23001830

Proprietary & Confidential

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News paper advertisement

Tender Notice

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES

Ground Floor, Vindhya C4 Building, IIIT-H campus, Gachibowli, HYDERABAD- 500 032
Phone: 040-23001830

Ref: RGUKT/Proc/Civil3/ENV/T33/2013

Separate Sealed Tenders are hereby invited from reputed Manufacturers or Authorised dealers for supply and installation of equipments for the following labs of Civil Engineering Departments at the three campuses of RGUKT located at Basar (Adilabad District), Nuzvid(Krishna District) and RK Valley (YSR Kadapa District) of Andhra Pradesh:

i) Concrete Technology Laboratory
ii) Environment Laboratory
iii) Fluid Mechanics Laboratory

Last date of submission of tender along with EMD as specified in the bid document is on 16.03.2013 before 04.00 pm.

Interested parties can collect the Tender document for each laboratory separately from the office of the RGUKT from 06.03.2013 to 15.03.2013 against payment of Rs. 1,000/- towards the cost of Tender document fee (non-refundable) through D.D. drawn from any Nationalized Bank, in favour of "REGISTRAR, RGUKT" payable at Hyderabad. For further details, visit our website www.rgukt.in

Date: 06.03.2013

Sd/-
Registrar

Web document

Time schedule of various Short tender related events

Bid calling date	06.03.2013
Sale of document	From 06.03.2013 to 15.03.2013 up to 04:00 P.M
Pre bid meeting	11.03.2013 at 04.00PM
Bid closing date/time	16.03.2013 at 04:00 P.M.
Technical Bid Opening date/time	16.03.2013 at 04:30 P.M.
Price Bid opening date/time	18.03.2013 at 04:00 P.M.
Bid Document fee	Rs.1,000/-
Contact person	Registrar, RGUKT
Reference No	RGUKT/Proc/Civil3/ENV/T33/2013

Note: Tender documents purchased bidders are only allowed to participate in Pre-Bid meeting.

Registrar,
RGUKT

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TENDER FORM

Not transferable

Reference. No. RGUKT/Proc/Civil3/ENV/T 33/2013 Dated 06.03.2013

Subject: Invitation of Tenders for Supply, installation and commissioning of Environmental Lab Equipments to the Civil Engineering Department at three campuses of RGUKT located at Basara (Adilabad Dist), Nuzvid (Krishna Dist) and RK Valley (YSR Kadapa Dist) of Andhra Pradesh.

Last date and time for submission of the TENDER AT RGUKT, Vindhya-C4, IIIT Campus, Gachibowli, HYDERABAD **is 16.03.2013 up to 4:00PM**

Dear Sir/Madam,

A. RGUKT invites sealed tenders comprising technical bid and price bid separately from reputed manufacturers (or) authorized dealers for its three campuses located at Basara (Adilabad Dist), Nuzvid (Krishna Dist) and R K Valley (Kadapa Dist) of Andhra Pradesh.

B. The Tender form consists of 42 pages of which pages from 7 to 19 are instructions and page No.33 contains the format for financial bid. The duly completed Technical Bid together with a copy of the bid document (this tender) signed on all pages by the Bidders authorized signatory and the Price Bid should be kept in separate sealed covers. These sealed covers must be submitted in a sealed master envelope super scribed "Tender for Supply, Installation & Commissioning of Environmental Lab Equipments to the Civil Engineering Departments at the three campuses of RGUKT. The last date for submission of bid is **16.03.2013 and closing time is 04:00 PM.**

C. The Sealed Tenders should be deposited in the Tender box kept in the office of Registrar, RGUKT, Hyderabad up to **04:00 P.M. on 16.03.2013.**

For any clarification and further details on the above tender please contact by Telephone No: 040-23001830 or Contact in Person during office hours.

Thanking you

Yours faithfully,
Registrar,
RGUKT.

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STATEMENT OF IMPORTANT LIMITS/VALUES RELATED TO BID

Item	Description
EMD	**Rs. 1,00,000/- by way of Demand Draft from any Nationalised Bank or by way of irrevocable bank guarantee from any Nationalised Bank only. DD/BG from other than Nationalised Banks will not be accepted.**
Bid Validity Period	90 days from the date of opening of Financial bid
EMD Validity Period	90 days from the date of opening of Financial bid
Warranty Period	3 years Comprehensive Warranty
Variation in quantities/number of residents	**± 40 %**
Period for furnishing performance Security Deposit	Within 10 days from date of receipt of award
Delivery Schedule	Bidder shall deliver the goods in one single lot within 30days from the date of award of the contract.
Performance security value	5% of contract value by way of irrevocable Bank Guarantee from any Nationalised Bank
Performance security validity period	38 months from award of contract (including 30 days of installation period)
Period for signing the order Acceptance	Within 7 days from date of receipt of notification of award

Payment terms	
On delivery at user site	Payment for goods and services shall be made in Indian rupees as follows. 1. 80% of payment will be paid after installation, commissioning 2. Balance 20% will be paid after 3 months after obtaining the satisfactory certificate from the Director, RGUKT IIITs.
Maximum Liquidated Damages for late deliveries	For delays:- If the supplier fails to deliver any (or) all of the goods or perform the services within the time period specified in the contract the purchaser shall without prejudice to its other remedies under the contract deduct from the contract price as liquidated damages a sum equivalent to 0.25% of the contract value per day until actual delivery or performance up to a maximum deduction of 10% of the delayed goods or services contract price. Once the maximum deduction is reached, the purchaser may consider the termination of the contract duly forfeiting the performance security etc.,

ELIGIBILITY CRITERIA

5.1. This bid is open to all firms within India who are eligible to do business under relevant Indian laws as in force at the time of bidding, subject to meeting the pre-qualification criterion. They should provide list of customers of previous supply of similar/ same items to IITs, NIT's or Central Universities or any Academic Institute of National repute with contact details. Copies of orders received from the reputed firms on bidding firm need to be submitted.

5.2. The bidder should have servicing facility or work shop with in India so the provision of service is possible at a short notice and without incurrence of delay.

5.3. The Bidding firm should have minimum turnover as follows:

Bid Value offered against the tender call	**Last financial year's business turnover**
25 lakhs	50 lakhs
50 lakhs and above	1 crore

The bidder should have adequate experience in supply of such materials as required in the tender. Bidder should furnish proof of having supplied such materials as required in the tender in the previous financial year ending 31st March 2012 as mentioned above. A certificate indicating the Turn Over value details (in Rupees) of subject material, during the financial year 2011-12 (for the year ending 31.03.2012) from a Firm of Chartered Accountants must be enclosed (in original) as a proof for Turnover. The Turn Over of the subject Material must be separately indicated in the certificate.

5.4. The bidder should furnish satisfactory performance certificate from the parties concerned to whom bulk supplies were effected, in case such supplies were made. RGUKT may contact any such parties to elicit details**.**

5.5. Bidder should be registered under VAT Act/CST Act with the relevant State Sales Tax Authorities. He should furnish along with the bid document, the relevant VAT/CST Registration Document and PAN / TAN Card copies.

5.6. All bidders shall also include the following information and documents with their tenders (in the Technical bid cover)

5.6.1. Copies of original documents defining the constitution or legal status, place of registration, and principal place of business of the bidding firm/entity; written power of attorney of the signatory of the Bid to commit the Bidder.

5.6.2. Machinery/equipment owned by the bidder and number of employees.
5.6.3. Latest Income Tax returns and **VAT/ CST** Returns filed.
5.6.4. List of Present Clientele with contact addresses & telephone numbers.

5.7. All the certificates furnished along with technical bids should be attested by a Gazetted Officer, counter signed by bidder along with their seal.

The bidders must submit all relevant documentary evidence to support their claim for eligibility in placing bid. **The tenders received without the above documents will be rejected.**

Web document

Requirement of Environmental Lab equipments

Sl. No	Equipment	Qty for three Centers
1	B.O.D INCUBATOR	3
2	AUTOCLAVE	3
3	DISSOLVED OXYGEN AND BOD METER	3
4	COD DIGESTER	3
5	PH-CONDUCTIVITY METER	3
6	FLAME PHOTOMETER	3
7	UV VISIBLE SPECTROMETER	3
8	NEPHELO METER - TURBIDITY METER	3
9	HIGH TEMPERATURE HORIZONTAL MUFFLE FURNACE	6
10	DIGITAL DISSOLVED OXYGEN METER	3
11	HOT AIR OVEN	3
12	MAGNETIC STIRRER	6
13	WEIGHING BALANCE	6
14	VACUUM PUMP	9
15	JAR TEST APPARATUS	6
16	LABORATORY FREEZER OR REFRIGERATOR	6
17	ION METER AND FLUORIDE,CHLORIDE,BROMIDE & IODIDE ION SELECTIVE ELECTRODES	3
18	LAMINAR AIR FLOW EQUIPMENT	3
19	WATER DISTILLATION UNIT – METAL WALL TYPE	3
20	VACCUM FILTER APPARATUS	3
21	TOTAL ORGANIC CARBON ANALYZER	3
22	GAS CHROMATOGRAPH	3
23	CENTRIFUGE	3
24	ATOMIC ABSORPTION SPECTROPHOTOMETER	3

Glass Ware Items

Sl. No	Glass ware items with specification	Qty for three Centers
1	Aluminum Foil paper	150
2	BOD Bottles: 300 ml capacity	600
3	Borosilicate Tubes: capacity: 10 ml, dimensions 16×100 mm	180
4	Burette & burette stand: 50ml capacity, burette stand must fit to this capacity. 1) Burettes 2) Burettes stands	 300 210

5	Gooch Crucibles: 40 ml capacity	210
6	Distilled water bottles: capacity 500ml	150
7	Erlenmeyer flask of capacity 25ml, 50ml, 100ml, 250ml, 500ml, 1000ml.	150 each
8	Glass beakers of capacity 25ml, 50ml, 100ml, 250ml, 500ml, 1000ml.	150 each
9	Plastic beakers of capacity 25ml, 50ml, 100ml, 250ml, 500ml, 1000ml.	75 each
10	Glass rod size of 10 inches	150
11	Imhoff cone: capacity 1 liter	15
12	Measuring Cylinder: made of glass 5ml, 10ml, 25ml, 50ml, 100ml, 250ml, 500ml, 1000ml.	30 each
13	Measuring Cylinder: made of Plastic 5ml, 10ml, 25ml, 50ml, 100ml, 250ml, 500ml, 1000ml.	15 each
14	Nessler tubes of 100 ml & suitable stand 1) Nessler tubes 2) Stands `	 150 9
15	Petri dishes: Size 90mm× 15 mm	6
16	Pipette with bulb: 0.1 ml, 0.5 ml, 1 ml, 5 ml, 10 ml, 25 ml, 100 ml.	60 each
17	Plastic trays with standard size	60
18	Reagent bottles: <u>Made of glass:</u> 250ml capacity <u>Made of amber glass:</u> 250ml capacity	 60 30
19	Spatula: minimum of 12 inch	60
20	Test tubes: 5ml, 10ml, 25ml, 50ml, 100ml	60 each
21	Whatman filter paper (No.42)	6 set
22	Standard flask of capacity 50ml, 100ml, 250ml, 500ml, 1000ml.	60 each
23	Indicator plastic tubes capacity of 100 ml	30

S No	Equipment with specification	Qty Required
1	**B.O.D INCUBATOR** Capacity : 175 litre (16 flask of 250 ml) Temperature range : 5 Deg. C to 50 Deg. C Accuracy : ± 0.5 Deg. C Sensor : PT – 100 type RPM : 30-300 RPM continuously variable & settable • Digital indicator with easy set up mode • Trays should be Suitable to rest on shaking device capable to take suitable load • Orbital oscillation • Compatible with 230V, 50Hz single phase	3
2	**AUTOCLAVE** Specialized for Liquid and culture Media. Microprocessor controlled semi-automatic, horizontal /vertical model sterilizing operation. Complete safety pressure mechanism, strong and safe screw handle door. Digital PID Control. Automatic over-pressure release valve for safety. Capacity: 80 litre, Heater: ~3 kW. Temperature range: Ambient to 5°C to 124°C. Temp. Accuracy: + 0.5 °C at 121°C. Display: PV&SV Dual Digital Display. Controller Microprocessor PID Multi-Function Controller. Chamber Material: Stainless steel, Cabinet Material: Powder coated Steel Over temp, over pressure and over current protector. Door Packing: One touch pressure handle type. Basket: 2 Basket should be included. Electric Supply: 220V, 50/60 Hz. Timer: 99 hr 59 min 59 sec. Pressure: 1.2 kg/cm^3. Gauge: 0 - 3 kg/cm2.Accessory: One 5 KVA servo controlled, ISO certified voltage stabilizer	3
3	**DISSOLVED OXYGEN AND BOD METER** **Range** DO: 0.00 to 50.00 mg/L (ppm), 0.0 to 600.0 % saturation; Barometric Pressure: 450 to 850 mm Hg; Temperature: -20.0 to 120.0°C (-4.0 to 248.0°F); **Resolution** DO: 0.01 mg/L (ppm), 0.1% saturation; Barometric Pressure: 1 mm Hg; Temperature: 0.1°C/°F **Accuracy (@20°C)** DO: ±1.5% of reading ±1 digit; Barometric Pressure: ± 3 mmHg within ±15% from the calibration point; Temperature:±0.2°C/±0.4°F (excluding probe error) **Measurement Modes:** direct DO; BOD (biochemical oxygen demand); OUR (oxygen uptake rate); SOUR (specific oxygen	3

	uptake rate) **Calibration** DO: automatic one or two point at 100 % (8.26 mg/L) and 0 % (0 mg/L); manual one point using a value entered by the user in % saturation or mg/L Barometric Pressure: one point at any in range pressure value Temperature: one or two point at any in range temperature value **Compensation** Barometric : automatic from 450 to 850 mmHg Salinity : automatic from 0 to 70 g/L Temperature : automatic from 0.0 to 50.0 C (32.0 to 122.0 F) **Logging** Log on demand, 400 samples **Battery Type / Life** 1.2V (4) AA rechargeable batteries/approximately 200 hours of continuous use without backlight **Auto-off** User selectable: 5, 10, 30, 60 min or can be disabled **Environment** 0 -50 C (32 - 122 F) RH max 100%	
4	**COD DIGESTER** Specifications: Solid block heated unit with provision for 15 samples at a time in 40mm dia. Reaction Vessel. All the samples can be heated at 150oC within + 1% accuracy with utmost uniformity of temperature. **Features of COD Digester :-** Compact in Construction; No water circulation; Standard APHA method; Proven performance; Used by control boards of many states. **Specifications**: Glassware: 15 Reaction Vessels & Air Condensers; Temperature: 150°C ± 1%; Capacity: 15 Samples at a time with a Sample Size of 20 ml; Range: 0 to 500 ppm without dilution; further samples can be analyzed using appropriate dilution; Timer: 2 hours timer with Buzzer	3
5	**PH-CONDUCTIVITY METER** • Large Graphic LCD Display. • Averaging Facility for pH and 5 Pt. pH Calibration • PC Connectivity • Optional TDS Measurement and Auto Ranging for Conductivity	3
6	**FLAME PHOTOMETER** Specifications:	3

	Simultaneously Analyze Elements : Na, K, Li, Ca, and Ba. Flame System : LPG & Oil free dry air Detector : Photodiode LOQ : Minimum 1 PPM for each element The instrument carries advanced features like Automatic Ignition, Automatic Gas Shut off in case of power failure. Self Ignition through Push Button. PC Compatibility with RS 232 C Interface. Instrument can also be interfaced with printer and should have 3 digit LCD display. Sample data storage facility	
7	**UV VISIBLE SPECTROMETER** **Specifications:** Wavelength range : 190 to 900nm Spectral bandwidth : Up to 1 nm (190 to 900nm) Wavelength display : ≤ 0.1 nm increment Wavelength accuracy : ±0.2 to ±0.3nm in the wavelength range Wavelength repeatability : ±0.1nm Photometric Range : Absorbance: - 4.0 to + 4.0 Abs. Scan Speed : 5 to 2500 nm / min. Noise Level : ≤ 0.00005 Abs Detector : Silicon Photo diode. Quartz Cuvette : 1mm path-length (Atleast One Pair along with instrument) Photometric system : Double beam optics Light source : Halogen lamp and D2 lamp with auto position adjustment Output device : USB memory. Data files saved in text format and UVPC format. PC compatibility : Provided with UV-software to read the files. Software : Preferably through PC operating With a provision of up gradation for temperature dependant work using either water circulation and/or peltier temperature control module	3
8	**NEPHELO METER - TURBIDITY METER** Range : 0 - 10,000 NTU Principle of Operation : Nephelometric Ratio (Color Correction) : Full Time ON or OFF Accuracy : ± 2% of reading plus 0.01 NTU (0 to	3

	1000 NTU) : ± 5% of reading (1000 to 4000 NTU) : ± 10% of reading (4000 to 10,000 NTU) Resolution : 0.0001 NTU on Lowest Range Response Time : less than 6 seconds Sample Size : 30 ml Light Source : Quick connect Infrared Operating Temperature : 0° - 50°C Air Purge : Connection for external dry air supply Outputs : RS-232 Serial Port	
9	**HIGH TEMPERATURE HORIZONTAL MUFFLE FURNACE** 1. High temperature horizontal muffle furnace 2. Max working temperature- 1500ºC (for continuous run) or more with PID Controller 3. Temperature accuracy~ +/-5 ºC or better 4. Controlled temperature starting from 600 ºC or less 5. Internal dimensions ~ 120mm (width) X 210mm (depth) X 120mm (height) or more 6. Temperature variation within the muffle furnace has to be +/-5 ºC or better and must be demonstrated. 7. Demonstration of the constant temperature zone has to be done. 8. Temperature calibration has to be done in the region where the sample is kept. 9. Spares like heating elements, bricks and other accessories have to be provided.	6
10	**DIGITAL DISSOLVED OXYGEN METER** **Range** DO : 0 - 20 ppm Temperature : 0 - 100 °C **Resolution** DO : 0.1 ppm Temperature : 0.1 °C **Accuracy** DO : ± 0.2 ppm Temp. : ± 0.2 °C **Temp. Compensation** : 0 - 50 °C (Auto/Manual) **Display** : Large LCD with Backlight **Storage** : Up to 90 Samples **Power** : 230 V ± 10% AC, 50 Hz	3

	Printer Provision for attachment of any dot-matrix with centronics interface Standard Accessories: Do Probe, Temperature Probe, Do Membranes, Stirrer, Magnetic Capsule, Mains Lead, Operation Manual and Dust Cover	
11	**HOT AIR OVEN** 1. Should be operated on 230V, 50Hz single phase AC supply and having temperature ranging between 50-200ºC 2. Should be made of double walled chamber -Inner made of stainless steel SS 304 grade and powder coated outer surface. 3. Should provide with three heating elements on three sides of the equipment for uniform temperature on all shelves. 4. Should be provided with air circulating fan and air ventilations 5. Should provide with a variable microprocessor based digital temperature controller with digital display and thermometer should be provided separate. 6. Should have a minimum chamber size of (L*B*H) 450*450*450 with 2 stainless steel trays with holes.	3
12	**MAGNETIC STIRRER** Specification of magnetic stirrer Stirring speed : up to 2000 rpm Stirring volume : up to 2000 ml Stirring position : maximum 4 Power rating : maximum 20 watts Dimension : 35L x 30W x 6H (cm) Power : AC 230V, 50Hz	6
13	**WEIGHING BALANCE** Specification Capacity : up to 1 kg Readability : minimum 0.01 g Repeatability : minimum 0.01 g Operating temperature range : 10°C to 42°C Power supply : AC ADAPTER 230±10% 50 Hz Pan dia. (S.S) : Approx.150 x 140 Dimensions : Approx.180 (W) x 225 (D) x 75 (H) mm Net weight : 2.5 to 3 kg	6
14	**VACUUM PUMP** Capacity : 50 lit/min. to 8000 lit/min Vacuum : 0.05 mm Hg. In addition, higher vacuum with booster Motor Power : 2 HP Type : Single and two stage units	9

	Should have simple design and low maintenance Air and water-cooled construction	
15	**JAR TEST APPARATUS** No of stirrers : 6 RPM : 10 to 200 rpm (approximately) Capacity of single stirrer unit : 1 L Control : Digital control (Digital timer & r.p.m counter) Stirrer Paddle material : Stainless steel Paddle size : 2.5 x 7.5 cm Paddle height : ~30 cm Paddle spacing : ~15 cm Power : Single phase (220 – 240 Volts) Illumination : fluorescent tube Stirrer paddle material should be with appropriate corrosion protective coating	6
16	**LABORATORY FREEZER OR REFRIGERATOR** Internal Volume : 285 L No. of Shelves : 3, stainless steel with adjustable shelves Temperature : Control Digital Temperature Range : 0 C to 120 C ± 10 C Inner Chamber Material : Stainless steel (Non Corrosive, Non Magnetic) Outer Body Material : Powder coated CRCA steel Electrical : 220-240 volts, Single Phase	6
17	**ION METER AND FLUORIDE,CHLORIDE,BROMIDE & IODIDE ION SELECTIVE ELECTRODES** 1. Micro processor controlled multi-channel ion meter with LED display for menu, capable of measuring pH, milli volt, ORP (Oxidation Reduction Potential), Cations and anions, built in software. 2. pH Range: -2.000 to 19.999, Resolution: 0.001/0.01/0.1, Relative accuracy: ± 0.005 3. Calibration point: 1-6 point Concentration range – 0.000 to 19900. 4. Mv Range : 1600mV, milli volt accuracy: ±0.2 mV or ±0.05% of reading whichever is greater. 5. Working Temperature: -5^0 C to 105^o C and 5 to 85 % relative humidity, noncondensing. 6. Specific ion electrode of Fluoride, Chloride Bromide & Iodide with the following specifications. Fluoride : Capability of measuring in concentration range of saturated to 10^{-6} M; saturated to 0.02 ppm at temp range from 0 to 80^oC.	3

	Chloride : Capability of measuring in concentration range of 1.0 to $5x10^{-5}$ M; 35,500 to 1.8 ppm at temp range from 0 to 80^{o} C. Bromide : Capability of measuring in concentration range of 1.0 to $5x10^{-6}$ M; 79,00 to 0.40 ppm at temp range from 0 to 80^{o} C. Iodide : Electrode should have the capability of measuring in concentration range of 1 to $5x10^{-8}$ M; 1,27,000 to 0.005 ppm at temp range from 0 to 80^{o} C.	
18	**LAMINAR AIR FLOW EQUIPMENT** The various models of laminar air flow chamber are available in Stainless steel,Electro-galvanized steel or wood covering all applications. The environmental air is drawn by centri-balanced,centrifugal succession blower through pre-filters and is thrown to work plate form through high efficiency HEPA filters, retaining particulates and biological contaminants larger than 0.3 microns,Table- top is covered with stainless steel sheet. All the compartments of the chamber are chemically sealed to prevent leakage/loss of air-pressure,front door is collapsible type & side panels are fixed, made of crystal clear thick plexi-glass or transparent polycarbonate. All variants are available with UV tube, Fluorescent Tube light, Gas cock and static pressure manometer or differential pressuremagnehelic manometer. Features: • Efficiency:Removes organisms and particulates 0.3 micron in size with an efficiency of 99.99% • Blower unit: centri-balanced centrifugal motorized blower 1/3 H.P, 1440RPM • Discharge:air volume 90cfm$\pm$10% • Noise level: below 65 dB • Illumination by fluorescent tube • Germicidal: by ultraviolet tube	3
19	**WATER DISTILLATION UNIT – METAL WALL TYPE** Water distillers produce highly treated and disinfected water laboratory usuage. This distillation process removes minerals and microbilogical contaminants and can reduce levels of chemical contaminants. Specifications: • Made of all stainless steel • Output 4 Litre/hour approx. Work on 220V AC	3

20	**VACCUM FILTER APPARATUS** Vacuum filtration is used primarily in microbiological and laboratory procedures involving the collection of a particulate (bacteria, precipitate, etc.) from a liquid suspension. Liquid poured into a funnel passes through a filter, which retains the particulate, and filtrate can be collected into a filter flask, directly or via a vacuum manifold. Applying vacuum filtration also reduces process time compared to gravity flow. **Specifications** 1. Vacuum filtration apparatus (lab.) 2. Filter dia: 47 mm 3. Funnel: 1, 2 , or 3 4. adjusting vacuum regulator 5. manomet Extreme pressure vaccum: more than 0.08 Mpa Pressure: more than 30 psi Measure: 300 * 160 * 235 Power: 230 v 50 HZ / 60 HZ	3
21	**TOTAL ORGANIC CARBON ANALYZER** • This equipment should able to analysis Total Organic Carbon (TOC), Total Inorganic Carbon (TIC) and Non-purgeable Organic Carbon (NPOC) available in sea water and related environments. • Instrument should have the capacity to analysis in the range of 2ppb to 25,000 ppm concentration of organic carbon. • Analysis to be carried out by standard USEPA approved methods; each analysis time should be less than 5 minutes. • Should include windows based data management graphic software • Should have high salt tolerance for sea water analysis • Accurate reproducibility around the lower limit of expected analysis • Auto sampler attachment • Automatic loop for sample handling • Sample injection should be around µL to mL • Auto dilution procedure available at beginning point.	3
22	**GAS CHROMATOGRAPH** **Technical Specifications for Gas Chromatograph** **1. Oven:** Multiple level temperature program settable from 0.1^{o}C to 120 ^{o}C/ minute; Minimum oven temperature: Ambient 4^{o}C; Maximum oven temperature: 450 ^{o}C; Large column oven; Fast column oven cooling; Dual packed column injection port with dual	3

	flow line advanced flow controller (AFC) for digital setting and control of carrier gas flow up to 100 ml / min; Capacity of installing 2 packed columns either SS or glass, 1/8" OD. **2. Injectors:** Split / splitless injector with AFC for digital setting and control of carrier gas pressure up to 970 kPa and total carrier flow up to 1200 ml / min, gas sampling valve. **3. Detectors:** (1) Flame Ionization Detector (FID) – Operating temperature from ambient to 450^{o}C; Sensitivity range selectable from 10^{-9} to 10^{-12} A/mV; Detectability: 10^{-12} g/s. (2) Thermal Conductivity Detector (TCD) – Operating temperature up to 360^{o}C; Detectability: 10-10 g/ml of nC10. **4. PC with required configuration and suitable software** **5. Accessories:** Injection port septum; Glass insert for split & splitless; N2, H2, air gas with regulator; Gas purification system; SS tubing with color coded sleeves and casing; 10 µl liquid syringe; Capillary column: 60 m × 0.32 mm ID × 0.5 micron film thickness; Stabilizer **6. Auto sampler**	
23	**CENTRIFUGE** **Specifications:** RPM : up to 13000 RCF : up to 12000 x g Capacity Max. : 1.5 ml x 12 Control : Digital feedback controls with Jog Shuttle Switch (turn + push) Display : Digital back light LCD Timer : 99 min.59 sec. continuous mode Cooling device : air cooling Drive system : Brushless DC motor, direct drive Acceleration time :< =15 sec (for max speed) Braking time : <=15 sec (for max speed) Safety system : motor error detection, Auto stop when opening door Noise level : <= 57db Dimension : 17W X 23D X 18H (cm) Power consumption : 90W Power : AC230V, 50Hz	3
24	**ATOMIC ABSORPTION SPECTROPHOTOMETER** **Technical Specifications:**	3

	• The system should be fully automated computer controlled double beam graphite furnace AAS with D2 background correction and microwave digestion system. • Photometer of high light-gathering power with quartz-coated wide-range optics • Czerny-Turner monochromator, focal length 330 mm. • Holographic grating with1,800 lines/mm. • Wide range PMT detector • Wavelength range :175 to 900 nm, • Automated slit setting - variable slit width 0.1 to 2 nm with 0.1 nm increment. • Background correction: with 175 to 475nm. • Automated wavelength scan, adjustment and setting of wavelength. • Lamp turret with fully automatic alignment of up to 6 lamps • Possibility for using of coded lamps • Adjustment of lamp position, lamp and pre-heating current,integrated superlamp power supply • Safety circuits for cooling water, inert gas, excess furnace temperature • Deuterium back ground correction with optimized optical beam and moveable polarizer for maximum energy throughput. • Future up gradation for hydride generator • Basic software for device control and data analysis. • Latest configuration Branded PC & Printer (inbuilt display unit is preferable) **Graphite Furnace** • Sensorless adaptive temperature control, 50 to 3000 °C, over current protection. • Computer controlled maximum heating rate of 2000 °C per second • Comfortable replacement of graphite parts through special parking position for the furnace • Possibility for the direct observation • Ar gas pressure monitoring, cooling water flow monitoring, furnace temperature monitoring **Hollow cathode lamps** • HCL lamps: Fe, Mn, Cu, Zn, Cr, Pb, Al, Ni, Co, Cd **Microwave digestion system** • The system should enable rapid digestion for different inorganic / organic samples like soils, sludge, leaves etc	

	• The microwave system should have single Magnetron System with good diffuser for homogeneous microwave power distribution in the cavity. • Microwave frequency should be 2455 MHz. and installed power should be 1200 W minimum The delivered power up to 1200 W min controllable via microprocessor. There should be provision for protection from reflected microwave energy. • The cavity should be made of stainless steel housing with PTFE plasma coating for corrosion resistance. Also all hardware should have protective coating for the resistance from acid /organic fumes. The cavity door should be designed impact resistant. Cavity should be more than 42 liters. Also it should have illumination using lamp. • The system should have good interlocking system for safety and cavity door should have atleast 4 safety interlock. The system should have inbuilt exhaust system to cool the vessels and to drive away if any fumes in the cavity. • The system should be high throughput which can hold atleast 4 high pressure vessels. The material of construction should be high purity TFM* fluro-polymer .Vessel volume should be about 100ml and it should be designed for maximum temperature capacity of 260 ºC and maximum pressure 100 Bar. The system should be provided with temperature sensor (Thermocouple type or Fiber optics type) which will measure real temperature of the reference vessel and control it. All vessel pressure sensor should be provided with the system which can be controlled up to minimum 70 bar in operating condition. • System should be controlled by a touch screen controller which should have method storage capacity of more than 200 methods. • The system should be certified by necessary safety authority for safe operations. • Power- 230 V 50 HZ	

7. General Requirements & Qualification Criteria

- Bidding Firm offering the product should have ISO 9001 Accreditation certification.
- Bidding Firm, offering the product, should have supplied similar type of test systems for a several years to government establishments, defense organizations & National higher learning institutions like IITs, IISC etc., in India
- Bidding Firm offering the product should submit list of supplies made by it, during last two years with complete contact details of the end users such as phone number, fax number, e-mail ID etc. It should submit copies of order placed by such organizations and user certificates for goods of same/similar nature.
- Bidding Firm offering the Product should have a Local Service Support Facility, preferably in Hyderabad, and should submit address and contact details
- Bidding Firm should give an Undertaking that, un interrupted service support will be given for a minimum period of 10 years with unbroken availability of spares supply.
- Bidding Firm should give an undertaking that, the Software upgrades if any, during the warranty period of three year, should be supplied free of charge
- Bidding Firm should offer pre-dispatch inspection free of charge at their factory premises for 2 users for 3 days and post installation training at our three laboratories in different campuses to 2 users for 5 days.

Web document

NOTE

A complete set of bidding documents may be purchased by interested bidders from the RGUKT contact person upon payment of the bid document price which is non-refundable. Payment of bid document price should be by demand draft drawn from any Nationalized Bank only in favour of "Registrar, Rajiv Gandhi University of Knowledge Technologies" and payable at Hyderabad (India).

- **Tender documents purchased bidders are only allowed to participate in Pre-Bid meeting.**