Department of Environmental Science

University of Kashmir

Hazratbal Srinagar -190006

KU2017-Envsc-888
Dated: 14/12/17

No:F(NIT-Tender/Equip)ENVSC/KU/2017
Dated: 13-12-2017

Tender Notice

Sealed tenders affixed with revenue stamps worth Rs. 6 /= are invited from Registered Dealers/ Suppliers for supply of following equipment to the P.G Department of Environmental Science, University of Kashmir, Hazratbal, Srinagar on the following terms and conditions:-

1. The items quoted should be of the specification mentioned against item.
2. The rates quoted should be inclusive of all taxes and supply should be for Departmental. store.
3. Earnest money of an amount of Rs.5000/= pledged in the name of undersigned be enclosed with the tender.
4. GST / VAT clearance certificate should be attached with the tender.
5. Dealership certificate and certificate to the effect that after sale service will be made available.
6. The supply shall have to be made within 20 days from the date of issuing order.
7. The tenders should reach to the undersigned office along with soft copy (MS Word) **by or before 27th of December, 2017 up to 4.00 pm.**

The tender notice and the specifications are available on the University main website and Departmental Website http://envirsc.uok.edu.in

1. Stack air sampler
2. Digital colony counter
3. Laminar Air Flow
4. Double distillation plant
5. Indoor Air Sampler
6. Carbon Monoxide (air) Analyser
7. Magnetic stirrer
8. Heating mantle
9. Incubator Shaker
10. Portable multi-parameter pH /Conductivity /TDS meter

13.12.17

Prof. Azra N. Kamili
H.O.D

Copy to:

1. PRO University of Kashmir for publishing of the NIT in the Leading Local Dailies.
2. Information Technologist, for posting the NIT on the University Website.

Specification for the equipments for tender notice No:F(NITTender/Equip)ENVSC/KU/2017, Dated: 13-12- 2017

S.No	Equipments	Specification	
1	Heating Mantles	Capacity 500,1000,3000,5000ml along with energy regulators.	
2	Magnetic stirrer	With digital speed indicator for display of stirring speed and digital temperature indicator cum controller length between 40to 50 cms width 30to 35cms	
3	Double distillation plant	Capacity 5000ml with auto cut off /auto on	
4	Portable multiparameter pH /Conductivity /TDS meter	**pH**	**Range:** -2.00 to20.000
		mV/RmV	**Range:** ±2000.0 mV
		Conductivity	**Range:** 0.001 µS to 3000 mS
		Resistivity	**Range:** 2 ohm to 100 meg-ohm **Resolution:** 1 ohm or 0.1 meg-ohm, auto ranging
		Salinity	**Type:** Practical salinity or natural sea water **Range:** 0.06 to 80.00 psu, 0.05 to 42.00 ppt **Resolution:** 0.01 psu, 0.01 ppt
		TDS	**Range:** 0.001 to 200.0 ppt **Resolution:** 0.001 ppt minimum, auto ranging, up to 4 significant digits **Relative Accuracy:** 0.5 % reading ±1 digit **TDS Factor Range:** Linear 0.02 to 9.99
		Temperature	**Range:** -5 to 105 °C, 23 to 221 °F

5	Carbon Monoxide Analyzer	A: Analyzer Section 1. Measurement Method: Microprocessor controlled IR absorption using Gas filter Correlation. 2. Must have an operating temperature range of 5-40oC Must be U.S. EPA or TUV certified over 10-40oC temperature range.. 3. Ranges shall be user selectable from 0 -1 ppm to 0 -1,000 ppm in increments of 1 ppm, with 4. Minimum Detectable Limit: <0 .04 ppm. (RMS) 5. Zero Noise: <0.02 ppm. (RMS) 6. Span Noise: 0.5% of Reading (RMS) above 5 ppm 7. Precision: 0.5% of Reading 8. Linearity: 1% of Full Scale 9. Zero Drift: <0.1 ppm/24 hrs <0.2 ppm/7 days 10. Span Drift: <1%/7 days 11. Rise and Fall time (to 95%): <60 seconds 12. Sample flow rate shall be less than 1 LPM. 13. Outputs: Three (3) separate analogue outputs for a recorder and a data logger. Outputs can be independently set to be ⍰ 100 mv, ⍰ 1 V, ⍰ 5 V, ⍰ 10 V. 14. Field and objective mirrors shall be monolithic. Adjustment screws shall not be required and adjustment not be required even after cleaning. 15. GFC wheel shall be temperature stabilized and have a 5 year warranty against leaks. 16. Remote Technical Support available at No Charge for the life of the analyzer. 17. Particulate filter shall be front panel accessible with ability to view filter condition without disassembly. 18. Pump shall be internal to the analyzer. 19. Flow rate through the analyzer controlled by critical orifice and be displayed using front panel display 20. Measurement shall be temperature and pressure compensated. 21. Unit to be supplied with a complete instruction and maintenance manual. 22. Warranty shall be two years. Manufacturer shall guarantee gas filter correlation wheel and CPU for a period of five years. 23. Shall contain internal data logging capability with capacity to log a minimum of 900,000 data values. 1.Ability to log five years worth of 5 minute averages for CO along with calibration factors, flow and pressure data. 2. Ability to log data at a selectable frequency or upon occurrence of a defined event. 3. Ability to log averages instantaneous or min-max values. 24. All printed circuit boards shall be contained in the analyzer. All circuit boards shall use surface mount technology for durability. The analogue input digitizing card and the computer card shall be separate cards to facilitate servicing. 25. Shall provide Diagnostic warning messages in case of out of tolerance of key parameter: -System Reset - RAM Initialized - Source Warning - Bench Temp Shutdown - Mirror Temp Shutdown - Sample Flow Warning - Sample Pressure Warning - Sample Temp Warning - Box Temp Warning - Bench Temp Warning - Cannot DYN Zero - Cannot DYN Span In addition to CO concentrations, the instrument shall be able to view the following parameters in real time without disrupting data collection RS232 HELP Screen on external computer Summary of all TEST's Current CO Reading Current CO Measure Reading Current CO Reference Reading Sample Pressure Sample Flow Rate Sample Temperature Optical Bench Temperature Optical Mirror Temperature Internal Box Temperature

		DC Power Supply Output Current Time of Day B: Zero/Span Check: (Option) 1. Zero and span check shall be accomplished manually from the front panel, remote contact closure, RS-232, Ethernet or on a timed basis using built-in zero and span valves with CO cylinder shut-off valve. 2. Internal zero air systems shall be generated using long life catalyst with a 5 year life. C: RS232 and Status Output 1. Shall provide bi-directional RS232 interface capability to accommodate both printers and host computers/terminals. 2. Any function that can be accomplished from keyboard shall be capable of being performed through the RS232. 3. RS232 message types shall include: DAS Reports (R) Warning Messages Analyzer Control/Status Reports Diagnostics Commands/Reports Test Measurements Instrument Variables: Monitoring/Modifying 4. Status output shall provide isolated contact closures for zero cal, span cal, flow, temperature, system warning, and when in diagnostic mode 5. Analyzer shall have ability to connect to an Ethernet and shall support a unique IP address for access from anywhere on the network.
6	Stack air sampler	• **Stack Temperature Range:** Ambient to 600 □and 500-1000□C read on separate Digital Pyrometers • **Temperature Sensor**: At Metering Point (0-50 □) • **Ambient Temperature:** Ambient temp. Digital display • **Stack Velocity Range:** 0 to 60 m/sec • **Thermocouples:** Thermocouple sensor in SS 304 casing, length of insertion: 1 m with 2m long cable. Additional 1m thermocouple for High Temperature range • **Manometer:** Calibrated S-type pitot tube fabricated from SS304, 1m length • **Pitot Tube:** 2 –60 lpm collection on thimble type filter up to 0.3 micron rating. • **Particulate Sampling:** 0.2 – 6 lpm collection in a set of Borosilicate glass impingers. • **Gaseous Sampling:** 0.2 – 6 lpm collection in a set of Borosilicate glass impingers. • **Rotameter:** Acrylic body rotameter with 2% FSD accuracy, 0 – 60 lpm for Particulate and 0-6 lpm for gases. • **Sampling Probe:** Made from SS 304 tube, 1m length • **Filter Holder:** Fabricated from SS 304 tube suitable to hold either cellulose filtration thimble (size 28mm ID X 100mm long) or glass micro fibre thimble (size 19mm ID X 90mm long). • **Nozzles:** A set of 4 stainless steel nozzles. • **Digital Clock:** 0 -60 minutes, 1 second readout with start and stop switches. • **Impingers:** 4 No. of 250 ml capacity and 4 No. of 120ml capacity borosilicate glass impingers supplied with cold box with a provision to keep ice. • **Vacuum Pump:** Monoblock Rotary Vane type, oil lubricated, 0.5HP single phase motor (230V) with more than 60lpm free flow capacity • **Programmable Sampling:** Programmable Timer for Vacuum Pump to start and stop at fixed time interval. • **Dry gas Meter:** Dry Gas Meter with Resolution of 1L
7	Indoor air sampler	**Operation:** Microprocessor controlled (internal data logging) **Volumetric flow range/accuracy:** 1.0 - 4.5 L/m **Flow accuracy:** ± 2 % of reading **Flow repeatability:** ± 0.5 % of reading **Temperature range accuracy:** 0 to 45 °C ± 1 °C

		Barometric pressure range: 600 - 900 Torr ± 4 Torr **Filter types:** 47 mm ringed circular filter. **Inlets available:** PM_{10} , TSP (standard), $PM_{2.5}$(optional) **Sampler dimensions:** 300 x 170 x 170 **Battery pack dimensions:** 185 x 170 x 170 **Battery pack life:** Up to 40 hours sampling from fully charged battery pack **Operating voltage:** 12 VDC **Power consumption:** 2.5 - 3 watts depending on filter loading **Standard accessories:** • TSP/PM10 size selective inlet • Single 47 mm filter holder • 100 - 240 AC to 12 VDC power converter • MicroVol Downloader software • RS232 cable **COMMUNICATION & DATA LOGGING** **Number of readings** • 150 (averaging period is user selectable, e.g. 75 hrs of 30 min averages) **External inputs** • 1 x wind direction sensor input (10 k potentiometer) • 1 x wind speed sensor input (contact closure) • 1 x spare contact closure input (e.g. tipping bucket rain gauge) Output: RS232C
8	**Digital colony counter :**	1. Auto Mark Pen. 2. Wolffhuegel Grid Glass Plate. 3. 110 mm Magnifying Lence. 4. Four Digit Resettable Electronic Counter. 5. Net Weight- 3.5 Kgs. 6. Supply- 230V AC 50Hz
9	**Incubator shaker:**	Double walled inside made of Aluminium/ Stainless Steel Sheet. The outer body is made of thick Mild Steel Sheet and painted in Epoxy Powder Coating. Having thick mineral wool insulation between the two walls. Synthetic Rubber Gasket is provided on the door for better grip. The temperature is controlled by a Precision thermostat variable upto 60 ° C with a sensitivity of plus minus 1 ° C. To work on 220/230 Volts A.C. only. Supplied complete with shelves, indicators, wire and plug . **W D H Ltrs.** 605 X 605 X 910MM 336
10	**Laminar air flow:**	Laminar air flow Horizontal Working Size 2'x2'x2', 3'x2'x2', 4'x2'x2', 6'x2'x2' Size of HEPA Filter 2'x2'x6", 3'x2'x6", 4'x2'x6", 3'x2'x6" No. of HEPA Filter 1, 1, 1, 2 Illumination 1 x 20 w, 1 x 20 w, 2 x 40 w, 2 x 40 w