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STATE POLLUTION CONTROL BOARD, ORISSA

[DEPARTMENT OF FOREST & ENVIRONMENT, GOVERNMENT OF ORISSA]

Paribesh Bhawan, A/118, Nilakanthanagar, Unit - VIII,

Bhubaneswar - 751 012, INDIA

VI/SC/CLP/purch/ 92/11-12

No. _____

Date _____

TENDER CALL NOTICE

State Pollution Control Board, Orissa, Bhubaneswar invites sealed tenders from the manufactures/ authorized dealers in conformity with detailed tender documents, which is available in the office for supply of Laboratory instruments / equipments at Bhubaneswar. The last date of receipt of tender along with requisites is dt.31.10.2011 up to 3.00P.M. and will be opened at 4 P.M. on the same day. The details of short tender notice and tender document are also available at Board's website www.ospcboard.org. The downloaded tender documents can be used for submission of tender on free of cost. The request for supply of tender paper by post will be entertained on receipt of Demand Draft amounting to Rs.100/- (Rupees one hundred) only towards postage drawn in favour of "State Pollution Control Board, Orissa" payable at Bhubaneswar. The undersigned reserves all the rights to cancel any or all tenders without assigning any reason there of.


MEMBER SECRETARY.

Memo No. 16525

Dt. 29.9.11

Copy to Sri U.Sahu, Computer Cell along with Tender Schedule for pasting in the Board's website / Notice Board for display / Accounts Section/ Establishment Section for publication in one National Daily within 8X12 cm.


Addl. Adm. Officer



DETAILED TENDER SCHEDULE FOR SUPPLY OF SCIENTIFIC INSTRUMENTS / EQUIPMENTS

- 1 Sealed tenders as per enclosed prescribed tender schedule are invited from the manufactures or their authorized dealers/ bonafide suppliers for supply of Scientific Instruments and other accessories as detailed therein. Each tender with clear subscription of "Technical" and "Commercial" bid shall be submitted in two separate sealed envelop containing the Technical and Commercial bids. Both the sealed envelop shall be enclosed in one sealed envelop with superscription at the top "Supply of Equipments/ Instruments".
 - 2 The tender shall be received up to 3.00 P.M of dt 31.10.2011 and only the technical bid will be opened at 4.00 P.M. on the same day in presence of the tenderer's or their authorized representatives having valid autohorisation letter from the tenderer, if any, by the **Addl. Administrative Officer**.
- IMPORTANT:** The tender submitted in any other format than the tender schedule will not be accepted and shall be rejected outright at the time of opening of tender.
- The Board is registered with DSIR, Ministry of Science & Technology, Govt. of India, New Delhi for exemption of Central Excise and Customs Duties vide No. TUVN/RG-CDE (217)/2010 dt. 22.12.2010, which is valid up to dt.31.8.2013.
- 3 The technical bid with respect to compliance to the Board's desired specifications shall be evaluated by an internal technical committee and after compliance of the same, the commercial bid will be opened in the presence of the tenderer (s) by the members internal technical Committee for consideration. In case the item (s) is not manufactured in India, the tenderer may submit the rate either in foreign currency or in Indian Rupees or both for consideration. The EMD and commercial bid of the unsuccessful tenderer (s) shall be returned, if they do not qualify to the technical specification.
 - 4 The technical bid of the tender should accompany an earnest money deposit (EMD) @ 1% of the quoted tender value in shape of N.S.C. / N.D.C. / Postal Savings Pass Book / Bank Draft duly pledged in favour of the Member Secretary, State

- 21
- Pollution Control Board, Bhubaneswar, Orissa. ~~No interest will be paid for E.M.D.~~ at the time of release. Request for adjustment or part deposit of EMD will not be entertained. Tenders without E.M.D. will be rejected out rightly at the time of opening of the tender. E.M.D. of unsuccessful tenders will be refunded after selection of items. E.M.D. of successful tenders shall be kept till compliance of supply orders placed against the tender.
5. The successful tenderer's should deposit @ 10 % cost of the instruments (on discretion of Board) as security deposit in shape of bank guarantee with validity period for 15 months from the date of installation along with the bill. The same will be refunded after expiry of warranty period of the instrument. In case of any non-compliance of the terms and conditions of supply order particularly regarding operation of instrument the amount will be forfeited.
 6. Attested photo copies of valid STCC/VAT Clearance Certificate, TIN/ PAN No., authorized dealership certificate should also be enclosed with the tender of technical bid.
 7. The printed leaflet of technical literature / catalogue as per required specifications for all items must be enclosed with the tender. Preventive maintenance and after sales service facilities of instruments shall be submitted with tender. A point wise compliance to the technical specification must be furnished in a separate sheet duly signed. The firm may submit the user list along with the tender. The Board may obtain the views of the users on satisfactory performance of the instruments/ equipments with or without intimating the supplier/ manufacturer prior to taking any decision.
 8. Applicable Govt. Taxes, Duties, Entry Tax, Packing, Forwarding, Insurance and Freight charges etc. for supply and delivery of ordered items at State Pollution Control Board, Orissa, Bhubaneswar shall be mentioned against quoted rates in the commercial bid of tender. The transportation charges will be borne by the tenderer at the time of delivery.
 9. Demonstration (free of charge) is to be done by the tenderer at the office of State Pollution Control Board, Orissa, Bhubaneswar. If so desired, the tenderer shall facilitate operational training courses of sophisticated instruments to users at his convenient center and shall bear all costs.
 10. Validity of the tenders should be for 180 days, from the date of opening of the tender, which can be further extendable up to another 90 days.

11. Telegraphic / Telephonic tenders will not be entertained. Tenders received after due date and time will be rejected outright.

12. The successful tenderer will be required to supply the ordered equipment within 60 (sixty) days from the issue of the supply order. Failure to supply the ordered item within stipulated time period as per the purchase order, may lead to cancellation of supply order and forfeiture of earnest money deposit to Board's account. Further, extension of delivery time period as stipulated in the purchase order depends on the decision of the authority.
13. IMPORTANT Specification: The rates should be quoted only for the specification as mentioned in the enclosed schedule. Extra/Alternative rates will not be entertained. Full payment will be made within 45 (Forty Five) days from the date of fulfillment of the terms and conditions of the purchase order and supply as per Board's required specifications along with verification in presence of the supplier representative followed by satisfactory performance of the instruments for at least one week and respective operational training of personnel of the Board. Advance payment either in part or full and payment through bank in case of instrument to be supplied in Rupees will not be entertained. However, procurement of the instruments from foreign principals may be done through Bank L/C with applicable customs duty exemption.
14. The guarantee / warranty period in respect of each scientific equipment should be clearly quoted. Commitment to provide after sales service for a minimum period up to 10 (Ten) years of the post guarantee/warranty period.
15. The competent authority reserves the right to reject any or all tenders or accept a portion thereof, increase or decrease the number of requirements without assigning any reason thereof. Verbal communication and / or information given by the undersigned or its employees or representatives shall not be binding on the undersigned.
16. If any dispute arises, the matter shall be settled in any Court at Bhubaneswar or in the Hon'ble High Court of Orissa at Cuttack.


MEMBER SECRETARY

N.B.: PLEASE FURNISH THE TECHNICAL AND COMMERCIAL SCHEDULE SEPARATELY ITEM WISE IN PACKET MENTIONING ITS SL. NO. OVER THE PACKET WITHOUT MIXING WITH EACH OTHER.

COMMERCIAL BID

Sl. No.	Name of Instrument/ Equipment (Specifications described in the enclosed Technical Bid)	Required quantity (Nos.)	Unit rate (Rs.)	Total price (both in figure & words) (Rs.)	Remarks, if any
1.	Hot Air Oven	5			
2.	Respirable Dust Sampler (Noiseless)	35			
3.	Visible Spectrophotometer	5			
4.	Gas Chromatograph	1			
5.	Stack Monitoring Kit	16			

Signature

Member Secretary
S.P. C. Board, Orissa
Bhubaneswar

Signature of the Tenderer
with Seal

Technical Specifications of Equipments/ Instruments

1. Hot Air Oven

Technical Specifications
<ul style="list-style-type: none">• Inside chamber size: 355 mm x 355 mm x 355 mm• Double walled with inside wall made of stainless steel and outside wall made of mild steel furnished in durable white enamel paint• The space between the walls should be at least 75 mm thick and packed with pure white glass wool• Heating elements should be located at appropriate locations to enable temperature controls through a built-in air circulating fan and thermostat arrangement from room temperature to 250°C.• Should have a built in digital thermometer and 2 adjustable air ventilators located near the top of the sides.• With a thermometer for comparison of internal temperature with digital display temperature• Should have provision for timer (up to at least 2 hours and adjustable in multiples of 15 minutes or less) with auto-cutoff.• Should be complete with pilot lamp, digital temperature display, at least two perforated adjustable shelves, power cable and plug.• Safety Features: An Additional inbuilt thermostat is to be provided to cut off power supply in case the controller fails.• Power requirement: 230 ± 10 volts 50 Hz AC.• BIS specification: to be supplied with ISI mark

2. Respirable Dust Sampler (RDS):

<ul style="list-style-type: none">• Blower: Noiseless, brush less, induction driven blower• Noise: Operating noise of the equipment shall not exceed by more than 5 dB(A) than the ambient noise level at a distance of 5m from the equipment.• Flow Rate: 0.9 – 1.4 m³/min free flow, attached with flow controller• Particle Size: Coarser particles > 10 microns shall be separated by a sharper cutoff cyclone and collected separately. The particle size of less than 10 microns shall be collected on glass micro fiber filter paper to be mounted in the filter holder, designed to accept any standard filter paper sheet of 20 cm x 25 cm.• Sampling Time: 28 hours (maximum)• Sampling Time Record: 0 to 9999.99 hrs.• New time totaliser circuit: for detection of blower stoppage due to any reason• Automatic Sampling: 24 hrs. programmable timer to automatically shut off the system at pre set time interval• Power Requirement: Normal 230 ± 10V, single Phase, 50 Hz AC. Built in voltage stabilizer with automatic shut-off beyond 170-270V range
Gaseous sampling :
<ul style="list-style-type: none">• Flow Rate : 0.3 to 3 LPM, 2% accuracy• Flow Control : Four inlet and one outlet manifold with built in needle valves for flow control of each inlet• Temperature controller: Gaseous sampling attachment should be fitted with thermo electrical cooling facilities to keep the impingers at 15°C• Sampling Train: 35 ml. Borosilicate glass impingers (4 nos.), plastic impingers (2 nos.) for fluoride sampling , dimensions as per IS: 5182 Part V• Warranty/ Guarantee card: To be provided indicating the period at the time of installation• Others: Service manual, sales and service facility, commitment for maintenance of instruments and supply of spares at least up to 10 (Ten) years

3. Visible Spectrophotometer

• Microprocessor controlled Spectrophotometer with wavelength display and auto-zero facility
• Single beam optics
• Light source: Tungsten-halogen lamp (12v-50W)
• Gratings: minimum 600 groves/mm
• Wavelength range: 340-990 nm
• Wavelength accuracy: ± 2 nm
• Wavelength resolution: ± 1 nm
• Wavelength readability: Better than 1.0 nm
• Spectral Band width: 5 nm
• Mode: selectable for transmittance (% T), absorbance (A) or concentration (C) and A to C conversion factor
• Photometric range: 0.00 -100 in T 0.00- 2.500 A 0.00 -9999 in C
• Photometric noise: Less than 0.1 % T near 100 % T 0.001near 0.00 A 0.002 near 1.00 A
• Photometric accuracy: ± 0.005 at 1 absorbance
• Photometric readout: 4 Digit LED display
• Accessories: manual, dust cover, spares and consumables for two years of operations, lamps (2 nos.), fuses
• Optional accessories: flow through cell with holder
• Set of absorption cells- 10 mm (10 nos.) quartz
• Optional 50 mm path length cell holder and 50 mm quartz cell (2 nos.)
• Should operate on 220 \pm 10 volts 50 Hz AC power supply
• Operation manual and hassle free operation for at least 5 years

4. GAS CHROMATOGRAPH with ECD-FID (OPTIONAL: NPD)

S. No.	Specifications	Requirement	
1.0	INSTRUMENT COMPOSITION		
	Gas Chromatograph	One set	
	Capillary Column with accessories	One set each of specified columns	
	ECD Detector	One set	
	FID Detector	One set	
	GC Data Station	One set	
	Auto Sampler	One set	
2.0	TECHNICAL SPECIFICATIONS		
	2.1	GC System	Computer controlled Data Workstation based computer compatible (GC). Built in Diagnostics and Comprehensive Self-Testing
	2.2	Oven temperature programming ramps	At least 6 ramps and seven plateaus
	2.3	Heated zones	At least six including Oven, Two Injectors, Two Detectors and One Auxiliary
	2.4	Display	Functional keyboard with four line alphanumeric display
			Display includes temperature and pressure / flow parameters, type of carrier gas, carrier gas column pressure, flow rates, split flow, detector gas flow rates and all detector parameters including method and Auto sampler information.
	2.5	Memory protection	Power fail memory protection,
	2.6	Storage facility	Unlimited methods and automated sequences
	2.7	Networking and data communication	LAN interface
	2.8	Method editing facility	Non-active methods should have editing facility
2.9	System leak check	Unattended and automated system leak simultaneous check	

S. No.	Specifications	Requirement
2.10	Injector / Detector mounting	2 Injectors and 2 detectors simultaneous mounting and capable to hold 100 µm to 530 µm different diameter capillary to mega bore columns
2.11	Purge system	Effective Gas Saver and Septum Purge System
2.12	Injection facility	Automatic and Manual Injection both
3.0	COLUMN OVEN	High performance, large capacity oven accommodating at least two capillary columns
	Volume	More than 10 Litres
	Operating temperature	Maximum 4 °C above ambient to 450 °C
	Temperature set point	± 1 °C
	Temperature Stability	± 0.01 °C for 1 °C ambient change
	Ramp rate	Up to 120 °C / minute
	Heating time	Maximum 8 mins (50 – 400 °C)
	Cooling time	Maximum 5 mins (400 – 50 °C)
	Facility for	Column bleed compensation
	Vent temperature control	Microprocessor control in automatic sequence and fast
4.0	FLOW / PRESSURE CONTROLLER	
4.1	Electronic Pneumatics Control (EPC) channels	Inlets, detectors, or auxiliary gases through Data Processor with screen display of pressure / flow
4.2	Pressure adjustment	0.01 psi increment
4.3	Compensation (pressure/temp.)	Atmospheric pressure compensation for altitude and ambient temperature variations
4.4	Pressure / flow programming ramps	Two or more
4.5	EPC setting facility	Computer work station system

S. No.	Specifications	Requirement
4.6	EPC sensor	Inlets and detectors for all gases (carrier gas, make up gas and support gas in detectors, and carrier and split vent gas in inlets)
4.7	Flow/pressure set points	On each inlet on detector parameter screen
4.8	Flow sensor for control and storage	Split ratio in split / splitless
5.0	INJECTOR	Two injectors mounting, one split / splitless injector
5.1	Protection	Heater, Temperature Sensor and protection from overheating
5.2	Capacity	To hold all types and all sizes of capillary columns and mega bore columns as well
5.3	Purge adjustment	Efficient Septum Purge system, purge time adjustable
5.4	Compatibility	Solid Phase Micro Extraction (SPME) system
6.0	SPLIT / SPLITLESS INJECTOR	Forward inlet pressure programming with an optimized modular, uniform thermal profile for split / splitless injections
6.1	Flow control	Electronic pressure / flow control
6.2	Temperature control	Upto 400 °C for split/splitless injector with 1 °C increment
6.3	Solvent / backflush facility	Solvent Rejection and backflush
8.0	DETECTORS (COMPULSORY)	Detector combination would be ECD-FID
	Temperature range	Detector specific
	Detector mounting	Two detectors should be mounted; one detector to be standby (NPD).
	Pressure control	EPC and electronic on/off facility for all detector gases
	Auto zero & protection	Detector with desired make up gas and automatic zeroing facility and overheat protection

S. No.	Specifications	Requirement
8.1		<p>Electron Capture Detector (ECD) with Nickel 63 Radioactive source with high sensitivity for compounds having affinity for free electrons. ECD operation with electronic control using modulated frequency.</p> <p>Radioactive Source : Nickel 63 Ionisation Chamber volume : 0.75 ml Temp Control Range : Ambient to 400°C maximum Operation mode : Modulated frequency Electrometer sensitivity : 10⁻¹² Amps FSD ECD sensitivity : 10⁻¹³ gm/sec for Lindane Output Provisions as required : To recorder 1mV or 10 mV To integrator 1V DC To Computer 10 V DC</p> <p>Auto zero facility : To be provided & to be operated through key board</p> <p>Provided MF / DC modes for ECD</p>

ECD

S. No.	Specifications	Requirement
8.2	<p>FID</p>	<p>Flame ionization Detector with Amplifier (EPC Controlled) :</p> <p>FID made up of stainless steel on universal mounting with electrometer amplifier</p> <p>Technical Data</p> <ul style="list-style-type: none"> • Type : Solid –state linear electrometer amplifier single • Electrometer Sensitivity : 1×10^{-12} Amps full scale on max sensitivity • FID sensitivity : 5x10-12 gram/sec for C₉ hydrocarbon • Linear dynamic range : Better than 10^7 • Max. Temp. : 450°C • Detection: Flameout detection facility • Ignition: Auto Ignition facility • Noise : Less than 1%, Drift : Less than 1% • Backing off : Software selectable • Auto Zero facility : Through key board
9.0	<p>OPTIONAL DETECTOR</p>	
9.1	<p>NPD</p> <p>Minimum Detection limit</p> <p>Selectivity</p> <p>Dynamic range</p> <p>Operational Temperature Range</p> <p>Standard EPC</p>	<p>NPD detector with direct heating with induction current.</p> <p>< 0.4 pg N/S, < 0.2 pg P/S with Azobenzene / Malathion / Octadecane mixture</p> <p>25000 to 1 g N/g C, 75000 to 1g P/g C with Azobenzene / Malathion / Octadecane mixture</p> <p>> 10^5 N, > 10^5 P with Azobenzene / Malathion mixture</p> <p>~ 400 °C in 1 °C increment</p> <p>Standard EPC for three gases Air – 0-200 ml/min; Hydrogen 0-30 ml/min; Makeup gase 0-100 ml / min</p>

S. No.	Specifications	Requirement
	<p data-bbox="289 1503 321 1755">AUTOSAMPLER</p> <p data-bbox="337 1541 370 1755">No. of sample vial</p> <p data-bbox="386 1558 418 1755">Syringe capacity</p> <p data-bbox="435 1558 467 1755">Washing solvent</p> <p data-bbox="483 1503 516 1755">Injection port access</p> <p data-bbox="532 1423 565 1755">Internal standard calibration</p> <p data-bbox="581 1587 613 1755">Programming</p>	<p data-bbox="337 567 370 1184">Capable of accommodating minimum 100 nos. vials.</p> <p data-bbox="386 781 418 1184">Upto six different syringe capacity</p> <p data-bbox="435 604 467 1184">Up to four different washing solvents in 4 ml vials</p> <p data-bbox="483 424 516 1184">Access three injection ports without requiring an additional tower</p> <p data-bbox="532 407 565 1184">Automated internal standard calibration and "sandwich" technique</p> <p data-bbox="581 554 613 1184">Completely programmable from Workstation software</p>
10.0 11.0	<p data-bbox="883 1205 948 1755">COLUMNS / CARRIER – DETECTOR - MAKE UP GASES</p>	<p data-bbox="792 214 857 1184">Suitable columns (Packed / Capillary) for the analysis of pesticides, PAHs, PCBs, PCPs, VOCs, THMs, Dioxins & Furans in environmental samples</p> <p data-bbox="896 340 961 1184">Suitable carrier – detector – make up gases with accessories as per the requirement</p>
12.0	<p data-bbox="993 1533 1026 1776">DATA STATION</p>	
12.1	<p data-bbox="1078 1348 1110 1776">Licensed Application Software</p> <p data-bbox="1133 1562 1166 1755">Data acquisition</p> <p data-bbox="1237 1528 1269 1755">Memory Protection</p> <p data-bbox="1286 1516 1318 1755">Data export / import</p>	<p data-bbox="1084 348 1117 1184">With basic programming facility, Accurate and Reproducible Integration</p> <p data-bbox="1133 214 1230 1184">At least three simultaneous chromatograms and data acquisitions Reintegration Report Multilevel Calibration Baseline Correction Area Calculation Background Subtraction and Custom/tailored report format facility should be in-built</p> <p data-bbox="1237 730 1269 1184">Battery back up for memory protection</p> <p data-bbox="1286 214 1351 1184">Data Export/Transformation to data base software i.e., Excel and Access should be supplied with the system</p>

S. No.	Specifications	Requirement
	Quality control	Software for Quality Control Protocols
	Data display / handling	Software for data display, handling, data export/import and reporting
12.2	<p data-bbox="407 1507 444 1780">Computer System</p> <p data-bbox="509 1633 542 1705">Make</p> <p data-bbox="558 1579 591 1705">Processor</p> <p data-bbox="607 1642 639 1705">RAM</p> <p data-bbox="656 1642 688 1705">HDD</p> <p data-bbox="704 1621 737 1705">Monitor</p> <p data-bbox="753 1591 786 1705">CD ROM</p> <p data-bbox="802 1558 834 1705">DVD-CDRW</p> <p data-bbox="850 1642 883 1705">Ports</p> <p data-bbox="932 1579 964 1705">Key board</p> <p data-bbox="980 1621 1013 1705">Mouse</p> <p data-bbox="1029 1600 1062 1705">Ethernet</p> <p data-bbox="1094 1570 1127 1705">Graphics</p> <p data-bbox="1143 1621 1175 1705">Sound</p> <p data-bbox="1192 1621 1224 1705">Printer</p>	<p data-bbox="509 655 542 1192">Reputed brand such as HP/Compaq/IBM/Dell</p> <p data-bbox="558 571 591 1192">Intel Core 2 Duo processor 3.0 GHz or latest version</p> <p data-bbox="607 865 639 1192">4 GB (upgradeable to 8 GB)</p> <p data-bbox="656 634 688 1192">500 GB ultra DMA or higher HDD (7200 RMP),</p> <p data-bbox="704 802 737 1192">21" TFT-LCD Flat Colour (Digital)</p> <p data-bbox="753 844 786 1192">52x CD-ROM or latest version</p> <p data-bbox="802 256 834 1192">32x DVD-ROM and CDRW-Combo Drive Max speed 48x24x48 or latest version</p> <p data-bbox="850 277 899 1192">2 Serial, 1 parallel and 2 USB front 6 Rear USB2 PS/2 Port, 1VGA integrated Port 1line in/out port,</p> <p data-bbox="915 898 948 1192">104 Key IBM Compatible</p> <p data-bbox="964 919 997 1192">Optical mouse with pad</p> <p data-bbox="1013 772 1045 1192">32 bit auto selectable 10/100 MBPS</p> <p data-bbox="1062 730 1094 1192">Internet ready with integrated Graphics</p> <p data-bbox="1143 613 1175 1192">Integrated sound card and inbuilt stereo speakers</p> <p data-bbox="1192 592 1224 1192">HP LaserJet Printer 1200 x 1200 dpi 12 PPM black</p>

S. No.	Specifications	Requirement
12.3	Softwares	Pre-loaded Windows 7.0 Professional / Windows XP Professional latest version operating system with Licensed CD should be compatible with operational software.
		Preloaded Antivirus with latest version along with Licensed CD. Up gradation of software as and when required
	ACCESSORIES	
	Operation / maintenance manual	Operation and maintenance manual
	Application Notes	Application notes in (CD) for pesticides, PAHs, PCBs, PCPs, VOCs, THMs, Dioxins & Furans in environmental samples
	Service manual	Service manual
13.0	N ₂ Gas Regulator	N ₂ gas complete stainless steel regulator (2 stage) with necessary tubing and connectors (1 No.)
	Hydrogen gas regulator	H ₂ gas complete stainless steel regulator with (2 stage) with necessary tubing and connectors (1 No.)
	Zero air regulator	Zero air complete stainless steel regulator (2 stage) with necessary tubing and connectors (1 No.)
	Tool kit	One set of required tools
	Gas Cylinders	H ₂ , N ₂ and Zero Air with purifier and moisture trap
		High pressure stainless steel cylinder filled with high purity 99.999% gases. Gas capacity 7 m ³ , water capacity 47 liters. Cylinder should be ISI marked conformed to IS-7285 specifications, Flat bottoms fitted with valve cap pointed as specified under gas cylinder as per IS-3224 complete with neck ring and cylinder cap: Hydrogen - one Nitrogen - one Zero - one

S. No.	Specifications	Requirement
14.0	SPARES & CONSUMABLES	Spare and consumables sufficient for two years trouble free operation should be included in the offer and supplied with each system
	Column nut	10 Nos.
	Washer	10 Nos.
	Graphite / vespel ferrules different sizes	20 Nos. each
	Inlet Septa (self sealing for injectors)	200 Nos
	O ring	20 Nos.
	Copper tubing with connectors	50 mtrs.
	Micro syringes for manual injection (5 µl)	4 Nos.
	Micro syringes for manual injection (10 µl)	4 Nos.
	Copper tube cutter	02 Nos.
	Auto sampler vials (2 ml)	500 Nos.
	Auto sampler septa and caps	2000 Nos.
	Auto sampler spare syringes	1.0 µl – 5 Nos. 5.0 µl – 5 Nos. - additional
15.0	WARRANTY	Comprehensive warranty with spares for three years from the date of installation of the instrument should be covered. AMC amount for next five years in two phases also to be quoted.
16.0	OPERATION AND MAINTENANCE TRAINING	The supplier has to impart on-site operation training at the time of installation followed by Complimentary (all expenditure inclusive) one week training to two scientists on application, Routine maintenance and software training at their application laboratory in India.

S. No.	Specifications	Requirement
17.0	<p align="center">GENERAL CONDITIONS OF SUPPLY</p>	<ol style="list-style-type: none"> 1. The instrument and all its sub units should operate on 230 ± 10 AC volts 50 Hz power supply. 2. All the operation and maintenance manuals, circuit diagrams, application notes and application softwares to be supplied should be in English language. 3. The supplier / manufacturer should have Indian agent to provide after sales service. 4. The main unit and all the sub units of the instrument should be serviced by the Indian representative of supplier. 5. The Bidder should be a manufacturer/authorized representative of a manufacturer, who must have designed, manufactured, tested and supplied two numbers of such equipment similar to the type specified in the past five years, which shall be in successful operation for at least 2 years as on the date of bid opening. 6. The bidder should furnish the information on past supplies and their satisfactory performance. 7. Bidders shall invariably furnish documentary evidence (client's certificate – at least two) in support of the satisfactory operation of the equipment as specified above. 8. Notwithstanding anything stated above the purchaser reserves the right to assess the capability and capacity of the bidder to perform the contract, should the circumstances warrant such an assessment in the overall interest of the purchaser. 9. 80% amount of the bill will be released at the time of shipment. The balance 20% will be released after satisfactory commissioning of the instrument. This amount will be released and bank guarantee of equivalent amount has to be provided by the supplier till end of warrantee period.

5. Stack Monitoring Kit

Stack Monitoring Kit for measurement of particulate matter emission with additional monitoring facilities for Gaseous pollutants like SO ₂ , NO _x , HF, Cl ₂ and H ₂ S etc.	
Stack Temperature Range	Ambient to 600 °C read on a Digital Pyrometer
Stack Velocity Range	3 to 60 m/sec
Thermocouple	T/C sensor in SS 304 casing, length of insertion: 1.0 m with 2 m long cable.
Manometer	Digital with 0-1300 mm of H ₂ O range
Pitot Tube	Calibrated S-type fabricated –SS 304 with extendable facilities (minimum 1m long)
Particulate Sampling	2-30 lpm collection on thimble type filter up to 0.3 micron rating
Gaseous Sampling	0.2 - 3 lpm collection in a set of Borosilicate glass impingers (10 Nos.), for gaseous fluoride monitoring Plastic/ teflon impingers (6 Nos.)
Rotameter	Acrylic body with 2% FSD accuracy, 0-30 lpm for PM and 0-3 lpm for gas
Sampling Probe	1 m long, made from SS 304 tube with inside lining of Teflon with extendable facilities & provision for controlled heating at 120° C
Filter Holder	Filter Holder to hold either Cellulose Thimble (size 28mm ID X 100 mm long) or Glass Micro fiber Thimble (size 19mm ID X 90 mm long): Glass filter holder with heating provision – 02 Nos and SS filter holder (SS 304) - 01 No.
Nozzles	Set of 3 Nos. Glass and 3 Nos. Stainless Steel nozzles
Digital Clock	0-60 minutes, 1 second readout with start and stop switches
Temp. Controller	Digital type temperature controller
Dry Gas Meter	Range 0 to 40 LPM connected to SPM line
Sampling Train	03 Nos. of 240 ml capacity glass impinger, 01 No. Condenser glass coil, 01 No. moisture bottle (400 ml) & 01 No. Cartridge tube accommodated in separate ice tray with instrument panel with a provision to cool down flue gas temperature
Vacuum Pump	For gaseous fluoride specific impingers (Plastic / Teflon) to be supplied Portable, Monoblock, Rotary Vane type, oil free, 0.5 HP single phase motor (230V) with 50 lpm free flow capacity

List of Components: Instrument panel consisting of pyrometer, manometer rotameters, vacuum gauge, stop watch, dry gas meter and temperature controller, Probe kit consisting of probe pipe, pitot tube, connecting hoses, tool kit, filter holder, nozzles, thermocouple, heating system, tripod etc. Cold box assembly consisting of glass impingers / Plastic(Teflon) impingers, condenser glass coil, moisture bottle & water pump, Vacuum pump assembly