

TENDER NOTICE
NO. MPPCB/PURCHASE/02/2012-13

TENDER DOCUMENT

FOR SUPPLY OF

**LABORATORY INSTRUMENTS AND
FILTER PAPERS**



Year: 2012 - 13

M. P. Pollution Control Board
E-5 Sector, Paryawaran Parisar,
Arera Colony, Bhopal - 462016

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M. P. POLLUTION CONTROL BOARD

PARYAWARAN PARISAR, E-5, ARERA COLONY, BHOPAL - 16

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TENDER NOTICE NO. MPPCB/PURCHASE/02/2012-13

Sealed tenders are invited from the reputed manufacturers [approved by BIS/ISO for quality & precision] and / or their authorized dealer / agent / representatives, specially authorized for this tender, for the supply of following laboratory instruments and Filter Papers:

Sl. No.	PARTICULARS OF ITEM & Qty.	APPROX. COST [Rs. In lakh]	EARNEST MONEY [Rs.]
1.	Deep Freezer [01]	100000.00	2000.00
2.	Flame Photometer [05]	325000.00	6500.00
3.	pH Meter [06]	150000.00	3000.00
4.	Conductivity Meter [02]	60000.00	1200
5.	Muffle Furnace [02]	150000.00	3000.00
6.	Autoclave [02]	160000.00	3200.00
7.	Bacteriological Incubator [02]	160000.00	3200.00
8.	Turbidity Meter [04]	200000.00	4000.00
9.	Hot Air oven [02]	80000.00	1600.00
10.	Portable [Hand Held] Ambient Air Sampler [02]	200000.00	4000.00
11.	Gas Detection Tubes [02 sets]	200000.00	4000.00
12.	Hot Plate [02]	20000.00	400.00
13.	COD Digestion Assembly [01]	100000.00	2000.00
14.	Water Bath [01]		
15.	UV-VIS Spectrophotometer [01]	125000.00	2500.00
16.	Global Positioning System [GPS] [12]	360000.00	7200.00
17.	Rotary Evaporator [01]	250000.00	5000.00
18.	Orsat Apparatus [01]	150000.00	3000.00
19.	Electronic Balance [01]	150000.00	3000.00
20.	Respirable Dust Samplers [12]	720000.00	14400.00
21.	Dissolved Oxygen (D.O.) Meter [01]	50000.00	1000.00
22.	Safety Personal Protective Equipment	315000.00	6300.00
23.	Filter Papers for Air & water analysis	3000000.00	60000.00

The tender document including technical specifications of equipment shall be issued up to 3.00 PM on dated 18.10.2012 on payment of Rs. 1000.00 [Rupees One Thousand only] by cash or demand draft [Rs. 50.00 extra for supply of

documents by post] in favor of Member Secretary, M. P. Pollution Control Board, Bhopal. The application for sending tender document by post shall not be accepted after 15.10.2012. The earnest money of requisite amount shall be submitted in a separate sealed envelop mentioning the details thereof. No tender shall be considered without requisite earnest money. The last date for submission of tender is 19.10.2012 by 1.00 PM and the same shall be opened on the same day at 3.00 PM in the presence of bidders, who wish to participate. The detailed terms & conditions are available in tender document. This Tender Notification may also be downloaded from Board's Web site www.mppcb.nic.in and www.govtenders.nic.in and the cost of tender document should be submitted in the form of demand draft along with Earnest Money in Envelop "A".

sd/-
[R. K. Jain]
Member Secretary

M. P. POLLUTION CONTROL BOARD

PARYAWARAN PARISAR, E-5, ARERA COLONY, BHOPAL - 16

Phone: [0755] 2466191/2464428 Fax: [0755] 2463742 E-mail: it_mppcb@rediffmail.com

To,

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Sub.: Sealed tenders for purchase of laboratory equipment.

Dear Sir,

M. P. Pollution Control Board desires to procure laboratory equipments and Filter Papers for its laboratories spread over whole of the state. Sealed tenders are invited from the reputed manufacturers [approved by BIS/ISO] or their authorized representatives, specially authorized for this tender, who are capable of supplying laboratory equipment and filter papers, which are shown on tender notice. The terms and conditions are as follows:

[A] **SPECIAL CONDITIONS:**

1. All prices quoted should be CIF New Delhi for imported equipment. Other charges like transportation, insurance, F.O.R. destination and installation charges should be quoted separately. For indigenous equipment prices should be F.O.R. destination.
2. Prices should be quoted for complete set of equipment including the cost of installation, minor civil works, electrical fittings and cabling etc.
3. Accessories required [if any] for maintenance for a period of three years should be given separately.
4. Annual Maintenance charges for three years should be quoted separately in Annexure - 2.
5. The technical specifications of the equipment are given on page no.13 to 38. The technical specifications of the offered equipment should be furnished in annexure - 1. Schedule of requirement is annexed as annexure-4(i) & 4(ii). The check list is shown as annexure -5.

6. The equipment offered should necessarily contain a guarantee for its trouble free performance for a period of one year from the date of installation.
7. The offer should clearly mention make, name of the manufacturer, detailed specifications, detailed literature about the equipment/circuit diagram/drawing of the mechanism and any other information relevant to the equipment. For any printing error / mistake in final bid will be the responsibility of the bidder and no correspondence will be entertained by the Board in future.
8. The tenderer should furnish details of supplies made by him to important institutions, along with performance certificate, during last one year [Users' list].
9. The firm / manufacturer submitting the offer shall only quote for one most suitable model of the offered equipment whose specification matches the Board's specifications. No alternate offers shall be considered and, if submitted, the offer shall be rejected.
10. Earnest money be furnished by a demand draft in favor of Member Secretary, M. P. Pollution Control Board, Bhopal in envelop "A". Offers without earnest money shall not be considered and the relevant envelopes [B & C] will not be opened and their offer shall be treated as rejected.
11. Bidders using downloaded tender forms must submit tender fee by demand draft along with Earnest Money in Envelop "A" drawn of Member Secretary, M. P. Pollution Control Board, Bhopal. The tender will not be accepted from the firm to whom the document is not issued by the Board and the bid downloaded from net without tender fee will not be accepted
12. The bidder shall have to submit the copy of sales tax registration and Income Tax registration [PAN] along with envelop "B" otherwise the offer shall be liable for rejection.
13. An undertaking shall be submitted by the tenderer that they are not black listed in any Govt. organization / institutions along with envelop "B".
14. The bidder shall provide exclusive company profile including necessary certificates / license for manufacture the product from DGTD / SSI/SIA etc.

15. The specifications are clearly mentioned in the document and the Bidder is requested to submit Bid only if their offer strictly comply to these specifications. Please note that no deviation in the required specification will be permitted. The bidding for the instruments having different specification will be on Bidder's risk as the Board will not entertain such Bids.

16. **PROCEDURE FOR SUBMISSION OF TENDERS :**

Each bidders shall submit his offer in three sealed envelops A, B and C. Envelop "A" shall contain earnest money and tender cost, if the tender document is downloaded from the web site. The Envelop "B" should contain technical specification, terms & conditions, company profile, copy of sales tax registration number, PAN number and authorization certificate from manufacturer for submission of offer for this tender, if offer is submitted by authorized representative. In case the manufacturer of any equipment authorizes more than one firm for submitting offer, then such offers shall be treated as rejected. Envelop "C" shall contain financial offer.

[a] Envelop - "A" : Envelop "A" should contain demand draft for the requisite amount of earnest money in favor of Member Secretary, M. P. Pollution Control Board, Bhopal. If the tender document is downloaded from web site, then separate demand draft for tender cost shall be submitted with envelop" A". The name of instrument and the amount of the demand draft should be inscribed on the top of envelop. Envelop "A" shall be opened on 19.10.2012 at 3.00 pm in the presence of the bidders or their authorized representatives. Insufficient amount furnished as earnest money and tender cost shall make the offer liable for rejection.

[b] Envelop - "B": Bidders, who have furnished the desired amount of earnest money and tender cost shall be liable for opening of the Envelop "B" of their offer. The Envelop "B" should contain detailed technical specifications in annexure -1, make & model of the equipment, functioning procedure of the equipment and other literature relevant to the equipment and company profile. If the offer is submitted by authorized representative, he should submit authorization letter in envelop "B" from the manufacturer for submitting offer for this tender, otherwise tender offer of the firm shall not be considered and liable for rejection. The tenderer should furnish users' list and details of supplies made by him to important institutions along with performance certificate. The bidder shall have to submit the copy of sales tax registration and income tax no. [PAN] along with the envelop "B", otherwise the offer

shall be liable for rejection. An undertaking shall be submitted by the tenderer, regarding whether they are not black listed in any Govt. organization / institutions, along with envelop "B". The details of service station in Madhya Pradesh and India should be furnished with other details.

[c] Envelop - "C" : The envelop "C" shall contain financial offer in annexure 3 or 4 [whichever is applicable] of the tender document. Offers received in due time shall be evaluated technically by a committee constituted by the Chairman, M. P. Pollution Control Board and as per the recommendation of committee , depending upon the suitability of equipment with respect to application, performance, after sale service and service centers in Madhya Pradesh or in India etc., the financial offer shall be opened.

[B] OTHER CONDITIONS :

1. The Madhya Pradesh Pollution Control Board reserves its rights to reject any or all the tenders without assigning any reason there for.
2. Tender found incomplete shall be rejected forthwith.
3. The indigenous equipment, for which an order has been placed, after acceptance of the tender, shall have to be delivered, installed & demonstrated to the consignee mentioned in the supply order within 60 days from the date of issue of supply order. In case of late supply of the material, 2% per month penalty shall be charged up to one month, there after supply order shall be treated as cancelled and earnest money shall be forfeited and the supply order shall be issued to the second lowest firm. In case of unavoidable delay in supply a prior permission shall be obtained for extension in delivery period.
4. The time limit for the supply of imported equipment shall be 90 days, which can be relaxed for additional 30 days by the Member Secretary. After scheduled time limit, 2% per month penalty should be levied.
5. If the bidder is not a manufacturer himself, should have a facility for repairing and maintenance of the instrument. The details of service centers in Madhya Pradesh and India should be furnished along with other details.

6. It shall be the responsibility of the bidder to deliver the material to the consignee in sound condition without any damage. Any damage or loss during transit shall be on the account of the bidder.
7. The tenders shall be valid for a period of 180 days from the date of opening of envelop "A". In case the validity is to be extended; the Board may solicit the Bidder's consent to an extension on the period of validity and the bid shall remain valid for the extended period mutually agreed for.
8. The prices should include all taxes like sales tax, excise tax or any other tax.
9. In case of equipments, the approved firm / manufacturer shall have to submit 5% security deposit of the ordered value in the form of Bank Guarantee for a period of 12 months, other wise 5% amount shall be deducted from the bill.
10. In case the approved bidder fails to effect supply, within the specified period as per supply order, the earnest money is liable to be forfeited.
11. The consignee or any other officer authorized by the Board shall have the right to reject any or all the items of the supply, if they do not confirm to specifications mentioned in the supply order. The rejected items shall be lifted by the bidders at their own cost. The consignee will not be responsible for the custody and safety of such items.
12. The Board reserves its rights to effect any reasonable increase or decrease in the quantity or number of items at the time of issue of supply order in the interest of the Board.
13. All the clearance including the obtaining NMI [Not manufactured in India] certificate, custom clearance and custom duty will be the responsibility of the tenderer. This office will open the letter of credit [L/C] as may be required and will only sign the documents wherever required.
14. In case, if any supplier quote their rates in Indian Rupees for imported equipment and do not require custom duty exemption certificate from the Board, then the supplier has to submit import document like bill of entry, custom duty paid and NMI [Not manufactured in India] certificate from the manufacturer.

15. The bidder is expected to examine all instructions, forms, terms and conditions and specifications mentioned in the bid document. Failure to furnish all information required by the bid documents of submission of a bid not substantially irresponsive to the bid document in every respect will be at the bidder's risk and may result in the rejection of its bid.
16. The terms of payment shall be as under:
- [A] Indigenous Items: 75% of the cost of material would be paid after receipt of the material by consignee and balance 25% payment shall be released only after satisfactory installation and demonstration of the equipments / material at site.
- [B] Imported equipments/ Filter Papers: The letter of credit will be opened for total ordered value, but 75% of the cost will be released on shipment of the material and balance 25% payment shall be released only after satisfactory installation and demonstration of the equipments / receipt of material at site.
17. Conditional offers will not be accepted and liable for rejection.
18. In case of human error regarding labeling of envelop, the committee constituted for the opening of envelop shall take appropriate decision.
19. In case of any dispute the decision of Chairman, M. P. Pollution Control Board shall be final & binding.
20. In order to comply the instructions of Department of Commerce & Industries, Govt. of M.P., minimum 30% of the quantity of the items shall be reserved for the manufacturers / entrepreneurs from Scheduled castes/ scheduled tribes based at Madhya Pradesh.

NOTE: The tenders shall be liable for rejection in breach of any of the special or other general conditions of the tender document and no correspondence in this regard shall be entertained in future.

sd/-
[R. K. Jain]
Member Secretary

TENDER SPECIFICATIONS VS OFFERED SPECIFICATIONS

Sl. No.	Tender Specifications	Offered Specifications

Signature of Bidder _____
Name _____
Business Address _____

Place: _____
Date : _____

**PRICE SCHEDULE FOR ANNUAL MAINTENANCE AND REPAIR
CHARGES AFTER WARRANTY PERIOD**

Sl. No.	Item Description	Qty.	Annual Maintenance & Repair charges for each unit including supply of spares [Price to be quoted either in Indian Rupees or in Foreign currency] Excluding guarantee period	Maintenance and Repair charges for 3 years, including supply of spares.

Note: In case of any discrepancy between unit price and total price, the unit price shall prevail.

Signature of the Bidder _____
 Name _____
 Business Address _____

Place _____
 Date _____

PRICE SCHEDULE FOR GOODS IMPORTED

1	2	3	4	5	6	7
Sl. No.	Description	Country of origin	Quantity	Unit Price CIF New Delhi	Total CIF price per item	Unit price pf Inland delivery to final destination and unit price of other incidental services.

Note: In case of discrepancy between unit and total price, the unit price shall prevail.

Signature of the Bidder.....
 Name
 Business Address

Place:
 Date:

Annexure - 4

PRICE SCHEDULE FOR GOODS INDIGENOUS

Sl. No.	Name of equipment with make & model	Unit Price in Rupees	VAT/CST or any other Tax/duty	Unit price including all taxes up to final destination

Note: In case of discrepancy between unit and total price, the unit price shall prevail.

Signature of the Bidder.....
Name
Business Address
.....

Place:
Date:

TECHNICAL SPECIFICATIONS

Item No. 1

Deep-Freezer:

- Capacity : 400-425lit
- Temperature range : 2°C to +12°C
- Type of size : Chest type with 02 no. basket
- Power requirement : 230Volt/50Hz, Single phase
- Double lid facility should be provided.
- Strong wheel base should be provided.
- Lock and key facility should be provided.
- Inner tank material should be stainless steel.

Flame Photometer:**Range of operation (with out dilution):**

Elements	Lower range	Higher range
Na	0-10 ppm	10-100 ppm
K	0-10 ppm	10-100ppm
Li	0-2 ppm	2-50 ppm
Ca	0-100 ppm	100-300 ppm

- i. Curve fit software to be provided for high concentration mode
- ii. Curve fit accuracy: $\pm 2\%$ f.s.

Full Scale Sensitivity:

Na: 2 ppm K: 1 ppm Li: 1 ppm Ca: 30 ppm

Minimum Detection Limit:

Na: 0.2 ppm K: 0.1 ppm Li: 0.1 ppm Ca: 3 ppm

- Filters [10nm typical] : Na , K, Li and Ca .
- Reproducibility : Low Conc.: $\pm 1\%$ f.s., High conc.: $\pm 2\%$ f.s.
- Minimum Sample : Appx. 3 ml per element
- Averaging : 2 to 15 seconds, selectable
- Aspiration Time : [5 sec + Avg. time] per element + 4 sec.
- Operating Air Pressure : 0.45 kg/cm² [typical]
- Air Compressor : With built-in air regulator and air filter to deliver stable moisture / oil free air supply

- Fuel Gas : LPG
- Power supply : 230 V AC, 50 Hz.

Accessories: All necessary accessories to make the equipment functional such as Power cord, Operation and service Manual [2 copies each], Electrode stand [preferentially flexible], Beakers for calibration.

pH Meter:

General requirement: Light weight, Bench top, sensitive microprocessor controlled digital pH Meter, Main [230 ± 10/50 Hz AC] through charging transformer and battery operated.

Salient Points	Specification
Size / weight	Light weight, Portable
Display	LCD, simultaneous display of Temperature and pH
pH Range	0.00 to 14.00 pH
Accuracy	± 0.01 pH
Resolution	0.01 pH
Calibration	Automatic 3 points calibration, 1,2 and 3 points calibration option at operator's desire for buffer values [pH 4.01, 7.0,10.00] or at nereby points.
Slope	80 - 120 %
Electrode	Combined [glass/reference], composed of epoxy, Ag/AgCl
Temperature Range	0.0 to 50 deg.C
Resplution	0.1 deg.C
Accuracy	± 0.50 deg.C
Temperature Compensation	Automatic
Milli Volt Range	± 1999.0
Accuracy	± 0.1 mV
Resolution	0.1 mV
Button/Keys	ON/OFF, pH/mV, CAL, ENTER, UP, DOWN Inputs: BNC, Temperature, Probe, Power, reference
Power	220V online with sufficient back-up battery
Accessories	All necessary accessories to make the equipment functional such as Power cord, Operation and service Manual [2 copies each], Electrode stand [preferentially flexible], Beakers for calibration.
Electrode Maintenance solution	Suitable electrode filling solution for at least 2 years hassle free operation.
Standard	NIST traceable Standard buffers for 3 points calibration <ul style="list-style-type: none"> • Built in printing protocol for attachment of normal printer/PC • RS Interface to attach the normal printer / PC

Conductivity Meter:

General requirement: Light weight, Bench top, sensitive microprocessor controlled digital Conductivity Meter, Main [230 ± 10/50 Hz AC] through charging transformer and battery operated.

Salient Points	Specification
Size / weight	Light weight, Portable
Display	LCD, simultaneous display of Temperature and Conductivity LCD display for the condition of electrode with an warning
Conductivity Range	0.00 to 199.9 μ S 200 to 1999 μ S 2.00 to 19.99 mS
Auto Ranging Resolutions for respective determination ranges	0.1 μ S [0.00 to 199.9 μ S] 1 μ S [200 to 19.99 μ S] 0.01 mS [2.00 to 19.99 mS]
Accuracy	± 2% [at full scale]
Temperature Range	0.0 to 50 deg.C
Resolution	0.1 deg.C
Temperature Accuracy	± 0.50 deg.C
Offset	0.1 deg.C increments
Calibration	up to 3 points [push button, 1 point per range]
Cell Constant	Theoretically 1.0, [Provide internationally Traceable Calibration Certificate]
Temp. Compensation	Automatic, at 0.00 to 50.0 deg.C
Reference Temperature	Factory set at 25 deg.C
Temperature Coefficient	Factory set at 25 deg.C
Button/Keys	ON/OFF, Measure [Cond.], CAL., ENTER, UP, DOWN and others
Inputs	BNC, Temperature Probe, Power, Reference etc.
Power	220V online with sufficient back-up battery
Accessories	All necessary accessories to make the equipment functional such as Power cord, Operation and service Manual [2 copies each], Electrode stand [preferentially flexible], Beakers for calibration.
Standards	NIST traceable Standard for calibration at all working ranges.
Standard	NIST traceable Standard buffers for 3 points calibration <ul style="list-style-type: none"> • Built in printing protocol for attachment of normal printer/PC • RS Interface to attach the normal printer / PC

Muffle Furnace

- Temperature range : Up to 1000°C
- Power requirement : 230 Volt Single / 440 Volts three Phase
- Programmable Digital temperature controller cum indicator should be provided.
- Digital timer of 99 hours should be provided
- Energy regulator should be provided
- Overload protection
- Construction should be lightweight with ceramic fiber Wool insulation.
- Outer body is made of thick M.S. with enamel painted.
- Size inner chamber- 8" x 8" x 18" (L x W x depth)
- Silver Fuse should be provided
- CE / ISO 9001 certified
- Lock & key arrangement.

Autoclave:

Specifications:

- Chamber Dimension** : 350 D X 500 H [mm]
- Jacket Dimension** : 425 D X 525 H [mm]
- Material of Construction** :
- Chamber** : Hospital Grade Stainless steel SS 304, 2.5 mm thick polished interior.
- Jacket** : Polished Stainless steel to provide aesthetic appearance long lasting and to be rust proof .
- Lid Head Plate** :Made out of heavy stainless steel plate with 10mm Flange to hold the swing clamping bolts. Thermally insulated nuts for the bolts.
- Foot Pedal Lift Mechanism** : For the Head Plate
- Insulation** : High quality glass wool of 1.5 " thickness to conserve heat Energy and to be energy efficient.
- Gasket** : Seamless Neoprene, Silicone gasket
- Safety Valves** : 3 safety valves, 2 spring loaded and 1 perforated dead weight safety valves.
- Exhaust Valves** : Provided on the Head Plate to release the steam after the sterilization is completed.
- Water drain** : A drain cock is provided

Operating Pressure : 5 to 20 psi.

Hydraulic Test Pressure : 40psi

Pressure Gauge : 0 to 4 kg/cm²

Timer : Digital Electronic Timer adjustable from 0 - 120 mins. in one minute increments for sterilization control. The system will be automatically shut down after the lapse of the said time.

Water level indicator : Glass gauge visual level indicator will be provided as standard.

Automatic Power Cut off during low water level: A SS float switch will be provided as standard without additional cost to cut off power supply in case water level fails below the heater level and give visual indication on the control panel.

Electrical Service: 230V, 50Hz, 2 KW, 15 amps, single Phase.

Provided with 2 spare gaskets, power cable and plug, Mains On/Off, Timer On/Off etc.

Essential Requirement: Overload test pressure should be demonstrated at the time of Installation.

Bacteriological Incubator

Size (Inner chamber)	:	605x605x910mm (approx)
Temperature Range	:	Ambient to 70°C
Accuracy	:	±0.2°C
Timer	:	99hrs/cotinuuous
Chamber/Body	:	Tripple wall construction. Inner Chamber made of stainless steel SS-304 grade & middle wall made of G.I. sheet. Outer body made of M.S. painted in epoxy powder with perforated adjustable SS shelve 03No.
Power Supply	:	220/230Volt Single / 440 Volts three phase, 50Hz/ AC

- Air Circulatory fan should be provided for circulation of hot air in between inner chamber.
- Programmable Digital Temperature Controller cum Indicator
- Display: up to one decimal point
- Door with glass window should be provided.
- Wheel base should be provided.

Turbidity Meter:

Should be a laboratory and Portable, suitable for measurement even for colored samples, and with the following specifications:

Display	:	Digital [LED]
Ranges	:	0 – 1, 0-10, 0-100, 0-1000NTU Automatic range selection (Four ranges)
Accuracy	:	± 1.5% of full scale for 0 – 500 NTU ± 2% of full scale 500- 1000 NTU
Repeatability	:	Less than 0.1% of full scale
Resolution	:	0.01 for 0 - 0.01 NTU
Stray Light	:	Less than 0.01 NTU on 0 - 10 range
Power requirement	:	230 ± 10 Volts /50 Hz AC
Air Purge	:	0.1 cfm at 20 psig/max instrument air.

Accessories: All necessary accessories to make the equipment functional such as Epoxy - coated steel case, instruction manual, Power cable and plug , dust cover, Cuvettes and cuvette stand.

Hot Air Oven:

Inside chamber of size 605 mm X 910 mm X 605 mm (Approx) should be double walled with inner and outer wall made of thick stainless steel (SS 304). 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 with programmable temperature controller from room temperature to 250 °C. Should have a built in programmable digital thermometer and 2 adjustable air ventilators located near the top of the sides. Should operate on 230 ±10 volts 50 HZ AC power with timer for auto cut offs. Should be complete with pilot lamp, digital display [continuous] facility for temperature, at least three perforated shelves adjustable at any levels, power cable and plug.

Portable (Hand Held) Ambient Air Sampler

The multi gas portable sampler for field monitoring and collection of ambient gaseous pollutants. The basic operation system should be contained in a single light weight, compact, all non corrosive stainless steel / anodized aluminium / FRP with built - in sampler pump, flow measuring rotameter and complete sampling train housing consisting of 2 impingers.

Technical Specifications:

Suction Pump	Built -in and diaphragm type / Rotary type
Max. Vacuum	Adequate to generate required flow rate
Rotameter	0 to 2 lpm flow rate
Timer [Battery operated]	3 digit display in minutes, Adjustable from 0 to 12 hours
Running Time	1 to 999 minutes
Delay Time	1 to 99 minutes
Power Supply	230 ± 10 V AC: 50 Hz with battery back up along with battery charger and Rechargeable Ni-Cd batteries.
Battery back up	Suitable Battery back-up
Charge	15 hours with full charge at 1 lpm
Sampling Train	Consisting of 2 nos, 35 ml glass impingers connected with superior quality Teflon / vinyl tubing to be kept in ice tray
Accessories	All necessary accessories to make the equipment functional such as carrying case, Rota meter [01 No.], Power Cord and instruction manual and spare impingers [06 nos

Gas Detection Tubes

The gas detection tubes should be compatible with gas detection pump Make: Gastec, model GV100LS]

Sl. No.	Description	Range
1.	Carbon Monoxide Tube	1 - 30 ppm
		25 - 1000 ppm
2.	Ammonia	0.5 - 1 ppm
		2.5 - 5 ppm
3.	Benzene	0.5 - 10 ppm
		1 to 20 ppm
4.	Chlorine	0.05 - 0.5 ppm
5.	Chloride	0.05 - 1 ppm
6.	Hydrogen Chloride	0.2 - 1 ppm
7.	Hydrogen Sulphide	0.2 - 1 ppm
8.	Mercaptans	0.1 - 0.2 ppm
9.	Methyl Mercaptans	0.25 - 2.5 ppm
10.	Ethyl Mercaptans	0.2 - 0.5 ppm
11.	Nitrogen Oxides	0.04 - 0.08 ppm
		0.2 - 5 ppm
12.	Sulphur Dioxide	0.2 - 5ppm

Hot Plate

Rectangular Hot Plate shall be capable to perform the analysis of used oil with the maximum temperature up to 150 deg. C. The body made from thick [at least 188mm] mild steel painted with powder coated paint, upper portion is of thick [at least 25mm] iron plate or machine caste iron plate which can stand high temperature, should have temperature control switch with energy regulator indicator lamp, wire and plug.

Size : Approx. 45cm X 37.5cm X 15cm \pm 10%, Rating 2 Kilo watt.

COD Digestion Apparatus:

Reactor with one touch operation for in-built pre - programmed for all standard digestion temperature [100°C /105°C/150°C] and all COD tests. Reactor should digital count down timer with automatic shut off and alarm signal. Should have to adjustable temperature setting 37°C to 165°C in 1°C steps & adjustable time setting 1 to 480 minutes and up to 3 customer specific digestion / reaction storable applications.

Fast heat up time: 150°C in less than 10 minutes.

Dual Block: 15 wells. 166 mm vials. 15 wells 16 mm vials.

Temperature Stability: ± 1 °C

Fully insulated heater block [no skin contact]

Separate locking and transparent protective lids.

Temperature safeguards to prevent overheating. High flexibility via programmable reactions.

Water Bath:

Double walled inner chamber made of Stainless Steel and Outer wall made of mild steel sheet finished in white enamel. The Gap between outer and inner wall is filled with special grade glass wool insulation. The top cover with 12 holes of 75 mm dia. And concentric rings are made of stainless steel. Electrically operated fitted with suitable best quality heaters and with automatic cut off device when bath goes on dry. With digital temperature display cum temperature controller. On / Off switch card and plug , suitable to operate on 220V, 1Ph, 50Hz AC supply only. Temperature range above room temperature to 90 Deg.C. Size of Chamber 405 X 300 X 100mm (app.).

Water Bath with stirrer for circulation of water with speed control and uniform temperature in water bath.

UV-VIS Spectrophotometer:

Provision/Item	Description
Optics	Complete mirror optics with 1200 groves / mm grating Czerny - Turner mount
Wave Length Range	200 - 1000 nm
Read Out	Digital Counter, 0.2 nm increments
Accuracy	$\pm 1\text{nm}$
Repeatability	$\pm 0.5\%$ nm
Spectral Bandwidth	3 nm [almost constant throughout the spectral range]
Photometric Range	Digital 0 - 2.000 Abs. , 0 - 1999 concentration units
Accuracy	+ 0.005 Abs. at 1Abs
Repeatability	± 0.002 Abs. at 1 Abs.
Stray Light	Less than 0.1% at 220nm, 340nm
Source	[a] Tungsten - Halogen Lamp [b] Deuterium Lamp
Detector	Wide range, Solid State, Silicon Photodiode
Sample Holder	Manual 4-position sample changer for 10nm cuvettes [cells]
Standard Accessories	2 matched 10nm path length quartz cuvettes [cells]
Power Requirement	230V, 50Hz, 200VA
Construction	Composite unit consisting of Power supply mono chromator digital read out.

Global Positioning System:

Structure	Should be made up of rubber or impact resistant plastic, water resistant seal.
Base Map	Built in base map of Worldwide Geographic Boundaries.
Weight	220 ± 10 Gms.
Display	min. 2.7" [6.86 Cm] diagonal [240 X 320] resolution and touch screen [LED backlit]
Memory	SD Card
Data Storage	Secure Digital [SD] Card
Antenna	Built-in multidirectional patch.
Keypad	Nine direct access keys/ Menu Operated / touch screen
Operating temperature	- 10°C to 60°C
Receiver	20 Channels
Acquisition Time	Hot - 20 seconds, Cold - 60 seconds, initial - 2 minutes
Update Rate	Once per second
Accuracy	< 7 meters [15 feet]
Language	English
Coordinate systems	Latitude / Longitude and UTM

Rotary Evaporator:

Rotary evaporator suitable for processing of samples for analysis of organics. Should have a diagonal design, a reproducible and digital of RPM with a Buchi type or equivalent movable and high vacuum proof sealing. Should be provided with Ball servo lifter. water bath, sealing for the RE system, spare clams for the evaporating and receiving flask, a self contained and chemical resistant. The system should have following specifications:

[A] Rotavapor:

Operating voltage	100 - 240 V
Frequency	50/60 Htz.
Power consumption	60 W
Rotation Speed	20 - 280 rpm
Flask size	50- 4000 ml
Max. Flask capacity	3 kg
Display	Rotation speed and vapor temperature
Approval	Reputed Certification

[B] Heating Bath:

Operating voltage	100 - 120 V or 220 - 240V
Frequency	50/60 Htz.
Heating Power	1300W
Power consumption	1700 W
Flask size	up to 4000 ml
Controlled temperature range	20 - 180°C [water and oil]
Display	actual and specified temperature, water /oil
Temperature deviation	± 2°C
Approval	Reputed Certification

[C] Evaporating Flask: The evaporating flask should be pear shaped with standard joint and capacity 250ml.

[D] Drying Flask: The drying flask should be suitable for powdery substances. The integrated baffles encourage through mixing and prevent crushing of the sample. The drying flask should be complete with standard joint having the capacity of 500ml.

[E] Receiving Flask: The receiving flask should be round shaped with ball joint having capacity 500 ml.

Orsat Gas Apparatus:

Technical Specification:

- Orsat apparatus consists of a burette with 3 absorption pipettes.
- Each pipette is controlled by separate glass stopcocks and all together with one.
- In a hardwood carrying case with removable front and back panels.
- One sample collecting bottle connected with Silicon Tubing.
- Provision of opening from both sides.

Weight - 3.5 Kg approx.

Size (App.)	Length (In mm)	Breadth (In mm)	Height (In mm)
	300	120	500

Electronic Analytical Balance:

- Capacity : 220 g [± 10 g acceptable]
- Tare Range : Full scale display
- Sensitivity : 0.0001 g [0.1mg]
- Std. Deviation : 0.1 mg
- Linearity : ± 0.2 mg
- Pan diameter / size : Minimum 80 mm [± 5 mm acceptable]
- Temp. Coefficient of sensitivity : ± 2 ppm/Deg. C
- Ambient Temperature : 5 ~ 40 Deg.C

Perfect self calibration, Motor cal-built in weight for internal calibration, External calibration, Built-in RS-232 Interface, Printer connectivity supported with standard weighing chamber, Power source- 230V 50 Hz. Over weight protection. Glass draft shield with sliding doors.

As soon as the mains connected and switched ON, the unit will perform all function self test with all display segments for half second and then normal display will be displayed.

Respirable Dust Sampler:

Provision/Item	Description
Blower	0.8 to 1.4 meter cube per minute free flow with flow controller and Brush less motor operated at 230 Volts preferably noiseless.
Particle Size	Particles of 10 Microns and below collected on filter paper. Filter holder designed to accept any standard filter sheet of 203mm X 254mm. Separate provision for collecting particles bigger than 10 microns under the cyclone.
Sampling time	0 to 24 hours flexible to set at any time interval.
Time Totalizer	0 to 9999.99 hours. Time totalizer circuit detects blower stoppage due to any reason including brush failure.
Automatic Sampling	24 hour programmable timer to automatically shut off the system after pre-set time intervals.
Power	Normal 230 \pm 10V, single phase, 50Hz AV, Built in requirement voltage stabilizer with automatic shut off beyond 170 - 270 V. range
Handling	Portable and as sleek as possible
Housing	Sturdy aluminium cabinet consists of blower, filter case assembly, time totalizer, Real time timer, flow meter, flow controller & flow measurement device. RSPM should be collected on filter paper and coarse dust should be collected in a cup under cyclone.
Flow Measurement	Glass manometer tube accurately graduated directly in M ³ /Min and calibrated across orifice.

Gaseous Sampling Attachment :

Flow Rate	0.3 to 3 lpm, 2% accuracy
Flow Control	Four Inlet and one outlet manifold with built in needle valve for flow control of each inlet
Sampling Train	4 nos. of 35ml Borosilicate glass impingers kept in ice tray. Dimensions as per IS: 5182 Part V

DO Meter:

Range	0.00 to 19.99 mg/L
Resolution	0.01 mg/L
Temperature	- 0.5°C to 50°C
Accuracy	± 0.5% of value
Temp. Compensation	Automatic temperature compensation [ATC] for mg/L & % saturation
Salinity Correction	Automatic from 0 to 70
Calibration	Rapid calibration facility
Sensor / probe	Galvanic type with 3 mt. cable [approx.]
Power	Powered with Alkaline Battery
Size	Light weight / Portable
Certificate	Reputed Certification

Safety Personal Protective Equipments:

- **Self Contained Breathing Apparatus [SCBA]:** Carbon composite fiber cylinder, 7 litre 300 Bar for 45-60 minutes duration. Digital Pressure gauge, back light illumination, distress signal alarm, low pressure warning signal. Chemical resistant and height adjustable back plate. Weight of complete BA, face mask and back plate should be 10-12 Kgs.
- **Chemical Resistant Hand Gloves:** Nitrile glove with tight grip in wet and oily environment, absorption resistant, blade cut resistant, tear resistant, puncture resistant. Butyl gloves, highly chemical resistant, protection against mustard agents, nerve gases, acids, alkalis, dioxins etc. Resistant to oxygenated solvents and most oxidizing chemicals, highest permeation resistance to gases and vapours.
- **Chemical Boot:** Water Proof, built-in sponge insole, heavy canvas lining, steel toe cap, steel mid sole, heel tendon protection, electric shock resistant, heat and oil resistant sole, ozone and UV resistant.
- **Chemical Protection Clothing:** Soft, light weight, suitable for working in static charge and explosive environment, liquid tight with ultrasonically welded seams, chemical resistant, flexible and abrasion resistant, Hood with acrylic visor, Colour - Yellow.
- **Chemical Suit (level A & B):** Fully encapsulated Suit, Single piece, air and liquid-tight designed to work with SCBA, fully sealed hood with visor and exhalation valve, attached booties, chemical resistant. Colour - Green
- **Chemical Agent Mask:** Made of high filtering efficiency, provided with exhalation valve, Aluminium adjustable clip and foam for increased comfort, elastic head band. Colour - White
- **Full Face Mask with magic Canister:** Made of neoprene rubber, speech diaphragm, self demisting facility, inhalation and exhalation valve, provision for all types of canisters / multi range canisters for all toxic gases and chemicals.
- **Safety Goggles:** Full vision goggle, can be worn over most prescription spectacles, wide and fully adjustable headband, optical polycarbonates lens, easy lens replacement, foam surround, flame retardant PVC, maximum IV protection, resistant to chemical splash, dust particles, molten metals and solids.
- **Full Face Piece Respirator:** Gas mask with three filter ports, sufficient number of adjustable straps, heat and chemical resistant, polycarbonate visor.
- Toxic Gas Filters, Safe Escape Hood, Chemical Agent Detection Paper, Emergency Blankets, Eye Wear and Ear muffs combo

Filter Papers:

- (a) **Filter Paper (Quantitative)** Equivalent to Whatman Grade No. 41&42, Ash Less with specifications -Pore Size - 2.5 μm , Ash content - 0.007% & Thickness- 0.20 mm and weight - 100 g/m² or less with the finest particles retention of all cellulose filter typical analytical precipitates include Barium Sulphate, Metastanic Acid and finely precipitated calcium carbonate ash less circles, 125 mm diameter. [Box containing minimum 100 no. circle form paper]
- (b) **Filter Paper (Quantitative)** Equivalent to Whatman Grade No. 40, Ash Less with specifications- Pore Size - 2.5 μm , Ash content - 0.007% & Thickness- 0.20 mm and weight - 100 g/m² with the finest particles retention of all cellulose filter typical analytical precipitates include Barium Sulphate, Metastanic Acid and finely precipitated calcium carbonate ash less circles, 125 mm diameter. [Box containing minimum 100 no. circle form paper]
- (c) **Filter Paper (Quantitative)** Equivalent to Whatman Grade No. 42, Ash Less with specifications - Pore Size - 2.5 μm , Ash content - 0.007% & Thickness- 0.20 mm and weight - 100 g/m² or less with the finest particles retention of all cellulose filter typical analytical precipitates include Barium Sulphate, Metastanic Acid and finely precipitated calcium carbonate ash less circles, 90 mm diameter. [Box containing minimum 100 no. circle form paper]
- (d) **Glass Micro - Fiber Extraction Thimbles** Equivalent to Whatman Grade HP-GF with specifications - High purity, internal diameter X External length [19mm X 90mm] The Thimble should be free of binders or additives and can be used at temperature up to 500° C. [Box containing minimum 25 Thimbles] [to be used for stack monitoring]
- (e) **Cellulose Extraction Thimbles** Equivalent to Whatman Grade with specification - Internal diameter X External length [28mm X 100mm] [Box containing minimum 25 Thimbles] [to be used for stack monitoring].
- (f) **Glass Micro- Fiber Filters sheets** Equivalent to Whatman Grade GF/A and EPM 2000 with specifications- to be used in Ambient Air monitoring for measuring PM₁₀, high purity borosilicate glass filter, thickness - maximum 0.43mm, Particle retention - 99.95 % (min.), Flow rate - 1.52 \pm

0.18 M³/min., weight - 80 g/m² maximum and should sustain for temperature of 500 ° C. Size - 203mm X 254 mm [Box containing minimum 100 sheets]

- (g) **PM 2.5 monitoring filters** Equivalent to Whatman Grade with specifications - Made up of high purity thin PTFE membrane required for ambient air monitoring. Size - 46.2mm circular box containing minimum 50 circles in box. Filter Pore size - maximum 2.0 µm, thickness - 40 µm, Particle retention - 99.7%.
- (h) **Glass Micro Fiber Filter** Equivalent to Whatman Grade 934-AH with specifications - Pore Size - maximum 1.5 µm, Thickness - minimum 0.33 mm and weight - maximum 64 g/m² with the finest particles retention, Circle size - 47 mm diameter. [Box containing 100 no. circle form paper] suitable for suspended solids in all types of water and effluent and filtration of particles in water, algae and bacterial culture.
- (i) **Glass Micro Fibre Filter** Equivalent to Whatman grade GF/A with specifications - Pore size - maximum 1.6 µm, Thickness - 0.26 m, Dry tensile 430 gm, suitable for PM 2.5 sampling in ambient air quality monitoring. Circle size - 37mm diameter. (Box containing minimum 100 no. paper circles)

CHECK LIST

ENVELOP "A"	Earnest Money of requisite amount and tender cost in case of tender document is downloaded from web site.
ENVELOP "B"	<ul style="list-style-type: none">• Technical compliance details in Annexure "1"• Company Profile.• Leaf let / brochure of the applied item.• Copy of sales tax registration number.• Copy of PAN No.• Undertaking regarding not being blacklisted.• User's List & Performance reports etc.• Manufacturer's authorization certificate, in case the offer is not submitted by Manufacturer.• Commercial Terms & conditions
ENVELOP "C"	<ul style="list-style-type: none">• Price schedule for Indigenous items in annexure "4"• Price schedule for Imported items in annexure "3"• Price schedule for AMC in annexure "2"