

Sl. No.

/ICB

TENDER NOTICE

No.C-47011/01-58/2012-13/ICB/Mat.

Dt.18.02.2013

**CENTRAL POLLUTION CONTROL BOARD
'PARIVESH BHAWAN'
C.B.D. CUM OFFICE COMPLEX
EAST ARJUN NAGAR
DELHI - 110 032.**

Website:www.cpcb.nic.in

e-mail:cpcb@alpha.nic.in

INDEX

S.No.	Contents	Page No.
01.	Schedule of Tender	(i)
02.	Copy of Advertisement appeared in News paper	(ii)
03.	Details of Tender Notice	(iii) & (iv)
04.	General Terms & Conditions	1-8
05.	Payment Conditions	9
06.	Settlement of Dispute	10
07.	Laws & Regulations	10
08.	Force Majeure	11
09.	Injury & Damage	11
10.	Royalty & Patent	11-12
11.	Effectiveness	12
12.	Application Form	13
13.	Bid Form	14
14.	Undertaking	15
15.	Schedule of Earnest Money	16-19
16.	Location of delivery and installation	20-25
17.	Pre Contract Integrity Pact	26-32
18.	Specification of instruments/equipments	33-277
19.	Check List	278

CENTRAL POLLUTION CONTROL BOARD
(MINISTRY OF ENVIRONMENT AND FORESTS)
'PARIVESH BAHWAN'
C.B.D. CUM OFFICE COMPLEX
EAST ARJUN NAGARR, DELHI-32.

TENDER NOTICE NO.C-47011/01-58/2012-13/ICB/MATERIALS
DATED.18.02.2013

TENDER DOCUMENT FOR THE SUPPLY OF
LABORATORY INSTRUMENT/EQUIPMENTS.

Price of Tender Document

- i) By Hand : Rs. 800.00 or US \$ 20.
ii) By Post : Rs. 1000.00 or US \$ 25.
- Date of Sale of Tenders : 18.02.2013 to 18.03.2013 on all working days
between 11.00 AM to 5.00 P.M.
- Last date & time for submission of Tenders : Up to 10.00 A.M. on 19.03.2013
- Opening of Tenders : 19.03.2013 at 11.00 A.M.

DELHI
18.02.2013
DELHI -110 032

(M. Varghese)
Administrative Officer (M)

TELEPHONE : 22308202, 43102030 Extn.243& 245
FAX : 011-22308202, 22307078
e. mail : cpcb@alpha.nic.in
Website : www.cpcb.nic.in

**Central Pollution Control Board
(Ministry of Environment & Forests)
"Parivesh Bhawan" East Arjun Nagar.
Delhi – 110032. India
Tel. Nos. 22308202, 43102030 – Extn.243**

TENDER NOTICE

No.C-47011/01-58/2012-13/ICB/Materials.

Dated.18.02.2013

Sealed tenders are invited on behalf of the Member Secretary, Central Pollution Control Board from the manufacturer/supplier in India & abroad for the supply of various Laboratory Instruments/equipments.

02. The Tender Document along with detailed specifications of the instruments can be obtained from the office of Administrative Officer (Material), Central Pollution Control Board, Delhi.

03. The request for tender documents sent by post will be accepted up to 11.03.2013.

- | | |
|--|--|
| Sale of Tender Document | - From 18.02.2013 to 18.03.2013 on all working days between 11.00 AM to 5.00 PM |
| Cost of Tender Document | - By hand ₹-800.00 or US Dollar 20. By post ₹-1000.00 or US Dollar 25 (Tender fees only through Demand Draft/Pay order) |
| Last date & time for submission | - 19.03.2013 up to 10.00 AM |
| Opening date of Technical bids | - 19.03.2013 at 11.00 AM |

Bidder's using downloaded tender forms must submit separate tender fee by Demand Draft along with technical bid drawn in favour of Central Pollution Control Board, Delhi. Details of tender document, terms & conditions and Technical Specification may kindly be seen at our website www.cpcb.nic.in.

**(Administrative Officer)
Material**

CENTRAL POLLUTION CONTROL BOARD
(Ministry of Environment and Forests)
"Parivesh Bhavan" East Arjun Nagar,
Delhi - 110 032, INDIA

DETAILS OF TENDER NOTICE

NO.C-47011/ 01-58/2012-13/ICB/MATERIALS:

Dated:18.02.2013

FOR SUPPLY OF LABORATORY INSTRUMENT/EQUIPMENTS

Sealed Tenders are invited on behalf of the Member Secretary, Central Pollution Control Board from Manufacturer/Suppliers in India and abroad for the supply of various Laboratory Instrument / equipments as listed below:

Accelerated Solvent Extraction System 1 (One), Air Sampling Pump (0-3 ltr/min) 15 (Fifteen), AOX Analyzer with TOC Combination 5 (Five), Atomic Absorption Spectrophotometer (AAS) – GTA / VGA 1 (One), Automatic Mercury Analyser for Ambient Air, 1 (One), Balance (electronic top loading for media/broth) capacity 0.001 gm 4 (Four), Bomb Calorimeter 5 (Five), Calibration Gas Cylinder 100% Concentrated Certified):a) Sulphur Dioxide (SO₂) 5 (Five) , b) Nitric Oxide (NO),5 (Five) Combined Nitrogen and Zero Air Gas Generator for GC/GC-MS 2 (Two), Conductivity & TDS Meter (Online) 2 (Two), Cool Beam light 2 (Two) , Diffusion Sampling Tube for BTX One lot (1000 Nos.), Digital Pyrometer with Sensor 2 (Two), Echo Sounder, 1 (One), Elemental (CHNS) Analyzer for Carbon, Hydrogen, Nitrogen, Oxygen and Chloride Analysis, 1 (One), Flash Point Apparatus 5 (Five), Flue Gas Analyser, 10 (Ten) Fourier Transform Infrared Spectrometer (FT-IR) PC – Operated 1 (One), Gas Chromatograph 1 (One) Gas Chromatograph Mass Spectrophotometer (GC-MS) 3 (Three), Gas Chromatograph with Methanizer 1 (One) , GC-MS with ATD 2 (Two), Gas Mixture (NIST certified) a) Sulphur Dioxide (SO₂) Gas Mixture 120 PPM 5 (Five) b) Nitric Oxide (NO) Gas Mixture 250 PPM 5 (Five), c) Carbon Monoxide (CO) Gas Mixture 110 PPM 5 (Five) d) Ammonia (NH₃) Gas Mixture 10 PPM 1 (One) e) Methane (CH₄) Gas Mixture 100 PPM 1 (One) f) Propane (C₃H₈) Gas Mixture 10 PPM 1 (One), High Performance Liquid Chromatograph (HPLC) 1 (One), High Precision Pressure cum Vacuum Gauge (Analog) (Master gauge), 8 (Eight) set Individual VOC Analyser 1 (One), Inductively Coupled Plasma (ICP) Spectrometer 1 (One), Isokinetic Stack Sampling Assembly (Stack Monitoring Kit suitable for EPA Methods 5, 23A, 26A, 29 etc.) 6 (Six) , Ion Chromatograph for water analysis 4 (Four), Ion Analyser with Fluoride, Nitrate, Nitrite, Cyanide and Ammonia Electrodes 6 (Six), Karl Fischer Coulometer with Oven for moisture analysis 4 (Four) ,Laboratory Glassware Washer & Dryer 5 (Five) Liquid Chromatograph Mass Spectrometer (LC-MS) 1 (One), Mass Flow Controllers of various ranges with Digital Readout and Control unit 4 (Four) sets Meteorological Station 6 (Six), Microwave Digestion System 7 (Seven) Moisture Analyser 3 (Three), Multi Gas Analyser for indoor ambient air quality Monitoring 1 (One), Noise level meter with data logger 10 (Ten), Oil Sealed Mechanical Vacuum Pump 4 (Four), Permeation Tubes for SO₂ NIST Certified 6 (Six) (40°C-5 Nos.) (50°C-1 No.), Permeation Tubes for SO₂ Non-NIST Certified 3 (Three) (40°C) 2 (Two) (50°C) Permeation Tubes for NO₂ (NIST) certified 6 (Six) , Permeation Tubes for NO₂ (Nitrogen Dioxide) (Non-NIST) certified 3 Nos., (40°C) 2 Nos. (50°C), Permeation Tubes for BTX Analyser (NIST Certified) a) Benzene b) Toluene c) Ethyl-Benzene d) Xylene-M&P e) Xylene-O 1 each = Total 5 Nos. (40°C) , pH meter - Online 2 (Two), PM_{2.5} Sampler 23 (Twenty Three), Portable Calibrator, 1 (One) Portable Hydrocarbon (Methane / Non-Methane HC / THC) Analyzer 1 (One), PUF sampler (for sampling of Ambient VOC, Dioxins) 9 (Nine), Rotatory Evaporator with Vacuum Pump & Chiller 3 (Three), TEOM Sampler 1 (One), TKN Assembly (TKN Analyzer) 3 (Three), Ultrapure Water System, 1 (One), Ultrasonic Water Bath 4 (Four), Vacuum Pump (Suction Pump) 8 (Eight), Velocity meter 3 (Three), Water Purification System (RO/bacteria free), 4 (Four), Weighing Micro Balance (capacity 5.1 g, minimum display 0.001mg) 6 (Six) , Weighing Micro Balance (capacity 220 g, minimum display 0.001gm) 4 (Four), Weighing Micro Balance (capacity 220 g minimum display 0.1 mg) 3 (Three) , Weighing Micro Balance (capacity 200 g minimum display 0.01 mg) 2 (Two).

02. The Tender Documents along with detailed specifications of the instruments can be obtained in person on Production of authority letter of the Firm or by post from the office of the Administrative Officer (Material), Central Pollution Control Board or by the authorized representative with prescribed tender fee in the form of DD/Pay order drawn in favour of Central Pollution Control Board, Delhi

(iii)

03. The Bid must be submitted in English, by the principal / their authorized suppliers.

04. The Earnest Money as indicated in Bid document must be submitted by the Bidder along with the Tender in the form of Demand Draft only drawn in favour of "CENTRAL POLLUTION CONTROL BOARD" payable at Delhi (India). It should be either in Indian Rupees or in bid currency (equivalent amount as per the exchange rate prevailing). The Indian agent/ representative should furnish an authorization letter from their foreign Principal supplier authorizing to deposit the EMD on their behalf.

05. The request for Competitive Bidding Documents sent by post will be accepted strictly Up to 11.03.2013. CPCB will not be responsible for any delay in receipt of tender document sent by post. Request received by post after above mentioned date will not be entertained at any cost. Other details are as follows:

Sale of tender document - From 18.02.2013 to 18.03.2013 on all working days between 11.00 am to 5.00 pm.

Cost of tender document - By hand ₹-800.00 or US Dollar 20. By post ₹-1000.00 or US Dollar 25

Earnest Money along with Tenders - As indicated in the Tender Document

Last date & time for submission - Up to 10.00 AM on 19.03.2013

Date of opening of Technical Bids - At 11.00 A.m. on 19.03.2013

06. Bidders using downloaded tender forms must submit separate tender fee by Demand Draft along with technical bid drawn in favour of Central Pollution Control Board, Delhi

**Administrative Officer
(Material))**

COMMITTED FOR CLEAN ENVIRONMENT

1.0 GENERAL TERMS AND CONDITIONS

- 1.1 This document contains the following:
- i) Copy of the Competitive Bidding Notice
 - ii) General Terms and Conditions of Bid
 - iii) Terms and Conditions for Submission of Bid
 - iv) Payment Terms
 - v) Settlement of Dispute
 - vi) Application Form
 - vii) Undertaking
 - viii) Bid Form
 - ix) Schedule of Earnest Money to be deposited alongwith Tender
 - x) Quantity of Instruments and Locations of delivery and installation.
 - xi) Pre-contract integrity pact form
 - xii) Detailed specification of the instruments.
 - xiii) Check List.
- 1.2 The Tender Document is not transferable by the purchaser. The bid form in the tender Document at Annexure-II may be used for bidding. Documents /forms downloaded from the net can also be used. Bids made on photocopy etc. will not be considered. However, the additional sheets containing the same proforma may be used for each item. Each sheet including that provided by the Board with this document must be signed by the bidder. The price bid must be in the form provided herewith at Annexure-II.
- 1.3 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 with out tender fee will not be accepted.
- 1.4 The Board takes no responsibility for delay or non receipt of Tender Document sent by post either way and also reserves the right to accept; or reject any or all the tenders in part or full without assigning any reason thereof.
- 1.5 No bid document will be sold after the last date of sale of Tender Document or between the extended period of opening date, if any.
- 1.6 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 or 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 it's bid.
- 1.7 This call of tenders does not bind the Central Board to place order. The Tenders submitted in response to this invitation be rejected without assigning any reason.

The bidder should be a manufacturer or their authorized Indian supplier. This tender notice, Tender forms, Schedule of requirement's , Specification etc are also available on CPCB's website WWW.cpcb.nic.in bidders using down loaded tender forms must submit a Separate tender fee by Demand Draft alongwith the technical part of the bid. The tender without requisite tender fee will be rejected.

- 1.8 The Board at its discretion may extend the last date of submission of tender and opening of tenders. The final authority for acceptance of a Tender will rest with the Chairman, Central Pollution Control Board who does not bind himself to accept the lowest tender and is vested with the authority to reject any or all of the tenders received without assigning any reason.
- 1.9 Documents, literature, diagrams/leaflets, samples etc., enclosed in the Tender shall become the property of the Central Board without any payment.
- 1.10 The warranty period for item Sl. Nos.1,3,4,5,7,9,15,16,17, 18,19,20,21,22,24,26,27,28,29,30,31,33,34,36,47,48,49,50 will be for thirty six months starting from the date of successful commissioning of the instrument and for the rest of the item warranty will be for a period of twelve months. Under this warranty upon the receipt of such notice supplier/agent shall within the period specified, repair/replaced the defective instrument or spare parts thereof at the ultimate destination. The supplier/agent shall take over the replaced parts/goods, in the event of any correction of defects or replacement of defective material. In such cases, the warranty for the corrected/replaced materials shall be extended till the left over period of warranty.
- 1.11 The Tender would be regarded as turned down, if no award of contract has been obtained till the expiry of the Tender validity. No separate communication will be made in this regard.
- 1.12 The items have to be supplied in standard packing.
- 1.13 If the last date for sale, submission and opening of Tenders falls on any Government declared holidays, the next working day at the same time will be considered last dates of the same.
- 1.14 The bid shall contain no interlineations, erasures or overwriting words except as necessary to correct errors made by the bidder, in such case, correction shall be initialed by the person or persons signing the bid.
- 1.15 Late and delayed tenders will not be considered and shall be returned unopened to the Bidder.
- 1.16 It is advised that the outside suppliers should send the Tender through Registered /Speed Post/Courier. However, the local supplier may drop their Tenders in Tender Box kept in Central Board for the purpose. In no case, Tender should be handed over to any employee of the Board.
- 1.17 Canvassing in any form will disqualify the Bid.
- 1.18 Request for the Tender Document for bidding through e-mail, Telephone, Money Order and Tele-fax shall not be entertained.
- 1.19 The Tender Notice No.C-47011/01-58/2012-13/ICB/Materials dated.18.02.2013 alongwith the item code number. (The item code number is given in the specification sheet against each items) must invariably be quoted in the bid and for further correspondence in this regard will be entertained.

- 1.20 All the Tenders should be addressed to:
The Administrative Officer (M)
CENTRAL POLLUTION CONTROL BOARD
'PARIVESH BHAWAN'
EAST ARJUN NAGAR, DELHI - 110032, INDIA

2.0 SUBMISSION OF BID

- 2.1 The bid prepared by the bidder and all correspondence and documents relating to the bid exchanged by the bidder and the purchaser, shall be written in English language, provided that any printed literature furnished by the Bidder may be written in another language so long as accompanied by English translation of its pertinent passages in such case, for the purpose of interpretation of the bid, English translation shall govern.
- 2.2 The bid must accompany Annexure-I with Techno Commercial part of Bid, tender fee incase of down loaded Document and Annexure-II & III along with 'Price' part of the Bid duly filled in and signed by the Bidder along with the seal of the Firm.
- 2.3 The Bidders are requested to quote the rates item-wise on CIF/FOR destination basis including total price of each instrument separately indicating the Govt. levies, and other expenditure item-wise. The concessional custom duty exemption certificate and other required documents will be provided for custom clearance.

For the authorized Indian suppliers, supplying foreign origin / manufactured items, they are allowed to quote in Indian Rupees on FOR destination basis. The Board will not enter into any Trade Agreement such as high See Sale Deed etc. The concessional custom duty and excise duty exemption certificate will be supplied. In that case, the normal custom duty applicable should borne by the supplier. The entire responsibility / charges upto destination should be borne by the supplier. Taxes, other levies, insurance, freight etc if any should be indicated separately. No C/D form will be issued against VAT / CST.

Bidder is expected to examine the bidding Documents carefully and are deemed to have received and read all documents. It shall be the responsibility of the bidder to request copies of any missing documents. Failure to do so will be at bidders risk.

- 2.4 It may be noted that mere quoting lowest rates will not entitle any firm to get the order. The quality of the item being offered, the past performance supply etc will also be taken in to consideration. Prior to award of purchase order the buyer can call any details, explanation, regarding technical & financial aspect.

- 2.5 IMPORTANT: -** BIDDER CAN QUOTE THE RATES FOR ALL THE INSTRUMENTS OR SOME OF THE INSTRUMENTS AGAINST ONE TENDER DOCUMENT. HOWEVER, SEPARATE PRICE BID AND TECHNICAL BID SHOULD BE SUBMITTED FOR EACH ITEM CLEARLY MENTIONING THE ITEM CODE NUMBER, ITEM NAME ON THE TOP OF THE ENVELOPES WITH SENDERS NAME AND ADDRESS. THE CENTRAL POLLUTION CONTROL BOARD RESERVES THE RIGHT TO ACCEPT THE TENDER IN FULL OR IN PART. THE BID FOR EACH ITEM SHOULD BE IN SEPARATE SHEETS/PAGES AND FOR THE SAKE OF IDENTITY, COMPILATION, INSTRUMENT/ITEM CODE NUMBER AND DESCRIPTION OF ITEM SHOULD BE WRITTEN ON THE TOP OF EACH BID. EMD

SHOULD SUBMIT SEPARATELY AGAINST EACH ITEM. ITEMS-WISE TECHNICAL SPECIFICATION AND PRICE SHOULD BE IN SEPARATE SHEETS i.e. THERE SHOULD BE SEPARATE ENVELOPES FOR EACH ITEMS CONTAINING TECHNICAL, PRICE BID & ITEMS WISE EMD; INCASE, BIDDERS DESIRES TO QUOTE MORE THAN ONE ITEM. **Those tenders do not comply the above instructions will not be considered**

Please do not enclose the EMD alongwith the Envelop for price bid.

- 2.6 The Tender is to be submitted "single stage- three envelope system" i.e. the first sealed envelope will contain the earnest money deposit, second sealed envelope will contain full information required to judge pre-qualification, complete details and specification of the instruments offered including the leaflets and catalogues, list of credentials with documentary evidence i.e., purchase/work order etc., Income Tax Clearance Certificate, PAN Number, VAT/Sales Tax Registration No., Affidavit for not being black listed, Commercial Terms & Conditions etc. It shall be marked "Pre-qualifications, technical and commercial Bid No.C-47011/01-58/ICB/2012-13 dated.18.02.2013 due on 19.03.2013 for Instrument/Equipments. The third envelope will contain only price quoted by the bidder in the form given at Annexure -II of this document and shall be clearly marked "Price Bid No.C-47011/01-58/2012-13/ICB/Materials dated. 18.02.2013 for Instrument / Equipments. All the above envelopes must be separately sealed and shall be kept in one envelope bearing the address of Central Pollution Control Board and super scribed with bold letter "TENDER FOR Instrument/Equipments - NOT TO OPEN BEFORE 19.03.2013 AT 11.00 A.M. The senders address should be mentioned in all envelopes. Item Code Number(s) should be mentioned invariably on all envelopes. Separate bids for separate item should be submitted. The combined bids will not be considered.
- 2.7 Technical & Commercial part of the tender will be opened on due date i.e. at 11.00 A.M. on 19.03.2013 in the office of the Central Board, in presence of the representative of the tenderers who would like to present. Sealed Price part of technically and commercially acceptable tenders will be opened on a later day which will be communicated by the Board on the same day or on a later date.
- 2.8 The bidder shall furnish, as part of its bid, bid security for each instrument/equipment separately for the amount mentioned in schedule IV of this tender. Execution of Bid Security by the bidder's Bank on the basis of prevailing exchange rate shall be used for arriving at the amount of bid security in the Bid Currency.
- a) The bid security shall be in the form of Demand Draft only in favour of "CENTRAL POLLUTION CONTROL BOARD" payable at DELHI. No Earnest Money shall be accepted in any form. It should be either in Indian Rupees or in bid currency. The Indian agent/representative should furnish an authorization letter from their foreign Principal suppliers to deposit the EMD on their behalf. The Earnest Money shall be forfeited if a bidder withdraws or amends the tender in any respect within the period of validity of his tender or fails to supply the instruments within the specified period in the tender document. Tender shall not entertained where a Tenderer has not furnished adequate earnest money in the prescribed and acceptable form. In case, the instrument supplied is found defective and not attended by the supplier / authorized agent, the Earnest Money deposited by the supplier /their authorized Indian agent will also be forfeited.

- 2.9 The Firm who seek exemption from depositing earnest money being small scale industry, being registered with NSIC, DGS&D and other Government agencies which entitles them for exemption must submit the valid Registration Certificate - cover the instrument offered by them along with the permissible value. The copy of Government Notification granting exemption from deposit of EMD must be submitted along with the Techno-commercial part of tender alongwith the bid. (EMD Exemption will be granted only to those items specified in the certificate of Registration).
- 2.10 Unsuccessful bidders bid security will be discharged/ returned without any interest in the same form after the concerned purchase is finalized or within four months whichever is earlier and that of successful bidders will be discharged without interest within one month of the successful installation and commissioning of the instrument and on furnishing the Performance Bank Guarantee.
- 2.11 The validity of Tender would be for a minimum period of 180 days from the date of opening of Tenders. A Bid valid for a shorter period may be rejected by the Board as non responsive. 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.
- 2.12 The rates should be quoted both in words and figures.
- 2.13 Arithmetical error will be rectified on the following basis:- If there is discrepancy between the unit price and total price that is obtained by the multiplying the Unit Price and quantity, the unit price shall prevail and the total price shall be corrected. If there is discrepancy between words and figures, the amount in words will prevail.
- 2.14 Tenders not in proper sealed cover or received through tele-graphically or E-mail/ fax/telefax will not be entertained.
- 2.15 Conditional Tenders will be rejected without assigning any reason.
- 2.16 The Bid shall be typed or written in indelible ink and shall be signed by the Bidder or a person duly authorized to the Contract. The letter of authorization should bear the signatures of only the authorized person of the firm. All pages of the Bid, except for un-amended printed literature shall be initialed by the person or persons signing the bid.
- 2.17 To assist in the examination, evaluation and comparison of bids the buyer may, at its discretion, ask the Bidder for a clarification of its bid. However, no change in the price or substance of the bid shall be sought, offered, re-permitted.
- 2.18 Eventual suggestions for modification or subsidiary Tenders are principally not admissible.
- 2.19 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. BIDS CARRYING THE STATEMENT LIKE "SPECIFICATION AS PER TENDER DOCUMENT" SHALL NOT BE ENTERTAINED. THE PRODUCT

SPECIFICATIONS SUPPORTED BY TECHNICAL LITERATURE AND LIST OF USERS, MUST BE ENCLOSED.

- 2.20 The placement of work order/purchase order will be according to technical evaluation of the tender and after consideration of its price worthiness.
- 2.21 The price to be given in the Tender are fixed prices, irrespective of rise in Materials prices and increase in taxes etc., till the delivery of the overall consignment. No request in regard to increase in the price of instruments or in taxes etc., will be entertained after the submission of the tender.
- 2.22 The Supplier should attach a blank copy of financial bid/Proforma Invoice of the Instrument quoted (without cost/price figures) alongwith the technical bid to assess the items included/components quoted in the bid.**
- 2.23 The nomenclature of the instruments and spares will be invariably same in Proforma Invoice, Invoice, Packing list and all other relevant papers incase the Bidder is awarded with the purchase order for supply against its offer.
- 2.24 With the submission of his Tender the Bidder accepts the conditions of the Tender.
- 2.25 If the instrument supplied is not in conformity with the specification other than asked for, it will have to be replaced at the risk and cost of the supplier. No Freight and other charges for export and re-shipment will be paid by the Board.
- 2.26 The authorized Indian agent/Representative/ Indian supplier should have minimum two years continuous agency /partnership/joint venture/participation or collaboration with their principal foreign supplier. The documentary proof of such agency ship /authorization/MOU should submit alongwith the technical part. The bid of the firm does not contain the proof of such nomination/authorization as Indian agent will be rejected.**
- 2.27 The installation of the instruments is the entire responsibility of the supplier. It must be done either by the principal/supplier or their authorized agents within one month of the receipt of the instruments by the Board. The supplier or their authorized Agent should be in touch with the Material Section of the Board to know the exact day of receipt of stores supplied/dispatched by them.
- 2.28 The list of instruments/equipment, their approximate quantity and point of delivery is given at Annexure -V and the detailed specification of the instrument are given in the tender document (pages 33-277). The quantity mentioned in the tender document may be increased or decreased at the discretion of the Competent Authority in the Central Board without assigning any reason.
- 2.29 Each and every folio of the Tender must be signed by the Bidder.
- 2.30 Bidder can quote the rates for all the instruments or some of the instruments. The Bid shall be considered only for those instruments for which the rates have been specifically quoted. The Board further reserves the right to accept the Tender for all the instruments or some of the instruments for which the Tenderer has quoted the Bid. The bidder should attach a separate list for the consumable/spares required for smooth operation of the instrument at least for

three years (as optional items) and two copies of trouble shooting manuals, electric circuits etc. alongwith the bid. Combined EMD and consolidated bids will be rejected. (EMD, technical bid and commercial bid against each item quoted should be on separate sheets).

- 2.31. The bidder should provide a complete list of spares and consumables required for operation and maintenance of the instruments separately alongwith the price list.
- 2.32 Annual maintenance contract: The bidder should quote the charges for annual maintenance contract after the warranty period for the instrument listed in annexure -IV of this tender document at item Sl. Nos.3,4,5,7,9,15,16,17, 18,19,20,21,22,24,26 27,28,29,30,31,33,34,36,42,47,48,49,50,54.
- 2.33 The instrument for which Tenders are invited will have to be supplied within 90 days from the date of L.C. opening in the case of foreign suppliers. A period of 30 days will be allowed from the date of purchase order in the case of Indian manufacturers/suppliers.
- 2.34 The after sales service is most important to be considered for comparison of the bids. Bid of those firms who do not have Indian Agents or sufficient infrastructure facilities to provide after sales service during warranty period will not be considered.
- 2.35 **Important:- The foreign bidders should quote the price in foreign currencies. The price quoted should be on CIF/FOR Destination basis. The Indian agent/their authorized representative should arrange the custom clearance from the customs. The Board will provide the concessional custom duty exemption certificate and other required documents.**

The incidental expenses towards sending the instruments to the designated locations mentioned in Annexure-V such as arranging transport, insurance, labour, including charges to the custom clearing agent etc. to be borne by the supplier/their authorized Indian representative. The Indian agent/ their representatives should be responsible for the safety of the instruments during the transit from airports to the designated locations.

The agency commission will be paid in Indian Rupees. The charges on account of agency commission should be mentioned clearly in the bid Indian suppliers, the price should be quoted in Indian Rupees. However, the authorized Indian supplier should have minimum two years of continues partnership/joint venture /participation or collaboration with their principal foreign supplier.

- 2.36 The foreign bidders must indicate the following information in their proforma invoice alongwith the Price Bid separately for each instrument/equipment.
- a) Country of Origin.
 - b) Port of Shipment.
 - c) Name & Address of beneficiaries Bank, Branch name with Account No., IBAN No. & SWIFT Code.
 - d) Minimum delivery period.
 - e) Whether transshipment/partner shipment is required or not.

- f) Agency commission, if any payable to the Indian Agent, their Complete address, telephone & fax number.
- 2.37 The items have to be supplied in standard packing. The foreign supplier should use the minimum possible packets and should reduce the size of the packing in volume to avoid extra demurrage in the bonded warehouse in India, if any.
- Important - Bank charges: Three months time for shipment and further 21 days for negotiation will be given. All Bank charges inside the country (in India) will be buyers account and all Bank charges outside the country should be borne by the supplier / beneficiary's. The bidders may note this and quote the price of the instrument/ equipment accordingly. In the case of Foreign Suppliers, they will have to ensure shipment of the consignment as per the validity of the letter of credit established in this regard. In case of extension of supply date is sought, the bank charges should be borne by the Supplier/their authorized Indian representatives.**
- 2.38 Foreign Principals/their authorized Indian Agent shall intimate the buyer regarding the date of shipment well in advance. A copy of the invoice documents, air way bill, packing list, certificate of country of origin may be forwarded to the purchaser by fax immediately after shipment of the consignment to clear from custom authorities so as to avoid demurrage charges.
- 2.39 At any time prior to the deadline for submission of bids the buyer may for any reason whether at it's own initiative or in response to a clarification requested by a prospective Bidder, modify the bidding documents by an amendment.
- 2.40 The Amendment if any, will be brought to the notice in writing or by fax to all concerned Bidders who have purchased the bidding documents and will be binding on them.
- 2.41 In order to afford prospective Bidder reasonable time in which to take the Amendment into account in preparing their bids, the purchaser may at its discretion, extend the deadline for the submission of bids.
- 2.42 The prices must be quoted item wise i.e. basic price, taxes, packing forwarding, handling installation and training charges etc. The charges must be quoted clearly and not in vague terms like "As Actual" "Approx" etc.
- 2.43 If according to the Bidder, the Tender Documents contain unclear points which could influence price calculations, the bidder has to inform the authority who is issuing the call of Tenders before submission of its Tender, either in writing or by fax, even if he has pointed out this earlier in any other form/reference.
- 2.44 The Packing, Forwarding, charges must be quoted according to the place of delivery as mentioned in the schedule at Annexure-V. The supplier shall be liable for any damage, theft or loss during transit. In the case of Indian suppliers, the instruments are to be dispatched to the respective places directly and to be installed there, by the supplier under intimation to, CPCB Office at Parivesh Bhawan, Delhi-32.
- 2.45 The delivery of stores shall be taken at the locations mentioned in "annexure-V" of this tender documents, Please note that Proforma Invoice must be separate for each instrument/item.

- 2.46 The warranty/guarantee of the instrument/equipment should be clearly mentioned in the Bid.
- 2.47 MOST IMPORTANT
PLEASE NOTE THAT ANNEXURE-I OF THIS DOCUMENT MUST BE ENCLOSED WITH THE FIRST PART OF BID i.e."Envelop for EMD, TECHNICAL AND COMMERCIAL BID" AND ANNEXURE-II AND III WILL BE KEPT IN THE SECOND PART OF BID i.e. PRICE BID.
- 2.48. PLEASE NOTE THAT THERE IS NO NEED TO ENCLOSE THE ENTIRE TENDER DOCUMENT (SUPPLIED BY THE BOARD) WITH YOUR BID. ONLY ANNEXURE-I, II AND III NEED TO BE ENCLOSED AS PER INSTRUCTION STIPULATED IN PARA 2.6 AND OTHER RELEVANT PARAGRAPHS OF THIS BID.
- 2.49 Prior to placing purchase order, incase the buyer desires to inspect the stores/instrument-equipment including demonstration, the same should be arranged by the supplier or their authorized Indian agent in the premises of the Central Pollution Control Board on free of charges.

3.0 PAYMENT CONDITIONS

- 3.1 **For Foreign Bidders:-** The foreign bidders should quote the price in foreign currency. Incase, they have components and services of Indian origin/agent, the same may be quoted in Indian Rupees.

100% payment will be released through irrevocable Letter of Credit in the name of foreign bidders for stores of foreign origin in the following manner.

80% payment will be made on shipment of the instrument/Equipments 20% will be released on satisfactory commissioning of Instrument/Equipment and on furnishing Performance Bank Guarantee for 10% of the purchase order, valid for a period of 60 days beyond the warranty period.

For Indian bidders 100% payment will be released on satisfactory supply, installation & successful commissioning of the instrument and on furnishing performance security/Bank Guarantee for 10% of the purchase order value valid for a period of 60 days beyond the warranty period.

The Performance Security / Bank Guarantee be furnished by the principal supplier or their authorized Indian agent from any Nationalized Bank. No Proposal for advance payment will be allowed in any case. In the case of Indian suppliers advance payment, document and payment through bank will not be considered.

The defective, substandard and contrary to the specification of instruments supplied have to be replaced by the supplier at their cost and responsibility. Incase of indigenous instrument/ equipment quoted by Indian firms/ representatives/ Indian agents of foreign supplier / manufacturers in rupee term, the payment will be made in Indian rupees directly after supply and satisfactory installation of the instrument.

- 3.2 Single bills against one order; as per supply order, mentioning item code and other details will be accepted.

- 3.3 The firm whosoever getting the award/purchase order should sign and submit a Pre-integrity pact with the buyer as per the format attached as Annexure – VI of this tender documents.

4.0 SETTLEMENT OF DISPUTE, ARBITRATION

- 4.1 All disputes or difference arising out of or in connection with the contract and supply of any item/equipment assigned under the same (whether during the progress of the works or after their completion, determination, abandonment or breach of the contract) shall be Settled in accordance with the arbitration and conciliation Act, 1996. The Arbitral Tribunal shall consists of three (3) arbitrators appointed by the Chairman, Central Pollution Control Board. The decision of the arbitrators shall be final. It will not be an objection to any such appointment that the arbitrators are the Government servants and had any interest in the Board or the contract entered into directly or indirectly. In all cases, the arbitrator shall state reasons in their decision/award in writing, if the amount of claim in dispute is Rupees one Lakh and above, subject as aforesaid the provision of the Arbitration and Conciliation Act, 1996 or any statutory modification or re-enactment thereof and the rules made there under and for the time being in force shall apply to the arbitration proceedings under this clause. Arbitration proceedings shall be held at Delhi/New Delhi, India and the language of arbitration proceedings and that all documents and communication's between the parties shall be in English. The party invoking Arbitration clause shall bear the cost of arbitrator.

- 4.2 It is a term of the contract that the party invoking the arbitration shall specify the dispute or disputes to be referred to the arbitration under this clause together with the amount or amount claimed in respect of each such dispute.

- 4.3 It is also a term of the contract that if the supplier (s) do not make any demand for arbitration in respect of any claim (s) or dispute in writing within 90 days of submission of the final bill for payment, the claim of the supplier will be deemed to have been waived and absolutely barred and the Board will be discharged and released of all liabilities under the contract in respect of these claims.

4.4 LAWS AND REGULATIONS

The formation, validity and performance of this Contract shall be governed as to all matters by and under the laws and regulations of India and courts of Delhi shall have exclusive jurisdiction in all matters arising under this Contract.

The Supplier shall respect and abide by all laws and regulations of India and shall make its best effort to ensure that the personnel of the Supplier and their dependents, while staying in India, shall respect and abide by all laws and regulation of India.

The Supplier shall protect, absolve and indemnify the Board, and their representatives from any claim, loss or damage arising from any non compliance alleged or proved, without claiming them for payment.

4.5 FORCE MAJEURE

Vendor shall not be considered in default if delay in delivery occurs due to causes beyond his control such as acts of God, natural calamities, civil, wars, strikes, fire, frost, floods, riots and acts of usurped power. Only those causes which have a duration of more than 7 calendar days shall be considered cause of force majeure. A notification to this effect duly certified by the Local Chamber of Commerce/Statutory Authorities shall be given by the Vendor to the buyer by registered letter. In the event of delay due to such cases a length of time equal to the period of force majeure or at the option of the buyer, the order may be cancelled. Such cancellation would be without any liability whatsoever on the part of buyer. In the event of such cancellation the vendor shall refund any amount advanced by the Purchaser and deliver back any material issued to him by the Purchaser and release facilities, if any, provided by the Purchaser.

5.0 INJURY AND DAMAGE

5.1 Injury or Death of Persons

The Supplier shall be liable for and shall indemnify the Board against any liability, loss claim or proceedings whatsoever arising under any statute or law in respect of personal injury death or any disability caused by the carrying out the Works unless due to any act or neglect of the Board, or of any person for whom the Board is responsible.

5.2 Damage to Property

The Supplier shall be liable for and indemnify the Board against and insure and cause any Manufacturers and subcontractors to insure against any expense, liability, loss claim or proceedings in respect of any damage whatsoever to any real or personal property for any one occurrence in so far as such damage arises out of or in the course of or by reason of the carrying out of the Works and is due to any negligence, omission or default of the Supplier or any person for whom the supplier is responsible or any Manufacturers and subcontractors or person whom the Manufacturers and subcontractors are responsible.

6.0 ROYALTY AND PATENTS

6.1 The Supplier shall pay all royalties and license fees for the use of any patented item, whether it may be an invention, method, arrangement, article, process or appliance used in connection with the performance of the Contract. The supplier shall indemnify and save harmless the Board against any and all costs, damages and expenses of any nature or kind whatsoever which may arise out of or result from a claim by any person, firm or corporation that the manufacture, purchase, use or sale of any of the inventions, methods, arrangements, articles processes or appliances used in connection with the performance of this Contract infringes any patent or such other rights. The Supplier shall, at the request of the Board, defend the Board against any suit brought to enforce any such claim at the Suppliers expense.

- 6.2 In case any such patented item used on or in conjunction with the Works is in suit held to constitute and infringement of its use enjoined, the supplier shall either secure for the Board the right to continue using the said item by suspension of the enjoinder, by procuring for the Board a license or otherwise, or will replace such items with a non-infringing item or modify it so that it becomes non-infringing or with the Board's approval remove the said enjoined item and refund to the Board the sums paid thereof.

7.0 EFFECTIVENESS

This Contract shall come into force and effect on the date of the Letter of Award and shall be in force until the Works have been completed and all the payments have been made to the Supplier, except the obligation of the warranty period by the Supplier.

S. No. /ICB
APPLICATION FORM

(To be filled by the bidder)

- 1) Name and full address of the Bidder including Telegraphic Address/Telex No. and Fax No. :
- 2) Name and Designation of the Head of the Firm/supplier and his Telephone No. :
- 3) i) In case the supplier is located out of Delhi; specify the Address/ Authorized Distributor's or Agent's Address in Delhi, if any. :
ii) Name, Designation, Address Telephone & Fax Numbers of the Authorized Person who may be contacted during the process of the purchase concerned under this document (Applicable for all the suppliers) :
- 4) Item Code Number(s) quoted for :
- 5) Whether Earnest Money Deposited : (Amount: Rs./US Dollar/ - bid currency)
- 6) If yes, Demand Draft No, Date and Name of issuing Bank. :
- 7) Validity of Tender :
- 8) If the tender documents are accepted in full (Yes or No) :
- 9) Income Tax Clearance Certificate attached (Latest) (Yes or No) with PAN Number. :

Place:

Date :

Legally Binding Signature with stamp

BID FORM**ANNEXURE - II****No. /ICB**

Details showing quantity, specification and other details of the instruments offered (to be filled by the bidder and must be kept in "Price Bid" part of the Tender)

Sl. No and Item code Number of instruments as per our tender Document	Name of Instrument	The Specification offered by the Bidder	Difference in Specifications of tender document and that of Bid, if any	Quantity	Unit Price (in Rupees excluding rates at col. no. 7)	Taxes and other expenditures (Sales Tax/VAT, C.S.T, freight, cost of installation & training (in case of indigenous items)etc.	Total Amount in Rupees for indigenous items	Total Amount CIF/FOR Destination for imported items
1	2	3	4	5	6	7	8	9

NOTE:- If this sheet is not sufficient to accommodate the bid the additional sheets containing the same proforma but all such sheets including this one must be signed by the Bidder along with the seal. This Annexure must enclose in the Proforma Invoice price bid for item wise. Separate Bid form should be attached against each item, quoted for. Administrative Officer (Material)

Signature with date & stamp of the bidder

UNDERTAKING

DATE _____
TENDER NOTICE NO _____

TO

THE CHAIRMAN
CENTRAL POLLUTION CONTROL BOARD
(MINISTRY OF ENVIRONMENT & FORESTS GOVERNMENT OF INDIA)
C.B.D. CUM OFFICE COMPLEX
EAST ARJUN NAGAR DELHI - 110 032.

Sir,

Having examined the conditions of Tender Document and specifications of the instruments, the receipt of which is hereby acknowledged. We, the undersigned, offer to supply, delivery and install the following:

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 8.
- 9.
- 10.
- 11.
- 12.

(Please add additional pages, if required). The above supply, installation shall be in conformity with the specifications and conditions of supply.

We undertake if our bid is accepted to deliver the instruments quoted by us, we shall deliver and install within the period indicated by us in our offer.

We agree to abide by this bid for a period of 180 days from the date fixed for Bid opening and it shall remain binding upon us and may be accepted at any time before expiration of that period.

We are submitting a Demand Draft for Rs...../in bid Currency in favour of "Central Pollution Control Board", Delhi towards the Earnest Money.

This Bid, together with your written acceptance thereof in your notification of award shall constitute a bidding contract between us.

We understand that you are not bound to accept the lowest or any bid you may receive.

Dated this.....day of.....2013

Signature of authorized Person, Name with Stamp & full Address.

SCHEDULE OF EARNEST MONEY

S. No.	Item Code	Instrument / Equipment	Quantity Requirement	EMD (Rs.)
1.	ICB-1	Accelerated Solvent Extraction System	1 (One)	90,000/-
2.	ICB-2	Air Sampling Pump (0-3 ltr/min)	15 (Fifteen)	22,500/-
3.	ICB-3	AOX Analyzer with TOC Combination	5 (Five)	4,50,000/-
4.	ICB-4	Atomic Absorption Spectrophotometer (AAS) – GTA / VGA	1 (One)	90,000/-
5.	ICB-5	Automatic Mercury Analyser for Ambient Air	1 (One)	2,10,000/-
6.	ICB-6	Balance (electronic top loading for media/ broth) capacity 0.001 gm	4 (Four)	12,000/-
7.	ICB-7	Bomb Calorimeter	5 (Five)	1,20,000/-
8.	ICB-8	Calibration Gas Cylinder 100% Concentrated (Certified): a) Sulphur Dioxide (SO ₂) b) Nitric Oxide (NO)	5 (Five) 5 (Five)	28,500/-
9.	ICB-9	Combined Nitrogen and Zero Air Gas Generator for GC/GC-MS	2 (Two)	48,000/-
10.	ICB-10	Conductivity & TDS Meter (Online)	2 (Two)	9,000/-
11.	ICB-11	Cool Beam light	2 (Two)	1,200/-
12.	ICB-12	Diffusion Sampling Tube for BTX	One lot (1000 Nos.)	9,000/-
13.	ICB-13	Digital Pyrometer with Sensor	2 (Two)	1,200/-
14.	ICB-14	Echo Sounder	1 (One)	7,500/-
15.	ICB-15	Elemental (CHNS) Analyzer for Carbon, Hydrogen, Nitrogen, Oxygen and Chloride Analysis	1 (One)	60,000/-
16.	ICB-16	Flash Point Apparatus	5 (Five)	1,05,000
17.	ICB-17	Flue Gas Analyser	10 (Ten)	3,00,000/-
18.	ICB-18	Fourier Transform Infrared Spectrometer (FT-IR) PC – Operated	1 (One)	42,000/-
19.	ICB-19	Gas Chromatograph	1 (One)	90,000/-

S. No.	Item Code	Instrument / Equipment	Quantity Requirement	EMD (Rs.)
20.	ICB-20	Gas Chromatograph Mass Spectrophotometer (GC-MS)	3 (Three)	3,60,000/-
21.	ICB-21	Gas Chromatograph with Methanizer	1 (One)	90,000/-
22.	ICB-22	GC-MS with ATD	2 (Two)	2,40,000/-
23.	ICB-23	Gas Mixture (NIST certified) a) Sulphur Dioxide (SO ₂) Gas Mixture 120 PPM b) Nitric Oxide (NO) Gas Mixture 250 PPM c) Carbon Monoxide (CO) Gas Mixture 110 PPM d) Ammonia (NH ₃) Gas Mixture 10 PPM e) Methane (CH ₄) Gas Mixture 100 PPM f) Propane (C ₃ H ₈) Gas Mixture 10 PPM	5 (Five) 5 (Five) 5 (Five) 1 (One) 1 (One) 1 (One)	30,750/-
24.	ICB-24	High Performance Liquid Chromatograph (HPLC)	1 (One)	1,20,000/-
25.	ICB-25	High Precision Pressure cum Vacuum Gauge (Analog) (Master gauge),	8 (Eight) set	15,600/-
26.	ICB-26	Individual VOC Analyser	1 (One)	90,000/-
27.	ICB-27	Inductively Coupled Plasma (ICP) Spectrometer	1 (One)	1,20,000/-
28.	ICB-28	Isokinetic Stack Sampling Assembly (Stack Monitoring Kit suitable for EPA Methods 5, 23A, 26A, 29 etc.)	6 (Six)	2,16,000/-
29.	ICB-29	Ion Chromatograph for water analysis	4 (Four)	2,40,000/-
30.	ICB-30	Ion Analyser with Fluoride, Nitrate, Nitrite, Cyanide and Ammonia Electrodes	6 (Six)	90,000/-
31.	ICB-31	Karl Fischer Coulometer with Oven for moisture analysis	4 (Four)	1,44,000/-
32.	ICB-32	Laboratory Glassware Washer & Dryer	5 (Five)	45,000/-
33.	ICB-33	Liquid Chromatograph Mass Spectrometer (LC-MS)	1 (One)	2,40,000/-

S. No.	Item Code	Instrument / Equipment	Quantity Requirement	EMD (Rs.)
34.	ICB-34	Mass Flow Controllers of various ranges with Digital Readout and Control unit	4 (Four) sets	1,32,000/-
35.	ICB-35	Meteorological Station	6 (Six)	72,000/-
36.	ICB-36	Microwave Digestion System	7 (Seven)	2,73,000/-
37.	ICB-37	Moisture Analyser	3 (Three)	9,000/-
38.	ICB-38	Multi Gas Analyser for indoor ambient air quality Monitoring	1 (One)	6,000/-
39.	ICB-39	Noise level meter with data logger	10 (Ten)	1,20,000/-
40.	ICB-40	Oil Sealed Mechanical Vacuum Pump	4 (Four)	18,000/-
41.	ICB-41	a. Permeation Tubes for SO ₂ NIST Certified b. Permeation Tubes for SO ₂ Non-NIST Certified c. Permeation Tubes for NO ₂ (NIST) certified d. Permeation Tubes for NO ₂ (Nitrogen Dioxide) (Non-NIST) certified e. Permeation Tubes for BTX Analyzer (NIST Certified) i. Benzene ii. Toluene iii. Ethyl-Benzene iv. Xylene-M&P v. Xylene-O	6 (Six) (40°C-5 Nos.) (50°C-1 No.) 3 (Three) (40°C) 2 (Two) (50°C) 6 (Six) 3 Nos. (40°C) 2 Nos. (50°C) 1 each = Total 5 Nos. (40 °C)	32,700.00
42.	ICB-42	pH meter - Online	2 (Two)	4,500/-
43.	ICB-43	PM2.5 Sampler	23 (Twenty Three)	3,45,000/-
44.	ICB-44	Portable Calibrator	1 (One)	12,000/-
45.	ICB-45	Portable Hydrocarbon (Methane / Non-Methane HC / THC) Analyzer	1 (One)	12,000/-

S. No.	Item Code	Instrument / Equipment	Quantity Requirement	EMD (Rs.)
46.	ICB-46	PUF sampler (for sampling of Ambient VOC, Dioxins)	9 (Nine)	54,000/-
47.	ICB-47	Rotatory Evaporator with Vacuum Pump & Chiller	3 (Three)	72,000/-
48.	ICB-48	TEOM Sampler	1 (One)	75,000/-
49.	ICB-49	TKN Assembly (TKN Analyzer)	3 (Three)	54,000/-
50.	ICB-50	Ultrapure Water System	1 (One)	15,000/-
51.	ICB-51	Ultrasonic Water Bath	4 (Four)	6,000/-
52.	ICB-52	Vacuum Pump (Suction Pump)	8 (Eight)	9,600/-
53.	ICB-53	Velocity meter	3 (Three)	6,000/-
54.	ICB-54	Water Purification System (RO/bacteria free)	4 (Four)	84,000/-
55.	ICB-55	Weighing Micro Balance (capacity 5.1 g, minimum display 0.001mg)	6 (Six)	63,000/-
56.	ICB-56	Weighing Micro Balance (capacity 220 g, minimum display 0.001gm)	4 (Four)	24,000/-
57.	ICB-57	Weighing Micro Balance (capacity 220 g minimum display 0.1 mg)	3 (Three)	13,500/-
58.	ICB-58	Weighing Micro Balance (capacity 200 g minimum display 0.01 mg)	2 (Two)	9,000/-

Locations of Delivery and Installation of the Instruments / Equipments

Item Code	Instrument / Equipment	Quantity	Delivery Locations & Nos.
ICB-1	Accelerated Solvent Extraction System	1 (One)	ZOK-1
ICB-2	Air Sampling Pump (0-3 ltr/min)	15 (Fifteen)	ZOL-3, ZOK-3, ZOB-3, ZOV-3, AL-3
ICB-3	AOX Analyzer with TOC Combination	5 (Five)	IL-1, ZOK-1, ZOBH-1, ZOB-1, ZOV-1
ICB-4	Atomic Absorption Spectrophotometer (AAS) – GTA / VGA	1 (One)	ZOV-1
ICB-5	Automatic Mercury Analyser for Ambient Air	1 (One)	AL-1
ICB-6	Balance (electronic top loading for media/ broth) capacity 0.001 gm	4 (Four)	BL-1, ZOK-1, ZOBH-2
ICB-7	Bomb Calorimeter	5 (Five)	WL-1, ZOK-1, ZOV-1, ZOBH-1, ZOL-1
ICB-8	Calibration Gas Cylinder 100% Concentrated (Certified):		
	a) Sulphur Dioxide (SO ₂)	5 (Five)	ZOL-1, ZOK-1, ZOB-1, ZOV-1, AL-1
	b) Nitric Oxide (NO)	5 (Five)	ZOL-1, ZOK-1, ZOB-1, ZOV-1, AL-1
ICB-9	Combined Nitrogen and Zero Air Gas Generator for GC/GC-MS	2 (Two)	AL-1, TOL-1
ICB-10	Conductivity & TDS Meter (Online)	2 (Two)	WL-2
ICB-11	Cool Beam light	2 (Two)	BL-2
ICB-12	Diffusion Sampling Tube for BTX	One lot (1000 Nos.)	AL-1
ICB-13	Digital Pyrometer with Sensor	2 (Two)	ZOK-2
ICB-14	Echo Sounder	1 (One)	ZOK-1
ICB-15	Elemental (CHNS) Analyzer for Carbon, Hydrogen, Nitrogen, Oxygen and Chloride Analysis	1 (One)	WL-1
ICB-16	Flash Point Apparatus	5 (Five)	WL-1, ZOK-1, ZOV-1, ZOBH-1, ZOL-1

Item Code	Instrument / Equipment	Quantity	Delivery Locations & Nos.
ICB-17	Flue Gas Analyser	10 (Ten)	TOL-2, ZOK-2, ZOV-2, ZOBH-1, ZOB-1, ZOS-1, ZOL-1
ICB-18	Fourier Transform Infrared Spectrometer (FT-IR) PC – Operated	1 (One)	WL-1
ICB-19	Gas Chromatograph	1 (One)	ZOK-1
ICB-20	Gas Chromatograph Mass Spectrophotometer (GC-MS)	3 (Three)	TOL-2, ZOV-1
ICB-21	Gas Chromatograph with Methanizer	1 (One)	AL-1
ICB-22	GC-MS with ATD	2 (Two)	ZOB-1, ZOK-1
ICB-23	Gas Mixture (NIST certified)		
	a) Sulphur Dioxide (SO ₂) Gas Mixture 120 PPM	5 (Five)	ZOL-1, ZOK-1, ZOB-1, ZOV-1, AL-1
	b) Nitric Oxide (NO) Gas Mixture 250 PPM	5 (Five)	ZOL-1, ZOK-1, ZOB-1, ZOV-1, AL-1
	c) Carbon Monoxide (CO) Gas Mixture 110 PPM	5 (Five)	ZOL-1, ZOK-1, ZOB-1, ZOV-1, AL-1
	d) Ammonia (NH ₃) Gas Mixture 10 PPM	1 (One)	AL-1
	e) Methane (CH ₄) Gas Mixture 100 PPM	1 (One)	AL-1
f) Propane (C ₃ H ₈) Gas Mixture 10 PPM	1 (One)	AL-1	
ICB-24	High Performance Liquid Chromatograph (HPLC)	1 (One)	ZOK-1
ICB-25	High Precision Pressure cum Vacuum Gauge (Analog) (Master gauge),	8 (Eight) set	ZOL-2, ZOK- 2, ZOB-2, ZOV-2
ICB-26	Individual VOC Analyser	1 (One)	AL-1
ICB-27	Inductively Coupled Plasma (ICP) Spectrometer	1 (One)	ZOK-1
ICB-28	Isokinetic Stack Sampling Assembly (Stack Monitoring Kit suitable for EPA Methods 5, 23A, 26A, 29 etc.)	6 (Six)	ZOV-1, ZOB-1, ZOL-1, ZOK-1, AL-2
ICB-29	Ion Chromatograph for water analysis	4 (Four)	WL-2, ZOV-1, ZOL-1
ICB-30	Ion Analyser with Fluoride, Nitrate, Nitrite, Cyanide and Ammonia Electrodes	6 (Six)	ZOL-1, ZOV-1, ZOK-1, ZOBH-1, ZOB-2
ICB-31	Karl Fischer Coulometer with Oven for moisture analysis	4 (Four)	WL-2, ZOK-1, ZOL-1

Item Code	Instrument / Equipment	Quantity	Delivery Locations & Nos.
ICB-32	Laboratory Glassware Washer & Dryer	5 (Five)	BL-2, WL-1, ZOBH-1, ZOL-1
ICB-33	Liquid Chromatograph Mass Spectrometer (LC-MS)	1 (One)	TOL-1
ICB-34	Mass Flow Controllers of various ranges with Digital Readout and Control unit	4 (Four) sets	ZOL-1, ZOK-1, ZOB-1, ZOV-1
ICB-35	Meteorological Station	6 (Six)	ZOBH-2, ZOK-1, ZOV-1, POA-1, AL-1
ICB-36	Microwave Digestion System	7 (Seven)	IL-1, BL-1, WL-1, ZOK-1, ZOL-1, ZOV-1, ZOBH-1
ICB-37	Moisture Analyser	3 (Three)	IL-1, ZOBH-1, ZOK-1
ICB-38	Multi Gas Analyser for indoor ambient air quality Monitoring	1 (One)	ZOB-1
ICB-39	Noise level meter with data logger	10 (Ten)	ZOBH-3, POA-1, ZOK-2, ZOV-3, ZOL-1
ICB-40	Oil Sealed Mechanical Vacuum Pump	4 (Four)	ZOL-1, ZOK-1, ZOB-1, ZOV-1
ICB-41	a. Permeation Tubes for SO ₂ NIST Certified	6 (Six) (40°C-5 Nos.) (50°C-1 No.)	ZOL-1 (40°C), ZOK-1 (40°C) ZOB-1 (40°C), ZOV-1 (40°C), AL-2 (1 no. 40°C & 1 no. 50°C)
	b. Permeation Tubes for SO ₂ Non-NIST Certified	3 (Three) (40°C) 2 (Two) (50°C)	AL-5
	c. Permeation Tubes for NO ₂ (NIST) certified	6 (Six)	ZOL-1 (40°C) ZOK-1 (40°C) ZOB-1 (40°C) ZOV-1 (40°C) AL-2 (1 No. 40°C & 1 No. 50°C)
	d. Permeation Tubes for NO ₂ (Nitrogen Dioxide) (Non-NIST) certified	3 Nos. (40°C) 2 Nos. (50°C)	AL-5
	e. Permeation Tubes for BTX Analyzer (NIST Certified) i. Benzene ii. Toluene iii. Ethyl-Benzene iv. Xylene-M&P v. Xylene-O	1 each = Total 5 Nos. (40°C)	AL-5

Item Code	Instrument / Equipment	Quantity	Delivery Locations & Nos.
ICB-42	pH meter - Online	2 (Two)	WL-2
ICB-43	PM _{2.5} Sampler	23 (Twenty Three)	ZOK-3, ZOV-4, ZOBH-5, ZOB-4, ZOS-2, ZOL-1, POA-4
ICB-44	Portable Calibrator	1 (One)	ZOV-1
ICB-45	Portable Hydrocarbon (Methane / Non-Methane HC / THC) Analyzer	1 (One)	AL-1
ICB-46	PUF sampler (for sampling of Ambient VOC, Dioxins)	9 (Nine)	ZOB-4, ZOK-1, ZOV-2, AL-2
ICB-47	Rotatory Evaporator with Vacuum Pump & Chiller	3 (Three)	TOL-3
ICB-48	TEOM Sampler	1 (One)	AL-1
ICB-49	TKN Assembly (TKN Analyzer)	3 (Three)	WL-1, ZOL-1, ZOV-1
ICB-50	Ultrapure Water System	1 (One)	BL-1
ICB-51	Ultrasonic Water Bath	4 (Four)	ZOV-1, ZOL-1, ZOK-1, POA-1
ICB-52	Vacuum Pump (Suction Pump)	8 (Eight)	IL-2, ZOV-1, ZOL-2, ZOK-3
ICB-53	Velocity meter	3 (Three)	ZOBH-2, ZOK-1
ICB-54	Water Purification System (RO/bacteria free)	4 (Four)	BL-1, ZOBH-1, ZOB-1, ZOV-1
ICB-55	Weighing Micro Balance (capacity 5.1 g, minimum display 0.001mg)	6 (Six)	ZOB-1, ZOBH-1, ZOK-1, ZOL-1, ZOV-1, POA-1
ICB-56	Weighing Micro Balance (capacity 220 g, minimum display 0.001gm)	4 (Four)	BL-1, ZOK-1, ZOV-1, ZOB-1
ICB-57	Weighing Micro Balance (capacity 220 g minimum display 0.1 mg)	3 (Three)	IL-1, BL-1, ZOK-1
ICB-58	Weighing Micro Balance (capacity 200 g minimum display 0.01 mg)	2 (Two)	BL-1, ZOB-1

Abbreviations:

AL	=	Air Laboratory, HQs Delhi	ZOK	=	Zonal Office – Kolkata
TOL	=	National Reference Trace Organics Laboratory; HQs Delhi	ZOV	=	Zonal Office – Vadodara
IL	=	Instrumentation Laboratory; HQs Delhi	ZOBH	=	Zonal Office – Bhopal
WL	=	Water & Wastewater Laboratory; HQs Delhi	ZOS	=	Zonal Office – Shillong
BL	=	Bio-Science Laboratory; HQs Delhi	ZOB	=	Zonal Office – Bangalore
ZOL	=	Zonal Office – Lucknow;	POA	=	Project Office – Agra

**Delivery Locations of Instruments / Equipments at CPCB Laboratories
Contact Person, Address, E-Mail and Tel. No.**

Laboratories	Contact Person	E-Mail ID	Tel. No.
Headquarters Laboratories: (AL: Air Laboratory; BL: Bio-Science Laboratory; IL: Instrumentation Laboratory; TOL: Trace Organics Laboratory; WL: Water Laboratory)			
Central Pollution Control Board (Ministry of Environment & Forests) Parivesh Bhawan East Arjun Nagar Delhi-110 032	Sh. M. Varghese, Administrative Officer (Material)	cpcb@nic.in	011-22308202 (Off) 9891718109 (Cell Phone)
<u>Zonal Office – Lucknow (ZOL)</u>			
Central Pollution Control Board PICUP Bhawan (Ground Floor) Vibhuti Khand Gomti Nagar Lucknow-226 010 Uttar Pradesh	Dr. M. Q. Ansari Scientist 'E' & Incharge Zonal Office	ssmqa.cpcb@nic.in	0522-4087601 (Off) 08009100222 (Cell Phone)
<u>Zonal Office – Kolkata (ZOK)</u>			
Central Pollution Control Board 502, Southend Conclave 1582, Rajdanga Main Road Kolkata-700 107 West Bengal	Sh. A. Chattopadhyay, Senior Environmental Engineer & Incharge Zonal Office	achattopadhyay.cpcb@nic.in; abhijit_cpcb@hotmail.com	033-2441 6332(Direct) 033-2441 4289 / 4677 / 6003 / 6634
<u>Zonal Office – Vadodara (ZOV)</u>			
Central Pollution Control Board Parivesh Bhawan, OPP-VMC Ward Office No. 10 Subhanpura Vadodara-390 023 Gujarat	Sh. B. R. Naidu Scientist 'E' & Incharge Zonal Office	brnaidu.cpcb@nic.in; westzonecpcb@yahoo.com	0265-2392603 0265-2392604 0265-239283132/33 (EPABX) 0265-2392985/86 (EPABX)
<u>Zonal Office – Bangalore (ZOB)</u>			
Central Pollution Control Board 1 st & 2 nd Floors, Nisarga Bhavana, Thimmaiah Main Road, 7 th D Cross Opp. Pushpanjali Theatre Shivanagar Bangalore-560 010, Karnataka	Sh. A. Manoharan Scientist 'D' & Incharge Zonal Office	cpcbszo@yahoo.com ; mano_cpcb@yahoo.co.in	080-23233827 (Off) 09449833773 (Cell Phone) 080-23233739 / 23233827 / 23233996

Laboratories	Contact Person	E-Mail ID	Tel. No.
<u>Zonal Office – Bhopal (ZOBH)</u> Central Pollution Control Board 3 rd Floor, Sahkar Bhawan North T. T. Nagar Bhopal-462 003 Madhya Pradesh	Sh. R. S. Kori Scientist `E' & Incharge Zonal Office	cpcb.bhopal@gmail.com; rskori@yahoo.com	0755- 2775587 (O) 0755-2775385 / 86 (EPABX) 9425609052 (Cell Phone)
<u>Zonal Office – Shillong (ZOS)</u> Central Pollution Control Board "Tumsir" Lumdiengob Lower Motinagar (Near Fire Brigae H.Q.) Lumbyngngad Shillong-793 014 Meghalaya	Sh. H. K. Karforma Scientist `E' & Incharge Zonal Office	zoshillong,cpcb@nic.in	0364-2520923 / 2522859 (Off) 09436334978 (Cell Phone)
<u>Project Office – Agra (POA)</u> Central Pollution Control Board 4, Dholpur House Agra-282 601 Uttar Pradesh	Sh. V. K. Shukla Scientist `C' & Incharge Project Office	cpcbagra@rediffmail.com vk_sukla@rediffmail.com	0562-2421548 (Off) 09956009777 (Cell Phone)

PRE CONTRACT INTEGRITY PACT

General

This pre-bid pre-contract Agreement (hereinafter called the Integrity Pact) is made onday of the month of2013, between, CPCB, An autonomous body acting through Shri, (Designation of the officer, Ministry/Department, Government of India) hereinafter called the "BUYER", which expression shall mean and include, unless the context otherwise requires, his successors in office and assigns of the First Part and M/s..... represented by Shri....., Chief Executive Officer (hereinafter called the "BIDDER / SELLER" which expression shall mean and include, unless the context otherwise requires, his successors and permitted assigns) of the Second Part.

WHEREAS the BUYER proposes to procure (Name of the Stores/Equipment/Item) and the BIDDER/Seller is willing to offer/has offered the stores and

WHEREAS the BIDDER is a private company/public company/Government undertaking/partnership/registered export agency, constituted in accordance with the relevant law in the matter and the BUYER CPCB work under the ageis of Environment & Forests, performing its functions as per the provisions of Water Act 1974, Air Act ,1981 and EPA Act, 1986.

NOW, THEREFORE,

To avoid all forms of corruption by following a system that is fair, transparent and free from any influence/prejudiced dealings prior to, during and subsequent to the currency of the contract to be entered into with a view to :-

Enabling the BUYER to obtain the desired said stores/equipment at a competitive price in conformity with the defined specifications by avoiding the high cost and the distortionary impact of corruption on public procurement, and

Enabling BIDDERS to abstain from bribing or indulging in any corrupt practice in order to secure the contract by providing assurance to them that their competitors will also abstain from bribing and other corrupt practices and the BUYER will commit to prevent corruption, in any form, by its officials by following transparent procedures.

The parties hereto hereby agree to enter into this Integrity Pact and agree as follows:

Commitments of the BUYER

- 1.1 The BUYER undertakes that no official of the BUYER, connected directly or indirectly with the contract, will demand, take a promise for or accept, directly or through intermediaries, any bribe, consideration, gift, reward, favour or any material or immaterial benefit or any other advantage from the BIDDER, either for themselves or for any person, organization or third party related to the contract in exchange for an advantage in the bidding process, bid evaluation, contracting or implementation process related to the contract.

- 1.2 The BUYER will, during the pre-contract stage, treat all BIDDERS alike, and will provide to all BIDDERS the same information and will not provide any such information to any particular BIDDER which could afford an advantage to that particular BIDDER in comparison to other BIDDERS.
 - 1.3 All the officials of the BUYER will report to the appropriate Government office any attempted or completed breaches of the above commitments as well as any substantial suspicion of such a breach.
2. In case any such preceding misconduct on the part of such official(s) is reported by the BIDDER to the BUYER with full and verifiable facts and the same is prima facie found to be correct by the BUYER, necessary disciplinary proceedings, or any other action as deemed fit, including criminal proceedings may be initiated by the BUYER and such a person shall be debarred from further dealings related to the contract process. In such a case while an inquiry is being conducted by the BUYER the proceedings under the contract would not be stalled.

Commitments of BIDDERS

2. The BIDDER commits itself to take all measures necessary to prevent corrupt practices, unfair means and illegal activities during any stage of its bid or during any pre-contract stage in order to secure the contract or in furtherance to secure it and in particular commit itself to the following:-
 - 3.1 The BIDDER will not offer, directly or through intermediaries, any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the BUYER, connected directly or indirectly with the bidding process, or to any person, organization or third party related to the contract in exchange for any advantage in the bidding, evaluation, contracting and implementation of the contract.
 - 3.2 The BIDDER further undertakes that it has not given, offered or promised to give, directly or indirectly any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the BUYER or otherwise in procuring the Contract or forbearing to do or having done any act in relation to the obtaining or execution of the contract or any other contract with the Government for showing or forbearing to show favour or disfavour to any person in relation to the contract or any other contract with the Government.

- 3.3* BIDDERS shall disclose the name and address of agents and representatives and Indian BIDDERS shall disclose their foreign principals or associates.
- 3.4* BIDDERS shall disclose the payments to be made by them to agents/brokers or any other intermediary, in connection with this bid/contract.
- 3.5* The BIDDER further confirms and declares to the BUYER that the BIDDER is the original manufacture/integrator/authorized government sponsored export entity of the defence stores and has not engaged any individual or firm or company whether Indian or foreign to intercede, facilitate or in any way to recommend to the BUYER or any of its functionaries, whether officially or unofficially to the award of the contract to the BIDDER, nor has any amount been paid, promised or intended to be paid to any such individual, firm or company in respect of any such intercession, facilitation or recommendation.
- 3.6 The BIDDER, either while presenting the bid or during pre-contract negotiations or before signing the contract, shall disclose any payments he has made, is committed to or intends to make to officials of the BUYER or their family members, agents, brokers or any other intermediaries in connection with the contract and the details of services agreed upon for such payments.
- 3.7 The BIDDER will not collude with other parties interested in the contract to impair the transparency, fairness and progress of the bidding process, bid evaluation, contracting and implementation of the contract.
- 3.8 The BIDDER will not accept any advantage in exchange for any corrupt practice, unfair means and illegal activities.
- 3.9 The BIDDER shall not use improperly, for purposes of competition or personal gain, or pass on to others, any information provided by the BUYER as part of the business relationship, regarding plans, technical proposals and business details, including information contained in any electronic data carrier. The BIDDER also undertakes to exercise due and adequate care lest any such information is divulged.
- 3.10 The BIDDER commits to refrain from giving any complaint directly or through any other manner without supporting it with full and verifiable facts.
- 3.11 The BIDDER shall not instigate or cause to instigate any third person to commit any of the actions mentioned above.

- 3.12 If the BIDDER or any employee of the BIDDER or any person action on behalf of the BIDDER, either directly or indirectly, is a relative of any of the officers of the BUYER, or alternatively, if any relative of an officer of the BUYER has financial interest/stake in the BIDDER's firm, the same shall be disclosed by the BIDDER at the time of filling of tender.
- 3.13 The BIDDER shall not lend to or borrow any money from or enter into any monetary dealings or transactions, directly or indirectly, with any employee of the BUYER.

3. Previous Transgression

- 4.1 The BIDDER declares that no previous transgression occurred in the last three years immediately before signing of this Integrity Pact, with any other company in any country in respect of any corrupt practices envisaged hereunder or with any Public Sector Enterprise in India or any Government Department in India that could justify BIDDER's exclusion from the tender process.
- 4.2 The BIDDER agrees that if it makes incorrect statement on this subject, BIDDER can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

4. Sanctions for Violations

- 5.1 Any breach of the aforesaid provisions by the BIDDER or any one employed by it or acting on its behalf (whether with or without the knowledge of the BIDDER) shall entitle the BUYER to take all or any one of the following actions, wherever required:-
- (i) To immediately call off the pre-contract negotiations without assigning any reason or giving any compensation to the BIDDER. However, the proceedings with the other BIDDER (s) would continue.
 - (ii) The Earnest Money Deposit (in pre-contract stage) and/or Security Deposit/Performance Bond (after the contract is signed) shall stand forfeited either fully or partially, as decided by the BUYER and the BUYER shall not be required to assign any reason therefore.
 - (iii) To immediately cancel the contract, if already signed, without giving any compensation to the BIDDER.
 - (iv) To recover all sums already paid by the BUYER, and in case of an Indian BIDDER with interest thereon at 2% higher than the prevailing Prime Lending Rate of State Bank of India, while in case of a BIDDER from a country other than India

with interest thereon at 2% higher than the LIBOR. If any outstanding payment is due to the BIDDER from the BUYER in connection with any other contract for any other stores, such outstanding payment could also be utilized to recover the aforesaid sum and interest.

- (v) To encash the advance bank guarantee and performance bond/warranty bond, if furnished by the BIDDER, in order to recover the payments, already made by the BUYER, along with interest.
- (vi) To cancel all or any other Contracts with the BIDDER. The BIDDER shall be liable to pay compensation for any loss or damage to the BUYER resulting from such cancellation/rescission and the BUYER shall be entitled to deduct the amount so payable from the money (s) due to the BIDDER.
- (vii) To debar the BIDDER from participating in future bidding processes of the Government of India for a minimum period of five years, which may be further extended at the discretion of the BUYER.
- (viii) To recover all sums paid in violation of this Pact by BIDDER (s) to any middleman or agent or broker with a view to securing the contract.
- (ix) In cases where irrevocable Letters of Credit have been received in respect of any contract signed by the BUYER with the BIDDER, the same shall not be opened.
- (x) Forfeiture of Performance Bond in case of a decision by the BUYER to forfeit the same without assigning any reason for imposing sanction for violation of this Pact.

5.2 The BUYER will be entitled to take all or any of the actions mentioned at para 6.1 (i) to (x) of this Pact also on the Commission by the BIDDER or any one employed by it or acting on its behalf (whether with or without the knowledge of the BIDDER), of an offence as defined in Chapter IX of the Indian Penal code, 1860 or Prevention of Corruption Act, 1988 or any other statute enacted for prevention of corruption.

5.3 The decision of the BUYER to the effect that a breach of the provisions of this Pact has been committed by the BIDDER shall be final and conclusive on the BIDDER. However, the BIDDER can approach the Independent Monitor (s) appointed for the purposes of this Pact.

6. **Fall Clause**

6.1 The BIDDER undertakes that it has not supplied/is not supplying similar product/systems or subsystems at a price lower than that offered in the present bid in respect of any other Ministry/Department of the Government of India or

PSU and if it is found at any stage that similar product/systems or sub systems was supplied by the BIDDER to any other Ministry/Department of the Government of India or a PSU at a lower price, then that very price, with due allowance for elapsed time, will be applicable to the present case and the difference in the cost would be refunded by the BIDDER to the BUYER, if the contract has already been concluded.

7. Independent Monitors

- 7.1 The BUYER has appointed Independent Monitors (hereinafter referred to as Monitors) for this Pact in consultation with the Central Vigilance Commission (Names and Addresses of the Monitors to be given).
- 7.2 The task of the Monitors shall be to review independently and objectively, whether and to what extent the parties comply with the obligations under this Pact.
- 7.3 The Monitors shall not be subject to instructions by the representatives of the parties and perform their functions neutrally and independently.
- 7.4 Both the parties accept that the Monitors have the right to access all the documents relating to the project/procurement, including minutes of meetings.
- 7.5 As soon as the Monitor notices, or has reason to believe, a violation of this Pact, he will so inform the Authority designated by the BUYER.
- 7.6 The BIDDER(s) accepts that the Monitor has the right to access without restriction to all Project documentation of the BUYER including that provided by the BIDDER. The BIDDER will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The same is applicable to Subcontractors. The Monitor shall be under contractual obligation to treat the information and documents of the BIDDER/Subcontractor(s) with confidentiality.
- 7.7 The BUYER will provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the parties. The parties will offer to the Monitor the option to participate in such meetings.
- 7.8 The Monitor will submit a written report to the designated Authority of BUYER/Secretary in the Department/ within 8 to 10 weeks from the date of

reference or intimation to him by the BUYER / BIDDER and, should the occasion arise, submit proposals for correcting problematic situations.

8. **Facilitation of Investigation**

In case of any allegation of violation of any provisions of this Pact or payment of Commission, the BUYER or its agencies shall be entitled to examine all the documents including the Books of Accounts of the BIDDER and the BIDDER shall provide necessary information and documents in English and shall extend all possible help for the purpose of such examination.

9. **Law and Place of Jurisdiction**

This Pact is subject to Indian Law. The place of performance and jurisdiction is the seat/place of the BUYER.

10. **Other Legal Actions**

The actions stipulated in this Integrity Pact are without prejudice to any other legal action that may follow in accordance with the provisions of the extant law in force relating to any civil or criminal proceedings.

11. **Validity**

11.1 The validity of this Integrity Pact shall be from date of its signing and extend upto 5 years or the complete execution of the contract to the satisfaction of both the BUYER and the BIDDER/Seller, including warranty period, whichever is later. In case BIDDER is unsuccessful, this Integrity Pact shall expire after six months from the date of the signing of the contract.

11.2 Should one or several provisions of this Pact turn out to be invalid; the remainder of this Pact shall remain valid. In this case, the parties will strive to come to an agreement to their original intentions.

12. The parties hereby sign the Integrity Pact aton.....

BUYER

BIDDER

Name of the Officer.

CHIEF EXECUTIVE OFFICER

Designation

Deptt./MINISTRY/PSU

Witness

Witness

1.....

1.....

2.....

2.....

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF ACCELERATED SOLVENT EXTRACTION SYSTEM

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZO's)			
Code Number: ICB-1			
Equipment Name: Accelerated Solvent Extraction System			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	INSTRUMENT COMPOSITION		
	Accelerated Solvent Extractor (ASE)	One set with requisite accessories.	
	Sample Cells	One set for operation and another set as standby spare.	
	Collection Bottles	One set for operation and another set as standby spare.	
	Solvent Controller	One set with requisite accessories.	
	Computer Control Software	One set installed as well as backup restoration CDs.	
	Operation, Trouble shooting, maintenance manuals	One set of each. Electronic as well as Hard printed.	
	Service Tools, spares & consumables.	One set of each.	
2.0	TECHNICAL SPECIFICATION		
2.1	ASE System Control	Computer controlled as well as Instrument Control Panel, Capability to control and monitor several system by single workstation, method transfer between similar ASE systems.	
2.2	Computer Operating System Compatibility	Compatible to Windows 7 or latest Operating System.	
2.3	Method Compliance	Compliance with established methodologies of USEPA e.g. Method 3545A.	
2.4	Method Storage	Method building from computer software as well as from control panel and multiple method storage.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-1			
Equipment Name: Accelerated Solvent Extraction System			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
2.5	Display	Easy to use icons for quick access to control functions, Display of extraction process as color graphics. Sensors and display of temperature, pressure and solvent vapors.	
2.6	Automation	Automated sample extraction, filtration, automated unattended extraction of minimum 12 samples, automatic rinsing of system between sample extractions, programming for sample sequence automation.	
2.7	Sample Cell	Sample cell volume 22 ml (one set of six cells) and sample cell volume 66 ml (one set of six cells)	
2.8	Number of samples	Minimum 6 number of sample cells in each set.	
2.9	Collection Bottle	250 ml capacity.	
2.10	Rinsing between samples	Variable rinse volumes.	
2.11	Temperature range	Ambient to 200 °C.	
2.12	Operating pressure range	500 to 1500 psi.	
3.0	Solvent Controller		
3.1	Programmability	Solvent controller shall be controlled and programmable from the computer software.	
3.2	Automation and solvent control	Unattended operation and automatic switching between different solvents.	
3.3	Multiple solvent delivery and gradient	Solvent delivery from one or up to four solvent reservoirs with variable mixing ratios from 5% up to 95% of total volume.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZO's)			
Code Number: ICB-1			
Equipment Name: Accelerated Solvent Extraction System			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
3.4	Solvent bottle holding	Capacity to hold up to four reservoirs of up to 2 L of each solvent.	
3.5	Waste solvent collection	Provision for collection of waste solvent.	
4.0	Computer		
	Make	Reputed brand such as HP/Compaq/Dell	
	Processor	Intel Core i7 (3 rd Generation) processor	
	RAM	4 GB DDR RAM (upgradeable to 8 GB DDR RAM)	
	HDD	500 GB SATA	
	Monitor	21" TFT-LCD Flat Colour (Digital)	
	DVD Writer	DVD- Multi-drive	
	Ports	2 Serial, 1 parallel and 2 USB front 3 Rear USB 2 Port, 1VGA 4 bays (2 external & internal) with LAN 1PS, 2 mouse port	
	Key board	Latest multimedia (HP / Microsoft)	
	Mouse	Optical mouse with pad	
	Ethernet	32 bit auto selectable 10/100 MBPS	
	Graphics	Internet ready with integrated Graphics	
	Sound	Integrated sound card and inbuilt stereo speakers	
	Printer	HP LaserJet Printer 1200 x 1200 dpi 12 PPM black	
	Softwares	Pre-loaded Windows 7 Professional operating system with Licensed CD	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-1			
Equipment Name: Accelerated Solvent Extraction System			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		MS Office 2010 Professional with media, manual and Licensed CD	
		Pre-loaded Norton Antivirus with latest version of 3 years lifetime along with Licensed CD	
5.0	SPARES & CONSUMABLES	Spares and consumables sufficient for three years trouble free operation should be included in the offer and supplied with each system.	
6.0	OPERATION AND MAINTENANCE TRAINING	The supplier has to impart on-site operation training at the time of installation to user scientists on application, routine maintenance and software training.	
7.0	GENERAL CONDITIONS OF SUPPLY	<ul style="list-style-type: none"> (i) The instrument and all its sub units should operate on 230 ± 10 volts 50 Hz power supply. (ii) All the operation and maintenance manuals, circuit diagrams, application notes and application softwares to be supplied should be in English language. (iii) The supplier / manufacturer should have Indian agent to provide after sales service. (iv) The main unit and all the sub units of the instrument should be serviced by the Indian representative of supplier. (v) 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 atleast 2 years as on the date of bid 	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-1			
Equipment Name: Accelerated Solvent Extraction System			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		opening. (vi) The bidder should furnish the information on past supplies and their satisfactory performance. (vii) Bidders shall invariably furnish documentary evidence (client's certificate – atleast two) in support of the satisfactory operation of the equipment as specified above. (viii) 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. (ix) Comprehensive warranty with spares for 3 years from the date of installation of the instrument should be covered.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF AIR SAMPLING PUMP (0-3 LTR/MIN)

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-2			
Equipment Name: Air Sampling Pump (0-3 ltr/min)			
Quantity: 15 (Fifteen) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Description	Diaphragm pump/sampling pump operated on rechargeable Ni-Cd batteries	
2.0	Operation	12V DC	
3.0	Gaseous sampling	Suitable adopter for gaseous sampling	
4.0	Operational flow range	0 to 3 litre / min.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS AOX ANALYZER WITH TOC COMBINATION

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-3			
Equipment Name: AOX Analyzer with TOC Combination			
Quantity: 5 (Five) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	INSTRUMENT COMPOSITION		
	Main AOX Module	One Unit	
	EOX Module	One Unit	
	POX Module	One Unit	
	TOC Module with NDIR Detector	One Unit	
	Furnace	One Unit	
	Scrubber	One Unit	
	Titration Cell	One Unit	
	Data Work Station	One Unit	
2.0	TECHNICAL SPECIFICATION		
2.1	System Application	The system should be capable for measurement of AOX, POX, EOX, TX in solid, liquid or gaseous samples & TOC in liquid samples.	
2.2	System operation	The windows based software should offer easy to use menu control for all vital parts and complete the functions of analyzer i.e. movement of quartz boat, stirrer speed, temperature control, NDIR working etc.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-3			
Equipment Name: AOX Analyzer with TOC Combination			
Quantity: 5 (Five) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
2.3	Operating Gases	Oxygen: 99.996%	
		Argon: 99.996%	
2.4	Furnace	Double Furnace Technology combines horizontal (suited for EOX and also for AOX or TX determination in solid samples) and vertical (suited for AOX using the batch and column method and for EOX POX and TOC determination in Liquid samples combustions in a single instrument.	
2.5	Gas Flow Control Meter	System should be equipped with gas flow control meter capable for controlling maximum flow rate 500 ml/min.	
2.6	Power Requirement	The complete unit should operate on electric power of 230 ± 10 V AC, 50 Hz.	
2.7	Scrubber	Scrubber should be capable of cleaning and drying the gaseous steam coming from the combustion tube to the titration cell.	
2.8	Titration Cell	Titration cell should comprise of generator electrode and measuring electrodes.	
		The cell should reach full stability within 30 minutes.	
		Titration cell capacity not less than 20 ml.	
3.0	DATA WORK STATION		
3.1	Application Software (Features)	Capacity of regulating / control of all AOX analysis methods (Column or batch method) EOX, POX & TOC determinations through computer.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-3			
Equipment Name: AOX Analyzer with TOC Combination			
Quantity: 5 (Five) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		Software should monitor all system parameters and acquires measurement data and titration curve, allow data and results to be assessed with precision and accuracy.	
		Capable of evaluating results concentrations in ppm and ppb or less (ppt).	
		Storage of complete analysis data for future reference.	
4.0	COMPUTER SYSTEM		
	Make	Reputed brand such as HP/Compaq/Dell	
	Processor	Intel Core i7 (3 rd Generation) processor	
	RAM	4 GB DDR RAM (upgradeable to 8 GB)	
	HDD	500 GB SATA	
	Monitor	21" TFT-LCD Flat Colour (Digital)	
	DVD Writer	DVD- Multi-drive	
	Ports	2 Serial, 1 parallel and 2 USB front 3 Rear USB2 Port, 1VGA 4 bays (2 external & internal) with LAN 1PS, 2 mouse port	
	Key board	Latest multimedia (HP / Microsoft)	
	Mouse	Optical mouse with pad	
	Ethernet	32 bit auto selectable 10/100 MBPS	
	Graphics	Internet ready with integrated Graphics	
	Sound	Integrated sound card and inbuilt stereo speakers	
	Printer	HP LaserJet Printer 1200 x 1200 dpi 12 PPM black	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-3			
Equipment Name: AOX Analyzer with TOC Combination			
Quantity: 5 (Five) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
5.0	Softwares	Pre-loaded Windows 7 Professional operating system with Licensed CD	
		MS Office 2010 Professional with media, manual and Licensed CD	
		Pre-loaded Norton Antivirus with latest version of 3 years lifetime along with Licensed CD	
6.0	ANALYTICAL SPECIFICATIONS		
	Measuring Principle	Combustion and colorimetric titration for AOX/EOX & NDIR for TOC	
	Parameters	AOX, EOX, POX, TX & TOC	
	Measuring Range	0.1 to 50 µg Chlorine absolute for AOX/EOX & up to 10,000 mg/l for TOC	
	Confirmation of legislation / Protocols	DIN, ISO, EPA, ASTM, CEN, SCAN, NEN, APHA	
	Methodology Package	Comprehensive DIN, EPA, SCAN, ISO, ASTM methodology package (CD-ROM) for AOX, EOX, TX in liquid, solid, soil & sludge and other environmental analysis.	
	Inaccuracy	Less than 5%	
	Average analysis time	5-10 minutes	
	Sample Matrix	Liquids, Semi Solids and Solid samples.	
	Electrolyte	75% HAC.	
7.0	ADDITIONAL ITEMS		
	Bench Top Shaker	Shaker with Shake table of 18" x 12" to permit agitation of 9-12	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-3			
Equipment Name: AOX Analyzer with TOC Combination			
Quantity: 5 (Five) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		flasks (250 ml capacity) and load capacity up to 15 kg. Simultaneously giving their contents a circular motion.	
		RPM should be between 0 to 300 with digital display and controlled by a knob.	
		Attached with a timer can be set 5 minutes interval up to 1 hour or infinite.	
	Filtration Assembly	Consisting of complete glass of components like holder funnel, 25 mm base with 25 mm sintered disc, spring clamp, 1 L vacuum flask.	
		Consisting of complete glass of components like holder funnel, 47 mm base with 47 mm sintered disc, spring clamp (Steel), 2 Ltr vacuum flask.	
	Vacuum / Pressure Pump for Filtration assembly	Two no's of Vacuum / pressure pumps. Material of construction pump head and housing made of cast aluminium, chemically resistant head and diaphragm, oil free, moulded PTFE diaphragm, PTFE/Ryton head, with vacuum / pressure gauge, separate regulators for vacuum and pressure and simple switching, vacuum capacity 24" Hg (610 mm), 30 l/min trace air displacement and pressure capacity 35 psi, free air capacity 0.5 cfm, 230 Volts / 50 Hz AC operated.	
	Oxygen & Argon Gases Cylinders	High pressure seamless steel cylinder filled with High purity 99.999% Argon gas, and another oxygen gas with having gas capacity 7m ³ water capacity 47 liters, cylinders should be ISI marked, conforming to IS:7285. Specification, flat bottom fitted with valve as per IS:3224, complete with neck ring and cap, painted as	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-3			
Equipment Name: AOX Analyzer with TOC Combination			
Quantity: 5 (Five) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		specified under Gas Cylinders Rules, 1981 along with Hydraulic test certificate, ISI Inspection / Test certificate, Explosive certificate from Chief Controller of Explosives, Nagpur India as per BIS Standard with 47 liter cylinder: Oxygen – One cylinder filled, Argon – One cylinder filled.	
	Gas regulator for Oxygen & Argon	Oxygen and Argon gas regulators: Best quality double stage, Static pressure regulators fitted with two pressure gauges, having inlet range 0-280 kg/cm ² , Outlet range 0-16 kg/cm ² , made of stainless steel Oxygen – One , Argon – One.	
	Polycarbonate Membrane Filters for AOX	10 Packets of polycarbonate membrane filters (100 membrane in each packet) with 0.4 µm pore size) for 25 mm with no or least chloride content.	
		10 Packets of polycarbonate membrane filters (100 membrane in each packet) with 0.4 µm pore size) for 47 mm with no or least chloride content.	
	Quartz frits of various diameter for filtration with unit	One unit with ten no's of Quartz frits	
	Activated Carbon GR Grade	Suitable for batch method with 100-200 mesh size, having no or very low apparent halide background (6 x 10 gm).	
	p-chlorophenol Standard Solution	200 ppm	
	Potassium Chloride	200 ppm	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-3			
Equipment Name: AOX Analyzer with TOC Combination			
Quantity: 5 (Five) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Standards for TOC	One set of multi and single range calibration standards for TOC analysis.	
	Manual	Operation and Maintenance Manual for each unit.	
	Electrodes	Two sets of generating electrode and two sets of measuring electrodes with necessary wire and connectors.	
	Septa Kit	One set	
	Tool Kit	One set	
	Gas Purifier	High capacity carrier gas purifier for Oxygen and Argon	
	Temperature Sensor Probe	4 Nos. With each furnace	
	Micro Pipette	50 µl fixed volume – two	
		100 µl fixed volume – two	
		1000 µl fixed volume – two	
	Syringe	1 to 5 µl – 5 numbers	
		1 to 10 µl – 5 numbers	
		1 to 25 µl – 5 numbers	
	Quartz Boat and Combustion tube	Two quartz boat and two combustion tube (one each for AOX & EOX) in addition of one each to be provided with the system.	
	Scrubber	One additional set.	
	Homogenizer	One	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-3			
Equipment Name: AOX Analyzer with TOC Combination			
Quantity: 5 (Five) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
8.0	WARRANTY	The supplier or the Indian representative should give performance warranty for three years from date of completion of the satisfactory installation of the instrument. AMC amount for next two years also to be quoted after warranty.	
9.0	OPERATION AND MAINTENANCE TRAINING	One week of informal on-site training on the use and operation of instrument completion of installation followed by compulsory one week training to two scientists on software training operation maintenance and trouble shooting aspects of the instrument at its application laboratory in India. 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.	
10.0	GENERAL CONDITIONS OF SUPPLY	<ul style="list-style-type: none"> (i) The instrument and all its sub units should operate on 230 ± 10 volts 50 Hz power supply. (ii) All the operation and maintenance manuals, circuit diagrams, application notes and application softwares to be supplied should be in English language. (iii) The supplier / manufacturer should have Indian agent to provide after sales service. (iv) The principal should provide a certificate that they will provide the spares in future for at least ten years. (v) The main unit and all the sub units of the instrument should be serviced by the Indian representative of supplier. 	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-3			
Equipment Name: AOX Analyzer with TOC Combination			
Quantity: 5 (Five) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		(vi) The Bidder should be Capable of providing five satisfactory Installation/ performance report in India. (vii) Upgraded software if required is to be provides free of cost up to the ten Years from the date of Installation. (viii) Quantity of additional items as mentioned is subject to change.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF ATOMIC ABSORPTION SPECTROPHOTOMETER (AAS) – GTA / VGA

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-4			
Equipment Name: Atomic Absorption Spectrophotometer (AAS) – GTA / VGA			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	INSTRUMENT COMPOSITION		
	Atomic Absorption Spectrophotometer (GTA/FLAME/VGA)	One set	
	Unit for Flame (Air-acetylene and nitrous oxide-acetylene)	One set	
	Graphite tube atomizer (GTA)	One set	
	Chiller/Water circulating unit	One set	
	Auto samplers for GTA and flame	One set	
2.0	TECHNICAL SPECIFICATIONS		
	Atomic Absorption Spectrophotometer	Computer controlled with built-in flame emission mode	
	Wave length range	190-800 nm wavelength	
	Sensitivity	Sensitivity atleast 0.35 abs for 5 µg/ml aqueous copper standard solution with air-acetylene flame	
2.1	Optics	Double beam dual blazed/holographic Monochromator	
	Focal Length	Atleast 250 mm focal length	
	Resolution	1800 lines/mm	
	Width	Automatic bandwidth of 0.2 to 2.0 nm.	
2.2	Flame Atomizer	All titanium or equivalent burner with impact bead / Flow spoiler, Premix Design	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-4			
Equipment Name: Atomic Absorption Spectrophotometer (AAS) – GTA / VGA			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Movement	Automatic movement into the sample compartment	
	Affect from Acids/Organic solvent	Unaffected from attacks by acid solutions or organic solvents (e.g. Methyl isobutyl Ketone i.e. MIBK	
	Flame Alignment in liquid beam	Fully automatic, optimized with motorized burner mount for vertical and horizontal burner adjustment	
	Nebulizer	High precision able to provide manually adjustable uptake rates material of the nebulizer and related Venturi should be inert to acid solutions and organic solvents, such as MIBK.	
2.3	Flame Control	Computer controlled ignition	
2.4	Gas Control	Computer controlled with oxidant and fuel gases monitoring to monitor constant fuel/oxidant ratio ignition	
2.5	Safety Function	Interlocking system to prevent ignition	
2.6	Essential Interlock Monitors	Burner type as well as its presence in position, air selector, flame sensor, liquid trap level, gas supply pressures and air supply anywhere in the network of gas tubings in the system	
2.7	Automatic Lamp Selection Function	Computer controlled Hollow cathode lamp selection and alignment,	
	Lamp Holder	Atleast 8 lamp holder with built-in power supplies for hollow cathode lamps and electrode-less discharge lamps or equivalent	
	Operating Parameter setting	Automatic setting	
2.8	Read Out / Display	Display facility for absorbance as well as concentration, Display of errors or error codes, absorbance range atleast upto 2.0 Abs	
	Scale expansion	Scale expansion atleast upto 100x,	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-4			
Equipment Name: Atomic Absorption Spectrophotometer (AAS) – GTA / VGA			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Integration time	Integration time should cover atleast 0.2 to 50 seconds range	
	Measurement	Measurements of mean, RSD and CV, Background only mode, integration of peak height and peak areas	
2.9	Accessories/Spares with the Flame AA System		
2.9.1	Vapour generation assembly	Should be continuous flow based hydride/mercury vapour generator with option of using with or without a programmable auto sampler.	
	Precision	Precision of better than or atleast 1% at ppb levels of mercury, arsenic etc.	
	Absorption Cell	The absorption cell's material should have no effect of the high heat of the flame, and the cell for the analysis of mercury should be of a closed cell design	
	Flame Arrestor	Flame arrestor should be provided in the tube which connects the assembly to the absorption cell	
	Cell design holder	The design of the cell holder should give a firm and easily adjustable (for alignment) mounting on the burner head.	
	System accessories	Complete with necessary reagent bottles, connectors etc.	
2.9.2	Hollow Cathode Lamps	16 Hollow cathode lamps. One lamp for each of the elements - arsenic, antimony, boron, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, selenium, tin, vanadium and zinc. Equivalent coded lamps will also be acceptable.	
2.9.3	Air Compressor with Air Filter or equivalent Air Service Unit	Complete with pressure regulator quite in operation, necessary tubing and connectors and should meet the air supply requirements of AAS operation.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-4			
Equipment Name: Atomic Absorption Spectrophotometer (AAS) – GTA / VGA			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Oil free pump	Oil-free pump and moisture trap	
	Corrosion resistant	Resistant to acidic vapour and the drain value (if any) should be made of stainless steel or equivalent corrosion resistant material.	
2.9.4	Gas Regulators		
	Nitrous-oxide gas regulator	Nitrous-oxide gas regulator (two stage) with heater, with necessary tubings and connectors. Necessary transformer should be provided to transform this supply to the requirements of the heater The heater should work on 230 ± 10 volts 50 Hz AC power supply.	
	Acetylene gas regulator	Acetylene gas regulator (two stage) with necessary tubing and connectors	
	Nitrogen gas regulator	Nitrogen regulator (two stage) with necessary tubings and connectors	
2.9.5	Gas Cylinders		
	Nitrous Oxide Gas Cylinder - One	High pressure seamless steel cylinder fitted with high purity Nitrous oxide gas. Should be ISI marked conforming to IS 7285 specifications. Flat bottom with valve as per complete neck ring and cap painted as specified under Gas cylinder Rules alongwith Hydraulic test certificate and explosive certificate from Chief Controller of Explosives, Nagpur.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-4			
Equipment Name: Atomic Absorption Spectrophotometer (AAS) – GTA / VGA			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Acetylene Gas Cylinder - Two	High pressure seamless steel cylinder fitted with high purity Acetylene gas having gas capacity 7 m ³ water capacity 47 liters. Cylinder should be ISI marked conforming to IS 7285 specifications. Flat bottom fitted with valve as per IS: 3224. Complete with neck ring and cap painted as specified under Gas cylinder Rules, 1981 alongwith Hydraulic test certificate, ISI inspection / Test Certificate. Explosive Certificate from Chief Controller of Explosives, Nagpur as per BIS standards.	
	Nitrogen Gas Cylinder - One	High pressure seamless steel cylinder fitted with high purity Nitrogen gas having gas capacity 7 m ³ water capacity 47 liters. Cylinder should be ISI marked conforming to IS 7285 specifications. Flat bottom fitted with valve as per IS: 3224. Complete with neck ring and cap painted as specified under Gas cylinder Rules, 1981 alongwith Hydraulic test certificate, ISI inspection / Test Certificate. Explosive Certificate from Chief Controller of Explosives, Nagpur as per BIS standards.	
2.10	Graphite Furnace System		
	(a) Graphite Tube Atomizer	Should be computer controlled fully enclosed graphite tube system consisting of stabilized temperature/total pyrolytic graphite platform.	
	Gas supplies	Provision of two gas supplies (programme selectable) with independent control over the gas supply through the furnace	
	Heating Rate	Heating rate of atleast 2000 °C per second	
	Cooling time	Cooling time 20 seconds	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-4			
Equipment Name: Atomic Absorption Spectrophotometer (AAS) – GTA / VGA			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Temperature range	Temperature range ambient to 2600 °C or more in 1 °C increments	
	Feed back system	Feed back system for furnace temperature control, interlocks for water, gas, temperature, furnace door, graphite tube damage and mains power	
	Temp. Programming	Atleast eight steps temperature programming facility with flexibility of programme selection, ramp time, gases, gas flow, and read trigger for each temperature step	
	Control	Computer controlled with appropriate provision for print out of the furnace and sample parameters,	
	Display	Calibration data/graphs, temperature profiles, signal graphics and the instrument status	
	Memory	Memory should be able to store atleast ten nonvolatile programmes	
	(b) Chiller/Cooling Water circulation Unit	Re- Refrigerating water circulation unit of appropriate capacity. No discharge of water from this water circulation unit.	
3.0	DATA WORK STATION		
3.1	Application Software	Programme facility with multitasking software.	
		Should provide complete control of instrument with instrument status display and its various accessories	
		Provide accurate and reproducible time averaged, integration, non-averaged integration, multi level calibration	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-4			
Equipment Name: Atomic Absorption Spectrophotometer (AAS) – GTA / VGA			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		Software should handle instrument linear absorbance reading, concentration, or emission intensity, integration time, built in statistics, calibration equation control, slope of analytical curve using operator selective calibration standard	
		Built in interface for computer connection and use of optional accessories	
		Comprehensive quality control protocols facility including blank, multiple quality control standards, QA/QC audit trail and calibration failure.	
3.2	COMPUTER SYSTEM		
	Make	Reputed brand such as HP/Compaq/Dell	
	Processor	Intel Core i7 (3 rd Generation) processor	
	RAM	4 GB DDR RAM (upgradeable to 8 GB DDR RAM)	
	HDD	500 GB SATA	
	Monitor	21" TFT-LCD Flat Colour (Digital)	
	DVD Writer	DVD- Multi-drive	
	Ports	2 Serial, 1 parallel and 2 USB front 3 Rear USB2 Port, 1VGA 4 bays (2 external & internal) with LAN 1PS, 2 mouse port	
	Key board	Latest multimedia (HP / Microsoft)	
	Mouse	Optical mouse with pad	
	Ethernet	32 bit auto selectable 10/100 MBPS	
	Graphics	Internet ready with integrated Graphics	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-4			
Equipment Name: Atomic Absorption Spectrophotometer (AAS) – GTA / VGA			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Sound	Integrated sound card and inbuilt stereo speakers	
	Printer	HP LaserJet Printer 1200 x 1200 dpi 12 PPM black	
3.3	Operation Softwares	Pre-loaded Windows 7 Professional or latest operating system with Licensed CD	
		MS Office 2010 Professional with media, manual and Licensed CD	
		Preloaded Norton Antivirus with latest version of 3 years lifetime along with Licensed CD	
4.0	ADDITIONAL ITEMS	Following items to be supplied:	
	Operation kit	Manufacturers Standard Operation Kit including all required items, tubings, fittings for start up /regular operation of instrument	
	Operation / maintenance manual	Operation and Maintenance manual for each unit	
	Analytical manual	Analytical Manual including applications for Flame, VGA and graphite system	
	Service manual	Service Manual with one set of required tools for each system / unit	
	Trouble shooting charts	Trouble shooting charts	
	Spare parts catalogue	Spare parts catalogue	
	Application notes	Application notes for trace metal analysis in environmental, biological, geological, metallurgical and industrial samples.	
	Dust Cover	One for each unit.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-4			
Equipment Name: Atomic Absorption Spectrophotometer (AAS) – GTA / VGA			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Consumables	For three years operation for each of the following units: <ul style="list-style-type: none"> ▪ Flame AAS (basic unit, burner system) ▪ Vapour generation assembly ▪ Graphite Furnace Atomizer ▪ Autosampler 	
5.0	OPERATION AND MAINTENANCE TRAINING	Two weeks training to be provided to two scientists on software training, operation, maintenance and trouble shooting aspects of instrument at its application laboratory in India.	
6.0	GENERAL CONDITIONS OF SUPPLY	<ol style="list-style-type: none"> 1. The instrument and all its sub units should operate on 230 ± 10 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 atleast 2 years as on the date of bid opening. 6. The bidder should furnish the information on past supplies and 	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-4			
Equipment Name: Atomic Absorption Spectrophotometer (AAS) – GTA / VGA			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		their satisfactory performance. 7. Bidders shall invariably furnish documentary evidence (client's certificate – atleast 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. Comprehensive warranty with spares for 3 years from the date of installation of the instrument should be covered.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF AUTOMATIC MERCURY ANALYSER FOR AMBIENT AIR

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-5			
Equipment Name: Automatic Mercury Analyser for Ambient Air			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	General Requirement:	The system will be used for complete (Particulate, Gaseous including speciation of mercury) mercury monitoring in ambient air. It should be portable enough for short term monitoring purpose at locations for fugitive / process emission monitoring too. The system should have approval of USEPA / TUV or equivalent organization for mercury monitoring	
Part I: SPECIFICATION FOR AMBIENT AIR MERCURY ANALYZER:- Total Gaseous Mercury (TGM)			
1.	Analyzer	On-line measurement of Total Gaseous Mercury(TGM) in Ambient Air and Expandability to measure Gaseous elemental mercury(GEM), Gaseous oxidized mercury (GOM) and Particulate bound mercury (PBM)	
2.	Detection technique	Gold pre-concentration with atomic fluorescence detection	
3.	Detection limit	<0.1ng/m ³	
4.	Range	0.1-2000ng/m ³	
5.	Sampling cycle	2- 60 minute (user programmable)	
6.	Linearity (0.1-200ng/m ³)	2%	
7.	Sample volume Determination	High Precision Mass Flow meter	
8.	Sampling	Continuous (no gap in data stream)	
9.	Sample Flow Rate	0.7- 1.5 l/min	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-5			
Equipment Name: Automatic Mercury Analyser for Ambient Air			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
10.	Calibration	Automatic self-calibration using internal permeation source External multipoint calibration facility should be available	
11.	Zero Air Generator	System must have a Zero Air Generator to provide mercury free air for calibration purposes, either as internal unit or separate unit	
12.	Carrier Gas	Argon	
13.	Warm up time	Instrument:60 min, Permeation source:12 hr	
14.	Heated sample line	System must have a heated sample line to minimize condensation and loss of mercury during sample transfer to the detector intake	
15.	Data Acquisition	A/D Converter-24 bit, D/A Outputs-16 bits	
16.	Input/Output	USB Host Port-2,USB Device port-1,Network port-1,Analog chart outputs-2,RS 232 Serial output-1,Status & Control input-1, Sample & Gas Input-1,	
17.	Power Requirement	230V AC,50-60HZ, 250VA Max,100VA Avg.	
18.	Display	High resolution touch screen	
19.	Access	Remote	
20.	Environmental	Temp 15-50°C, Humidity 0 - 100 %	
Part II: SPECIFICATION FOR AMBIENT AIR MERCURY ANALYZER:- Particulate Mercury			
1.	Analyzer	Being capable of Automated and unattended particulate mercury determination in Air	
2.	Detection technique	Sampling, desorption followed by pre concentration by Gold amalgamation and finally atomic fluorescence detection	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-5			
Equipment Name: Automatic Mercury Analyser for Ambient Air			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
3.	Concentration range	1 pg/m ³ to over 1000 pg/m ³	
4.	Sampling cycle	30- 180 minute	
5.	Sample Flow Rate	10 l/min	
6.	Carrier	Zero Air	
7.	Power Requirement	230 ± 10 V AC, 50 Hz	
Part III: SPECIFICATION FOR AMBIENT AIR MERCURY ANALYZER:- Elemental & Ionic Mercury			
1.	Analyzer	Being capable of Automated and unattended speciation (Elemental & Ionic) mercury determination in Air	
2.	Detection technique	Gold pre-concentration with atomic fluorescence detection	
3.	Concentration range(Oxidized)	1 pg/m ³ to over 1000 pg/m ³	
4.	Sampling cycle	30- 360 minute	
5.	Denuder heater temp	500°c	
6.	Power Requirement	220±10 V,50 HZ	
7.	Display	4 line by 16 character LCD	
	Other Requirements	<ul style="list-style-type: none"> ➤ The system should include inbuilt data logger and Data should be retrievable through USB, RS 232 and should have direct print out facility. ➤ All the computer peripherals (including Laptop) should be 	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-5			
Equipment Name: Automatic Mercury Analyser for Ambient Air			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		included in offer. ➤ Installation should be done free of cost ➤ Training (One week) shall be provided at application laboratory in India to at least two CPCB personnel without additional cost. ➤ Delivery includes: - Required gas cylinder with regulators, - Calibration standards - Operation & Maintenance Manual (2 copies) - Calibration certificate from manufacturer - Transit Case	
8.0	GENERAL CONDITIONS OF SUPPLY	1. The instrument and all its sub units should operate on 230 ± 10 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 atleast 2 years as on the date of bid opening.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-5			
Equipment Name: Automatic Mercury Analyser for Ambient Air			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		6. The bidder should furnish the information on past supplies and their satisfactory performance. 7. Bidders shall invariably furnish documentary evidence (client's certificate – atleast 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. Comprehensive warranty with spares and consumables for 3 years from the date of installation of the instrument should be covered.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF BALANCE (ELECTRONIC TOP LOADING FOR MEDIA/ BROTH) CAPACITY 0.001 GM

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-6			
Equipment Name: Balance (electronic top loading for media/ broth) capacity 0.001 gm			
Quantity: 4 (Four) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Weighing Range	Up to 2000 grams	
2.0	Readability	0.001 gram in the range of 1000 grams. 0.01 gram up to 2000 grams	
3.0	Taring Facility	Entire range	
4.0	Sensitivity Drift	± 5 ppm / °C	
5.0	Display	LCD	
6.0	Calibration adjustment	Internal, fully automatic adjustment or by external weight	
7.0	Power supply	Should operate on 230 ± 10 Volts, 50 Hz. AC. Should be provided with dust cover/shield,	
8.0	Optional	Certified calibrated weight (E2 or F1 class) with original certificate for the entire range, traceable to National/ International accreditation organizations, operation and maintenance manual and power cable.	
9.0	Other Requirement	The instrument should be supplied with Instruction / operation / maintenance manual and dust cover.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF BOMB CALORIMETER

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-7			
Equipment Name: Bomb Calorimeter			
Quantity: 5 (Five) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	INSTRUMENT COMPOSITION	1 set	
	Oxygen bomb with permanent fuse wire	1set	
	O ₂ gas cylinder with regulator	2 Nos.	
	Electronic balance	1 No.	
	Pallet press	1 No.	
	Laser Printer	1 No.	
	Sample Crucible	3 Nos.	
	Accessories	As mentioned	
2.0	TECHNICAL SPECIFICATIONS		
	Type / Method	Compensated Isoperibol / Isothermal	
	Instrument	Microprocessor controlled Bomb calorimeter for determination of Heat of combustion, Gross calorific values & Sulphur contents solid & liquid fuels as per Indian and International standards. Bomb calorimeter should be compact bench top model. The Gross calorific value should display in BTU/lb, cal/g, J/kg, MJ/kg & etc., units on its color graphic touch screen display.	
	Measurement Range	Upto 12000 Kcal / Kg for one gram of sample with a provision to extend the measurement range without reducing the sample size. Calorimeter software should identify different bombs automatically	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-7			
Equipment Name: Bomb Calorimeter			
Quantity: 5 (Five) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		and maintain the history of the ignitions performed with each bomb.	
		Bomb & bucket should be removable type to increase the number of samples per hour	
	Precision	0.1 % RSD or better on analysis of 1 gram sample	
	Resolution	0.0001 Cal/gm	
	Analysis Mode	Equilibrium mode / Dynamic mode or any other mode	
	Temperature Measuring Resolution	0.0001 deg C	
	Temperature Measurement	with inbuilt high precision electronic thermometer	
	Repeatability / Reproducibility	As Per BIS 1350 (Part -2), 1970, ASTM D-5865/04 & DIN 51900 Methods	
	Display	Color touch screen with graphical user interface	
	Correction	Spiking, Ash/ Nitrogen or Acid, Fuse wire, Sulphur and Hydrogen.	
	Laser Printer	HP Laser printer 1200 X 1200 dpi, 12 PPM black compatible to the instrument along with connector	
	Sample Crucible Capacity	0.5 gm – 1.5 gm. Metal crucibles with Ni-Cr Alloy 3Nos	
	Power requirement	230 ± 10 V AC, 50 Hz	
	Processing Capacity	5 to 7 minute or better	
	No. of Tests per hour	6 samples or more in an hour	
	Oxygen bomb	Combustion vessel made up of Special stabilized stainless steel to resist the mixed nitric acid and sulfuric acid produced in combustion with heavy duty screw cap.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-7			
Equipment Name: Bomb Calorimeter			
Quantity: 5 (Five) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Memory Capacity	Inbuilt data storage for minimum 1,000 tests results and data transfer to PC via Ethernet without using any additional software	
	Interface	Inbuilt USB interface for Balance, Printer and computer without any additional accessories/software. Required extra software details should be mentioned separately	
	Up gradation	Calorimeter should have a facility to upgrade with different types of bombs by simply plug in without changing the main calorimeter configuration	
	Sample volume	Approx. 1 g	
	Electronic balance		
	Weighting capacity	120 g or more	
	Readability	0.0001 gram readability	
	Connectivity	Should be supplied with connecting cable to connect to the main instrument.	
3.0	ACCESSORIES		
3.1	Bucket & Water measuring flask	1 set	
3.2	Benzoic Acid with certificate	1 set	
3.3	Spares / consumables	1 set	
4.0	GENERAL CONDITIONS OF SUPPLY	<ol style="list-style-type: none"> The instrument and all its sub units should operate on 230 ± 10 volts 50 Hz power supply. All the operation and maintenance manuals, circuit diagrams, application notes and application softwares to be supplied 	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-7			
Equipment Name: Bomb Calorimeter			
Quantity: 5 (Five) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		<p>should be in English language.</p> <ol style="list-style-type: none"> 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 atleast 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 – atleast 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. Comprehensive warranty with spares and consumables for 3 years from the date of installation of the instrument should be covered. 	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF CALIBRATION GAS CYLINDER 100% CONCENTRATED (CERTIFIED)

SULPHUR DIOXIDE (SO₂)

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-8			
Equipment Name: Calibration Gas Cylinder 100% Concentrated (Certified) - Sulphur Dioxide (SO₂)			
Quantity: 5 (Five) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Description	Zero Grade Sulphur Di-oxide Gas (100% Pure) in high pressure seamless Aluminium Gas Cylinder (highly polished) complete with neck ring and valve along with pressure Regulator double stage valve SS 316, SS Diaphragm with certificate of BIS or ISO.	
2.0	Cylinder Capacity	10 Litre	
3.0	Purity	100%	
4.0	Stability	Minimum one Year	
5.0	Traceability Certificates	Gas Purity Certificate.	
		Traceability Certificate to any National/International Standard	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF CALIBRATION GAS CYLINDER 100% CONCENTRATED (CERTIFIED) - NITRIC OXIDE (NO)

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-8			
Equipment Name: Calibration Gas Cylinder 100% Concentrated (Certified) – Nitric Oxide (NO)			
Quantity: 5 (Five) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Description	Supply of Zero Grade Nitric Oxide Gas (100% Pure) in high pressure seamless Aluminium Gas Cylinder (highly polished) complete with neck ring and valve along with pressure Regulator double stage valve SS 316, SS Diaphragm with certificate of BIS or ISO.	
2.0	Cylinder Capacity	10 Litre	
3.0	Cylinder Pressure	40 Bar (Kg/Cm ²)	
4.0	Purity	100%	
5.0	Stability	Minimum One & Half Year	
6.0	Traceability Certificates	Gas Purity Certificate.	
		Traceability Certificate to any National/International Standard	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF COMBINED NITROGEN AND ZERO AIR GAS GENERATOR FOR GC/GC-MS

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)				
Code Number: ICB-9				
Equipment Name: Combined Nitrogen and Zero Air Gas Generator for GC/GC-MS				
Quantity: 2 (Two)				
S. No.	Specifications	Requirement		BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		Nitrogen Specifications	Zero Air Specifications	
1.0	Description			
2.0	Application	For use in GC, GC-MS for analysis of trace organics, PAHs / BTX / NMHC & other VOCs in environmental samples	For use in GC, GC-MS for analysis of trace organics, PAHs / BTX / NMHC & other VOCs in environmental samples	
3.0	Purity of Generated Gas	99.999% pure, GC grade. Almost free of most reactive anthropogenic pollution (NO, NO ₂ , SO ₂ , CH ₄ & Non-Methane hydrocarbons etc.)	99.999% pure, GC grade. Almost free of most reactive anthropogenic pollution (NO, NO ₂ , SO ₂ , CH ₄ & Non-Methane hydrocarbons etc.)	
4.0	Capacity	Atleast 200 ml / min at 5 kg / cm ²	Atleast 1500 ml / min at 5 kg / cm ²	
5.0	Capacity (Optional)	Atleast 500 ml / min at 5 kg / cm ²	Atleast 4000 ml / min at 5 kg / cm ²	
6.0	Moisture	< 2 ppm	< 2 ppm	
7.0	Oxygen	< 5 ppm	-	
8.0	Total Hydrocarbon (THC)	< 0.3 ppm	< 0.3 ppm	
9.0	CO & CO ₂	< 2 ppm	< 2 ppm	
10.0	Micron particulates	< 0.01 μ	< 0.01 μ	
11.0	Method of Purification	Pressure Swing Adsorption (PSA) & Depressurisation	Pressure Swing Adsorption (PSA) & Depressurisation	
12.0	Pressure accuracy	0.1 bar (± 0.5%)	0.1 bar (± 0.5%)	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZO's)			
Code Number: ICB-9			
Equipment Name: Combined Nitrogen and Zero Air Gas Generator for GC/GC-MS			
Quantity: 2 (Two)			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
13.0	Start up time	2 Hr / programmable by timer 10 min	
14.0	Power requirement	230 ± 10 V AC, 50 Hz, single phase	
15.0	Generator Approx. Size without compressor (in mm)	740 H x 415 W x 600 D or more compact	
16.0	Approx. weight of generator (in kg) (with compressor)	Less than 60 kg	
17.0	Soundproof Compressor Enclosure	With built-in oil free air compressor preferably with heat resistant & silencing cabinet.	
		Economy mode option – Enabling the compressor to switch off when Nitrogen / Zero Air supply is not required.	
		Noise level for air compressor should be 65 dBA	
		Max pressure of 120 psi and max current 7.5 A.	
18.0	Display	Microprocessor controlled, Graphic	
19.0	Alarm / Indicator	Audible and visual maintenance indicator	
20.0	Accessories	Operation and Maintenance Manual, Required Tools should be provided with a list & quantity of supplied items	
21.0	Spares & Consumable	Two years of trouble free operation should be provided with a list & quantity of supplied items	
22.0	Warranty	Three years comprehensive warranty including spares consumables necessary for trouble free operation / working without down time.	
23.0	Installation & Training	All inclusive offer to be provided.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF CONDUCTIVITY & TDS METER (ONLINE)

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-10			
Equipment Name: Conductivity & TDS Meter (Online)			
Quantity: 2 (Two) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Description	The instrument to be used for online measurement of conductivity and total dissolved solids in water and wastewater.	
2.0	Conductivity		
	Adjustable Reference Temp.	10 to 30°C or less	
	Adjustable Temp. Compensation	0.00 to 5.00 % or less	
	Temperature Compensation	Auto	
3.0	Temperature		
	Temperature Sensor Thermistor	10.00 k ohm at 25 °C	
	Analog Output	4-20 mA	
	Current Output Range	4 to 20 mA	
	Accuracy	± 0.02 mA	
	Isolation Voltage	500 V DC	
4.0	Relays		
	Control Type	3 ON/OFF controls	
	Relay Output	2.5 A at 220 V AC, resistive load only	
5.0	Other requirement		
	Power Supply	230 ± 10 V AC 50 HZ	
	Communication	RS-485	
	Display	128 x 64 graphical LCD with backlight	
	Ambient Temp. Range	0 to 50 °C	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)						
Code Number: ICB-10						
Equipment Name: Conductivity & TDS Meter (Online)						
Quantity: 2 (Two) Nos.						
S. No.	Specifications	Requirement			BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)	
	Case	IP65, 1/4 DIN case, 160 mm depth or less				
6.0	Range, Resolution & Accuracy	Range, Resolution and Accuracy for Conductivity, TDS and Temperature measurement are mentioned below:				
	Conductivity	Type of measurement	Range	Resolution	Accuracy	
		K=0.1	0.000 to 9.999 uS/cm	0.001 uS/cm	± 0.5 % ± 1 LSD	
			10.00 to 99.99 uS/cm	0.01 uS/cm	± 0.5 % ± 1 LSD	
			100.0 to 300.0 uS/cm	0.1 uS/cm	± 0.5 % ± 1 LSD	
		K = 1	100.0 to 999.9 uS/cm	0.1 uS/cm	± 0.5 % ± 1 LSD	
			1.000 to 9.999 mS/cm	0.001 mS/cm	± 0.5 % ± 1 LSD	
			10.00 to 30.00 mS/cm	0.01 mS/cm	± 0.5 % ± 1 LSD	
		K = 10	1.000 to 9.999 mS/cm	0.001 mS/cm	± 0.5 % ± 1 LSD	
			10.00 to 99.99 mS/cm	0.01 mS/cm	± 0.5 % ± 1 LSD	
		100.0 to 300.0 mS/cm	0.1 mS/cm	± 0.5 % ± 1 LSD		
	Total Dissolved Solids (TDS)	K=0.1	0.000 to 5.000 ppm	0.001 ppm	± 0.5 % ± 1 LSD	
			5.000 to 50.00 ppm	0.01 ppm	± 0.5 % ± 1 LSD	
			50.00 to 150.0 ppm	0.1 ppm	± 0.5 % ± 1 LSD	
		K = 1	50.00 to 500.0 ppm	0.1 ppm	± 0.5 % ± 1 LSD	
			0.500 to 5.000 ppt	0.001 ppt	± 0.5 % ± 1 LSD	
			5.000 to 15.00 ppt	0.01 ppt	± 0.5 % ± 1 LSD	
K = 10		0.500 to 5.000 ppt	0.001 ppt	± 0.5 % ± 1 LSD		
		5.000 to 50.00 ppt	0.01 ppt	± 0.5 % ± 1 LSD		
		50.00 to 150.0 ppt	0.1 ppt	± 0.5 % ± 1 LSD		
Temperature		10.0 to 50.0 °C	0.1 °C	± 0.3 °C		

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF COOL BEAM LIGHT

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-11			
Equipment Name: Cool Beam Light			
Quantity: 2 (Two) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.	Description	Cool Beam light for illumination of objects for viewing.	
2.	Main Body	Should be compact with inbuilt handle and made up of durable powder coating.	
		Flexible light pipe unit (preferably with two pipes) with focusing lens should be fit easily in illuminator port opening.	
3.	Light source	150 W halogenated bulb lamp with life span of 200 hours or more alongwith 3 additional spare halogenated bulb.	
4.	Light intensity	0 to 100% solid state intensity variability.	
5.	Illumination	Should provide shadow free, glare free cold illumination	
6.	Accessibility to light source	Easily assessable side door for bulb replacement.	
7.	Operating temperature	-15 ^o C to 45 ^o C	
8.	Power requirement	230 ± 10 V 50 Hz AC	
9.	Power supply cord	Length more than 1.5 mtr with power plug.	
10.	Other requirement	There should be no noise or vibration during operation.	
		Unit should be equipped with polarizer or a filter kit for special lighting effects	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF DIFFUSION SAMPLING TUBE FOR BTX

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-12			
Equipment Name: Diffusion Sampling Tube for BTX			
Quantity: One Lot (1000 Nos.)			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.	Tube Material	Borosilicate Glass tube open at both ends	
2.	Length of Tube	28 – 30 mm	
3.	Diffusion Distance	0.5 cm	
4.	Diffusion barrier	Cellulose acetate	
5.	Adsorbent	High Purity Coconut Shell charcoal with particle size from 0.4 to 0.6 mm	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF DIGITAL PYROMETER WITH SENSOR

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-13			
Equipment Name: Digital Pyrometer with Sensor			
Quantity: 2 (Two) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.	Description	Portable, compact digital Pyrometer with extended infrared sensor head for non-contact temperature measurement.	
2.	Range	- 40° to 1999°F (- 40° to 1100°C)	
3.	Resolution	1° C	
4.	Accuracy	± 1%	
5.	Digital display	4 digits, characters ½" high LCD	
6.	Operating Temp	0° to 52°C	
7.	Power Supply	9V Rechargeable battery	
8.	Battery Life	100 hours	
9.	Response Time	1-10 seconds	
10.	Warm-up Time	Instantaneous	
11.	Probe Cord Length	1.5 meters approx with steel jacket Coiled Cord detachable	
12.	Sensor Probe length	6" to 8" steel casing with 5 to 6 mm outer diameter for laboratory use	
13.	Sensor	Thermocouple K type	
14.	Cold junction compensation	Automatic.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF ECHO SOUNDER

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)										
Code Number: ICB-14										
Equipment Name: Echo Sounder										
Quantity: 1 (One) No.										
S. No.	Specifications	Requirement							BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)	
1.	Description	Portable with proper cable, battery charger, accessories Echo Sounder for depth measurement at Deep water lakes, tributaries sea / ocean								
2.	Display	5.6 inch TFT LCD								
3.	Echo Color	8 colors (including background color) according to echo intensity. The background color is selectable from blue, light blue, white and black.								
4.	Basic Range	5 to 300 meters and can be changed on the system menu								
5.	Range Shift	Up to 300 meters								
6.	Zoom Range	Times 2,3,4 and 5 ranges								
7.	Bottom Lock Expansion Range	5/10 meters								
8.	Auto Mode	Automatic adjustment of range and gain								
9.	Display Mode	High Frequency (200K), Low Frequency (50), Dual (200K and 50K ½ display on each), Zoom (200K 50K zoom) and A-scope Display								
10.	Zoom Display	Marker Zoom, Bottom Zoom and Bottom-lock Expansion								
11.	Display Advance Speed	Lines/TX: Freeze, 1/8, 1/4, ½, 1/1, 2/1								
12.	TX Frequency Output Power	50 and 200kHz (alternately transmitted), 300W								
13.	Pulse-length/TX rate	Display end depth(m)	5	10	20	40	80	150	300	
		Pulse-Length (ms)	0.2	0.2	0.2	0.4	0.8	1.5	3.0	
		TX Rate(pulse/min)	600	600	600	375	187	100	50	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-14			
Equipment Name: Echo Sounder			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
14.	Alarm	Fish and Bottom alarms, Temperature alarm	
15.	Sensor	Compound Temperature sensor option	
16.	Power supply	Display unit 12-24 VDC (-10%,+30%) : 1.0 - 0.6A	
17.	Operating Temperature	0°C to +50°C	
18.	Relative Humidity	85% at 40°C	
19.	Water proofing	Display Unit: IPX4	
20.	Vibration	±1mm ±10%, 2(5) to 13.2Hz maximum acceleration 7m/s ² , 13.2 to 100Hz	
21.	Coating Color(display unit)	Chassis: 2.5GY5/1.5 and Panel: N3.0 Newtone No.5	
22.	Mode of operation	Auto and manual option	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF ELEMENTAL (CHNS) ANALYZER FOR CARBON, HYDROGEN, NITROGEN, OXYGEN AND CHLORIDE ANALYSIS

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-15			
Equipment Name: Elemental (CHNS) Analyzer for Carbon, Hydrogen, Nitrogen, Oxygen and Chloride Analysis			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	MACRO ELEMENTAL ANALYZER SYSTEM	Fully automated PC controlled simultaneous CHNS, O and Cl analyzer with high sensitivity detector and capable for multiple operating mode with sample (solids & liquids) size of 0.02 to 1000 mg.	
1.1	Application	The instrument should accept 50-80 mg of solid sample such as solid waste, hazardous waste, coal, coke, biomass, liquid waste etc. System should be real multi matrix analyzer, capable to analyze solids, liquid, liquid volatile samples and gases.	
1.2	Selectable operation mode	Measurement of CHNS, CHN, CNS, Total Carbon, Total N, Total S, Traces sulphur and O-TCD, O-IR, Total Cl separately.	
1.3	Sample Combustion System	Should have atleast two furnaces for working in both vertical and horizontal operation with same system with independent temperature control up to 1200 °C for each furnace to ensure complete oxidation of sample.	
		Should have ash finger to hold ash and prevent ash from affecting catalyst and quartz combustion tube.	
		Should have mass flow controller for constant flow of carrier gas.	
		System should have auto protection due to fully integrated safety features for increased operational safety and minimized maintenance expenditure.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-15			
Equipment Name: Elemental (CHNS) Analyzer for Carbon, Hydrogen, Nitrogen, Oxygen and Chloride Analysis			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		Should have auto recognition and conditioning of all present modular using internal intelligence.	
1.4	Analytical range	PPB to percent weight for all elements with the capability of measuring following absolute weight:	
		Total Carbon (C) 0 – 100% wt; 0 - 10000 mg/l (water matrices)	
		Hydrogen (H) 0 – 3 ng or better	
		Total Nitrogen (N) 0 - 10000 mg/l	
		Total Sulfur (S) 0 - 40000 mg/l	
		Oxygen (O) 0 – 6 mg or better	
		Total Chloride (Cl) 0 - 10000 mg/l	
1.5	Minimum Detection Limit	Total Carbon: 100 µg/l (organics; 200 µg/l (water)	
		Total Nitrogen: 30 µg/l	
		Total Sulfur: 0.5 mg/l	
		Total Chloride: 100 µg/l	
1.6	Standard Deviation	<0.1% of absolute	
1.7	Analysis time	Self optimizing depending on element content and weight, but less than 8 minutes in any case.	
1.8	Separation system	Adsorption desorption principle for separation of gases using multiple columns with independent temperature control for each column.	
1.9	Analytical Gases	Nitrogen, Argon and Oxygen. Microprocessor control for gas flow	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-15			
Equipment Name: Elemental (CHNS) Analyzer for Carbon, Hydrogen, Nitrogen, Oxygen and Chloride Analysis			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		control.	
1.10	Detector system	Temperature stabilized TCD detector for measurement of C-H-N-S-O	
		IR Detector for trace measurement of sulphur as low as 2 ppm	
		Simultaneously CHN-Trace S detector and automatic switching from normal S to Trace S.	
		NDIR detector for Chlorine and Trace oxygen determination	
2.0	AUTO SAMPLER	Electro mechanical auto sampler system with 100 positions or more for solid and liquid samples with possibility of direct syringe injection of liquid and gas.	
3.0	CONSUMABLES	Consumables to be supplied should be sufficient for 3000 sample analysis.	
4.0	REFERENCE STANDARDS	Pure chemical reference standard (one set for each element) must be supplied with the system.	
5.0	COMPUTER SYSTEM		
	Make	Reputed brand such as HP/Compaq/Dell	
	Processor	Intel Core i7 (3 rd Generation) processor	
	RAM	4 GB DDR RAM (upgradeable to 8 GB)	
	HDD	500 GB SATA	
	Monitor	21" TFT-LCD Flat Colour (Digital)	
	DVD Writer	DVD- Multi-drive	
	Ports	2 Serial, 1 parallel and 2 USB front 3 Rear USB2 Port, 1VGA 4 bays	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-15			
Equipment Name: Elemental (CHNS) Analyzer for Carbon, Hydrogen, Nitrogen, Oxygen and Chloride Analysis			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		(2 external & internal) with LAN 1PS, 2 mouse port	
	Key board	Latest multimedia (HP / Microsoft)	
	Mouse	Optical mouse with pad	
	Ethernet	32 bit auto selectable 10/100 MBPS	
	Graphics	Internet ready with integrated Graphics	
	Sound	Integrated sound card and inbuilt stereo speakers	
	Printer	HP LaserJet Color Printer 1200 x 1200 dpi 12 PPM	
5.1	Software	Pre-loaded Windows 7 Professional or latest operating system with Licensed CD compatible with application software	
		MS Office 2010 Professional with media, manual and Licensed CD compatible with application software	
		Preloaded Norton Antivirus with latest version of 3 years lifetime along with Licensed CD compatible with application software	
5.2	Application Software	Programme facility with multitasking windows base software displaying method sample and analysis status.	
		Display of set and actual pressure, flow rate, temperature, no. of sample analyzed.	
		Provision for setting maintenance interval with warning regarding maintenance needed.	
		Online display of graphics and text data	
		Should have segmented leak check through software.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-15			
Equipment Name: Elemental (CHNS) Analyzer for Carbon, Hydrogen, Nitrogen, Oxygen and Chloride Analysis			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		Auto leak failure or electronic failure detection.	
		Instrument control reintegration / report, calibration, automatic data acquisition and processing.	
		Calculation of data and report formatting.	
6.0	SAMPLE PACKING	Should be supplied with required accessories for solid sample packing	
		Should be supplied with liquid sample sealing press for packing and analysis of liquid samples. The sealing press should allow for sealing of samples under inert gas flow to ensure air free packing.	
7.0	OPTIONAL ITEMS		
7.1	Microbalance	Microbalance capable of direct transferring the data to the analyzer	
	Operation	Balance operation through bright touch screen	
	Control	Hands free infrared controlled opening and closing of draft should:	
	Weigh range	Weighing range : upto 6100 mg	
		Resolution: 0.001 mg	
		Repeatability: 0.8 to 0.9 microgram	
		Linearity: $\pm 2 - 4 \mu\text{g}$	
7.2	Autosampler	System should have provision for Autosampler to handle both solid and liquid samples. Autosampler should have provision to analyze	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-15			
Equipment Name: Elemental (CHNS) Analyzer for Carbon, Hydrogen, Nitrogen, Oxygen and Chloride Analysis			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		more than 100 samples in liquid mode and 30 samples in solid mode.	
8.0	ADDITIONAL ITEMS	Oxygen analysis kit.	
		Chlorine analysis kit.	
		Kit for trace sulfur analysis using IR detector	
9.0	OPERATION AND MAINTENANCE TRAINING	On site comprehensive training for scientific officials operating the system and support services till customer satisfaction with the system followed by complementary (all expenditure including) one week training for two scientists on operation and maintenance aspects of the instrument at manufacturers application laboratory in the country / abroad.	
10.0	WARRANTY	Comprehensive warranty with spares for 3 years from the date of installation of the instrument should be covered. The AMC charges to be mentioned for next two years after warranty is over.	
11.0	GENERAL CONDITIONS OF SUPPLY	<ol style="list-style-type: none"> 1. The instrument and all its sub units should operate on 230 ± 10 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 principal should provide a certificate that they will provide the spares in future for at least ten years. 	10.

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-15			
Equipment Name: Elemental (CHNS) Analyzer for Carbon, Hydrogen, Nitrogen, Oxygen and Chloride Analysis			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		5. The main unit and all the sub units of the instrument should be serviced by the Indian representative of supplier. 6. The Bidder should be a manufacturer/authorized representative of a manufacturer, who must have designed, manufactured, tested and supplied two numbers of such equipment in the past five years similar to the type specified, which shall be in successful operation for atleast 2 years as on the date of bid opening. 7. The bidder should furnish the information on past supplies and their satisfactory performance. 8. Bidders shall invariably furnish documentary evidence (client's certificate – atleast two) in support of the satisfactory operation of the equipment as specified above. 9. 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.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF FLASH POINT APPARATUS

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-16			
Equipment Name: Flash Point Apparatus			
Quantity: 5 (Five) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Description:	Portable, Electrically heated equipment to measure flash point of waste, oils, lubricating oils, waste fuels, petroleum products, water liquid, paints as per latest flash point ASTM Standards method ASTM D 5450 & D 7094.	
2.0	Controller	Microprocessor based process controller-cum-indicator. Flash point measurement by Continuously Closed Cup with RTD sensor.	
3.0	Sample volume	Small; 1 to 10 mL	
4.0	Ignition	Electric Arc ignition inside closed measuring chamber; Ignition transformer having O / P of 10.6 KV DC from 230 ± 10 V AC i/p.	
5.0	Temp. range	Upto 400 °C	
6.0	Temp. readout & control	Digital, Built in temperature control	
7.0	Heater	800 Watt Electronic heater with energy regulator	
8.0	Flash Detector	Automatic Ionization principle based flame detector sensor with audible signals and on screen prompt	
9.0	Stirrer	Atleast two speed or more	
10.0	Measuring time	5-10 min per sample	
11.0	Pressure correction	Automatic	
12.0	Cooling	Force cooling facility	
13.0	Interface	<ul style="list-style-type: none"> • Computer & Printer • Connection for external keyboard or bar code reader 	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-16			
Equipment Name: Flash Point Apparatus			
Quantity: 5 (Five) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
14.0	Calibration	Simple, factory calibrated with calibration certificate from NABL accredited calibration laboratory. Should be supplied with calibration Liquid – 2 bottles.	
15.0	Power Supply	230 V ± 10 V AC 50 Hz single phase	
16.0	Safety features	Fire safe with fire sensor over temperature cut out facility	
17.0	Accessories	Syringes, igniter, electrical cable, instruction manual (2 Nos.) calibrated thermometer from NABL accredited calibration laboratory	
18.0	Other Accessories	Sample cup 4 ml for ASTM D 6450 - 1 No. Sample cup 7 ml for ASTM D 7094 - 1 No. Sample cup carrier - 1 No. Stirring magnet - 6 Nos. Brass eraser - 2 Nos. Power supply cable RS232 printer cable	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF FLUE GAS ANALYSER

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-17			
Equipment Name: Flue Gas Analyser			
Quantity: 10 (Ten) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.	Gases to be measured	CO, O ₂ , CO ₂ , SO ₂ , NO, NO ₂ , HC and combustion efficiency	
2.	Sensors	IR or Electro-chemical Sensors with high accuracy and life span of 3 to 5 years (CO, O ₂ , CO ₂ should be measured directly with respective individual sensors)	
3.	Responsive time	15 seconds for 90% response for NO _x , CO and CO ₂ ; 30 seconds for 90% response for SO ₂ and O ₂	
4.	Gas Flow	1 to 2.5 litre/min	
5.	Temperature Measurable	Upto 1200 °C with K type thermocouple Accuracy ± 1 °C	
6.	Operating Temperature	0-50 ° C (The instrument should be capable to handle high temperature through inbuilt dilution system/cooling system for accurate measurement).	
7.	Power Supply	Rechargeable Li-ion Battery along with built in charger and Power adopter 230 V ± 10 V AC; 50 Hz AC	
8.	Flue Gas Probe	Suitable metallic probe to withstand 1200°C temp with insulated handle.	
9.	Probe Length	Minimum 30 cm (12 inch) stainless steel or more; minimum hose length 2 m or more with Piston Grip.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-17			
Equipment Name: Flue Gas Analyser			
Quantity: 10 (Ten) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
10.	Pump	Built in pump nominal flow rate 700 cc/min	
11.	Pre Programming	For Natural gas, light oil, heavy oil, LPGs, Propane, Butane, Coke, Coal etc.	
12.	Display	Remote hand set with backlit 4 line LCD 15 ft cable connects the display handset to the analyzer.	
13.	Parameter-wise specifications	Please see Annexure-A	
14.	Software / Operator	Easy to handle keyboard operated and user friendly. Data format transferable to user software and data logger.	
15.	Weight	Portable Light weight housed in sturdy carrying case	
16.	Calibration certificate	Calibration and certificate of approval from recognized international agency like EPA, TUV be provided.	
17.	Documents	Instruction manual for operation. Circuit details for each electronic card for repair and maintenance.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

ANNEXURE-A

Parameter	Resolution	Accuracy	Range
Temperature Measurement			
Flue Temperature	0.1 °(C)	0.1 °(C) ± 0.3% of reading	Option:1 (single probe) 20 °C -1200 °C Option:2 (Two probes) 1. 20 °C -600 °C 2. 500 °C -1200°C or more
Inlet Temperature	0.1 °(C)	0.1 °(C) ± 0.3% of reading	0-1200 °C
Gas Measurement			
Oxygen (O ₂)	0.1%	± 0.2%	0-25%
Carbon Monoxide (CO)	1 ppm	± 2% of reading Upto < 2000 ppm + 5 % of reading >2000 ppm	0-10,000 ppm
Pressure	0.01 mbar/kpa	± 0.05% Full scale	0-150 mbar
Carbon Dioxide (CO ₂)	0.01 vol.%CO ₂ (0 to 25 Vol.%CO ₂)	± 0.3Vol.%CO ₂ +1% of mv (0 to 25 Vol.%CO ₂)	0 to +50 Vol.%CO ₂
Efficiency	0.1%	± 1%	0-100%
Hydrocarbon (HC)	0.01	± 5% of treading	0-10,000 ppm
Optional Sensors			
Nitrogen Dioxide	± 1 PPM	± 2 PPM for < 20 PPM ± 5% for > 20 PPM	0 – 200 PPM
Nitric Oxide	± 1 PPM	±5 PPM < 100 PPM 5% > 100 PPM	0 – 5000 PPM
Sulfur Dioxide	± 1 PPM	± 5 PPM for < 100 PPM ± 5% for > 100 PPM	0 – 2000 PPM
Hydrogen Sulfide	± 1 PPM	± 2 PPM for < 40 PPM ± 5% for > 40 PPM	0 – 200 PPM
Hydrogen Chloride	± 1 PPM	± 5 PPM for < 40 PPM ± 5% for > 40 PPM	0 – 50 PPM
High Capacity Carbon Monoxide	± 1 PPM	± 5 PPM for < 100 PPM ± 5% for > 100 PPM	0 – 100,000 PPM

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF FOURIER TRANSFORM INFRARED SPECTROMETER (FT-IR) PC – OPERATED

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-18			
Equipment Name: Fourier Transform Infrared Spectrometer (FT-IR) PC – Operated			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.	Wave length Range	7800 – 375 cm ⁻¹ or better	
2.	Resolution	1 cm ⁻¹	
3.	Detector	Deuterated Triglycine Sulfate Detector (DTGS)	
4.	Laser Source	Near – IR diode laser	
5.	Beam Splitter	KBr / GE mid infrared optimised	
6.	Humidity / Temperature	Tightly sealed and desiccated optical bench with protective KBr window indicator, humidity and heat sensor	
7.	Performance Verification	ASTM E 1421, ISO / GLP, NIST – traceable	
8.	Computer System		
9.	Make	Reputed brand such as HP/Compaq/Dell	
	Processor	Intel Core i7 (3 rd Generation) processor	
	RAM	4 GB DDR RAM (upgradeable to 8 GB)	
	HDD	500 GB SATA	
	Monitor	21" TFT-LCD Flat Colour (Digital)	
	DVD Writer	DVD- Multi-drive	
	Ports	2 Serial, 1 parallel and 2 USB front 3 Rear USB2 Port, 1VGA 4 bays (2 external & internal) with LAN 1PS, 2 mouse port	
Key board	Latest multimedia (HP / Microsoft)		

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZO's)			
Code Number: ICB-18			
Equipment Name: Fourier Transform Infrared Spectrometer (FT-IR) PC – Operated			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Mouse	Optical mouse with pad	
	Ethernet	32 bit auto selectable 10/100 MBPS	
	Graphics	Internet ready with integrated Graphics	
	Sound	Integrated sound card and inbuilt stereo speakers	
	Printer	HP LaserJet Color Printer 1200 x 1200 dpi 12 PPM	
10.	Softwares	Pre-loaded Windows 7 Professional or latest version operating system with Licensed CD should be compatible with operational software.	
		MS Office 2010 Professional with media, manual and Licensed CD	
		Preloaded Norton Antivirus with latest version of 3 years lifetime along with Licensed CD	
11.	Accessories	Sample compartment windows	
		Power supply desiccant	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF GAS CHROMATOGRAPH

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-19			
Equipment Name: Gas Chromatograph			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	INSTRUMENT COMPOSITION		
	Gas Chromatograph	One set	
	Capillary Column with accessories	One set each of specified columns	
	ECD Detector	One set	
	FPD Detector	One set	
	FID Detector	One set	
	GC Data Station	One set	
	Auto Sampler	One set	
2.0	TECHNICAL SPECIFICATION		
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 plateau	
2.3	Heated zones	At least six including Oven, Two Injectors, Two Detectors and One Auxiliary; if FID, then three Injectors, two Detectors.	
2.4	Display	Functional keyboard with four line alphanumeric display	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-19			
Equipment Name: Gas Chromatograph			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		Display include 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	
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 column	
	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	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-19			
Equipment Name: Gas Chromatograph			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Ramp rate	Upto 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	
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 of	Split ratio in split / splitless and PTV injector	
5.0	INJECTOR		
		Two injectors mounting, one split / splitless injector one PTV (Programmable Temperature Vaporizer)	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-19			
Equipment Name: Gas Chromatograph			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
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	
7.0	PTV INJECTOR		
	Injection volume	Large volume splitless injections	
	Pressure/flow control	Electronic pressure/flow control	
	Operating temperature	Upto 400 °C	
	Programme ramps	Atleast 3 temperature programme ramps	
	Solvent Back flush facility	Solvent rejection and back flush	
8.0	DETECTORS (COMPULSORY)	Detector combination would be ECD-FPD	
	Temperature range	Upto 400 °C	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-19			
Equipment Name: Gas Chromatograph			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Detector mounting	Two detectors should be mounted; one detector to be standby.	
	Pressure control	EPC and electronic on/off facility for all detector gases	
	Auto zero & protection	Detector with makeup gas and automatic zeroing facility and overheat protection	
8.1	ECD Detector	Coaxial design based on Ni ⁶³ Source	
	Linear Dynamic Range should be	Better than 10 ⁴	
	Departure from linearity should be	Less than ±1% for the entire range	
	Operating temperature (maximum)	400 °C	
	Pressure / Flow control	Electronic pressure/flow control	
	Minimum Detection Limit (MDL)	Less than 10 fg/sec of Lindane	
	Makeup Gas	Argon / 5% Methane or Nitrogen	
8.2	FPD Detector	Electronic pressure control, Wavelength version with detector of phosphorous & sulfur with filter change.	
	Temperature operating limit	Upto 400 °C	
	Dynamic range	Better than 10 ⁶	
9.0	Optional Detectors	Optional detectors (TCD / NPD / FID) to be selected as per requirement.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-19			
Equipment Name: Gas Chromatograph			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
9.1	Thermal Conductivity Detector	Thermal conductivity detector with excellent sensitivity to all compounds excluding the carrier gas, capillary column compatible, filament with automatic protection.	
	Minimum Detectable limit	400 pg tridecane / ml with helium carrier	
	Sensitivity	9 μ V / ppm nonane at 160 mA at the bridge with detector temperature of 100 $^{\circ}$ C.	
	Maximum temperature	400 $^{\circ}$ C in 1 $^{\circ}$ C increment.	
	Linearity	$>10^5 \pm 5\%$ entire range	
	Make up gas	0 to 12 ml / min	
	Reference gas	0 to 100 ml / min	
	Standard EPC	For He, H ₂ , Ar or H ₂ matched to carrier gas type.	
9.2	NPD Detector (FTD Detector)	NPD detector with direct heating with induction current.	
	Minimum Detection limit	< 0.4 pg N/S, < 0.2 pg P/S with Azobenzene / Malathion / Octadecane mixture	
	Selectivity	25000 to 1 g N/g C, 75000 to 1g P/g C with Azobenzene / Malathion / Octadecane mixture	
	Dynamic range	$>10^5$ N, $> 10^5$ P with Azobenzene / Malathion mixture	
	Operational Temperature Range	~ 400 $^{\circ}$ C in 1 $^{\circ}$ C increment	
	Standard EPC	Standard EPC for three gases Air – 0-200 ml/min; Hydrogen 0-30 ml/min; Makeup gas 0-100 ml / min	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-19			
Equipment Name: Gas Chromatograph			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
9.3	FID Detector	Electronic pressure control	
	Temperature operating limit	Operating temp. (maximum) should not be less than 450 °C	
	Detection	Flame out detection facility	
	Ignition	Auto Ignition facility	
	Dynamic range	Linear dynamic range < ± 10%; 10 ₇ with N ₂	
10.0	AUTOSAMPLER		
	No. of sample vial	Capable of accommodating minimum 100 nos. vials.	
	Syringe capacity	Upto six different syringe capacity	
	Washing solvent	Upto four different washing solvents in 4 ml vials	
	Injection port access	Access three injection ports without requiring an additional tower	
	Internal standard calibration	Automated internal standard calibration and "sandwich" technique	
	Programming	Completely programmable from Workstation software	
11.0	COLUMNS	Bonded phase, fused silica capillary column with (one each)	
		DB-1701 or equivalent 30 m x 0.25 mm ID having x 0.25 µm film thickness Film - 14% cyanopropyl phenyl and 86% dimethyl polysiloxane co-polymer column	
		Ultra-125 m x 0.2 mm ID having 0.33 µm film thickness Film - 100% dimethyl polysiloxane	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-19			
Equipment Name: Gas Chromatograph			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		HP-5-MS 60 m x 0.25 mm ID with 0.25 µm film thickness ultra low bleed column Film - 5% di-phenyl and 95% dimethyl polysiloxane copolymer column	
		Ultra-225 m x 0.2 mm ID having 0.33 µm film thickness, Ultra low bleed column Film - 5% diphenyl and 95% dimethyl polysiloxane co-polymer column	
12.0	DATA STATION		
12.1	Licensed Application Software	With basic programming facility, Accurate and Reproducible Integration	
	Data acquisition	Atleast 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	
	Memory Protection	Battery backup for memory protection	
	Data export / import	Data Export/Transformation to data base software i.e., Excel and Access should be supplied with the system	
	Quality control	Software for Quality Control Protocols	
	Data display / handling	Software for data display, handling, data export/import and reporting	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-19			
Equipment Name: Gas Chromatograph			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
12.2	Computer System		
	Make	Reputed brand such as HP/Compaq/Dell	
	Processor	Intel Core i7 (3 rd Generation) processor	
	RAM	4 GB DDR RAM (upgradeable to 8 GB)	
	HDD	500 GB SATA	
	Monitor	21" TFT-LCD Flat Colour (Digital)	
	DVD Writer	DVD- Multi-drive	
	Ports	2 Serial, 1 parallel and 2 USB front 3 Rear USB2 Port, 1VGA 4 bays (2 external & internal) with LAN 1PS, 2 mouse port	
	Key board	Latest multimedia (HP / Microsoft)	
	Mouse	Optical mouse with pad	
	Ethernet	32 bit auto selectable 10/100 MBPS	
	Graphics	Internet ready with integrated Graphics	
	Sound	Integrated sound card and inbuilt stereo speakers	
Printer	HP LaserJet Printer 1200 x 1200 dpi 12 PPM black		
12.3	Softwares	Pre-loaded Windows 7 Professional or latest version operating system with Licensed CD should be compatible with operational software.	
		MS Office 2010 Professional with media, manual and Licensed CD	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZO's)			
Code Number: ICB-19			
Equipment Name: Gas Chromatograph			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		Preloaded Norton Antivirus with latest version of 3 years lifetime along with Licensed CD	
13.0	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	
	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	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-19			
Equipment Name: Gas Chromatograph			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		High pressure stainless steel cylinder filled with high purity 99.999% gases. Gas capacity 7 m ³ , water capacity 47 liters. Cylinders should be ISI marked conformed to IS-7285 specifications, Flat bottoms fitted with valve cap, painted as specified under gas cylinder standards as per IS-3224 complete with neck ring and cylinder cap. Should be supplied with Hydraulic Certificate and certificate from Chief Controller of Explosives, Nagpur: Hydrogen - one Nitrogen - one Zero - one	
14.0	SPARES & CONSUMABLES	Spares and consumables sufficient for two years trouble free operation should be included in the offer and supplied with each system	
	Column nut	2 Nos.	
	Washer	2 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	1 No.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-19			
Equipment Name: Gas Chromatograph			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	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 two years also to be quoted after warranty.	
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.	
17.0	GENERAL CONDITIONS OF SUPPLY	<ol style="list-style-type: none"> 1. The instrument and all its sub units should operate on 230 ± 10 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 	9.

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-19			
Equipment Name: Gas Chromatograph			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		<p>equipment similar to the type specified in the past five years, which shall be in successful operation for atleast 2 years as on the date of bid opening.</p> <p>6. The bidder should furnish the information on past supplies and their satisfactory performance.</p> <p>7. Bidders shall invariably furnish documentary evidence (client's certificate – atleast two) in support of the satisfactory operation of the equipment as specified above.</p> <p>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.</p>	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF GAS CHROMATOGRAPH MASS SPECTROPHOTOMETER (GC-MS)

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZO)s			
Code Number: ICB-20			
Equipment Name: Gas Chromatograph Mass Spectrophotometer (GC-MS)			
Quantity: 3 (Three) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	INSTRUMENT COMPOSITION		
	Gas Chromatograph with accessories	One Set	
	Injectors	Two Sets, one for manual injections and another with Auto sampler	
	Mass Spectrometer with accessories	One Set	
	Capillary columns with accessories	One Set of each specified columns	
	Software for Automatic control of the system, Data Acquisition and processing	One Set	
	Vacuum Pump for MS with accessories	One Set	
	Electron Capture Detector (ECD) with accessories	One set	
	Auto Sampler	One set	
2.0	TECHNICAL SPECIFICATIONS		
2.1	Gas Chromatograph	Fully Computer controlled with Injectors, Oven, Detector, EPC and related electronics	
2.2	Make	Basic unit as well as other major components of the same manufacturer	
2.3	Display	Alphanumeric digital display in at least four lines	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-20			
Equipment Name: Gas Chromatograph Mass Spectrophotometer (GC-MS)			
Quantity: 3 (Three) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
2.4	Parameters setting & control	Through Application Software as well as through Keyboard of the Instrument	
2.5	Injector / Detector mounting	2 Injectors and Electron Capture Detector (ECD).	
2.6	Capillary Column mounting	Capable to hold two capillary columns of different diameter (100 µm to 530 µm)	
2.7	Heated Zones	At least five Heated Zones including two Injectors, Oven, Detector and Auxiliary	
2.8	Purge system	Gas Saver and Septum Purge System	
2.9	Memory protection	Memory protection during Power Failure	
2.10	Diagnostics & self testing	Built in Diagnostics and Comprehensive Self-Testing	
2.11	Data Acquisition	Simultaneous from two signal channels i.e. Mass Spectrometer and ECD	
3.0	INJECTOR-1	Split/splitless Injector (for Manual Injection)	
3.1	Constituents	Modular Injector with Heater, Temperature and Pressure Sensors	
3.2	Modes of Injections	Splitless and Split Injections	
3.3	Column compatibility	100 to 530 mm ID Capillary Columns	
3.4	Provisions for	Overheat Protection , Septum Purge and Gas Saver	
3.5	User Settings	User adjustable setting of Split Ratio, Purge Flow and Purge Time	
3.6	Temperature Range	50°C to 450°C	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-20			
Equipment Name: Gas Chromatograph Mass Spectrophotometer (GC-MS)			
Quantity: 3 (Three) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
3.7	Temperature Increments	Minimum 1°C in the entire operating range	
3.8	Temperature programming capability	Injector temperature programming	
3.9	Temperature Programme Ramps	At least 3	
3.10	Temperature Ramp Rate Range	From 0.1 to 120°C/min	
3.11	Pressure programming capability	Yes	
3.12	Number of Pressure Programme Ramps	At least 3	
3.13	EPC Pressure Range	0 to 100 psi	
3.14	Operation Modes	Constant Pressure, Ramped Pressure, Constant Flow and Ramped Flow	
3.15	Total Flow setting range	N ₂ : 0.1 to 100 ml/min, He: 0.1 to 100 ml/min, H ₂ : 0.1 to 1000 ml/min	
3.16	Maintenance	Quick and easy maintenance provisions	
4.0	INJECTOR-2	Multimode Injector (for use with Autosampler) – Located at back position	
4.1	Constituents	Modular Injector with Heater, Temperature and Pressure Sensors	
4.2	Inlet Options	Split/splitless, temperature programmable, Large Volume Injection and Cool on column injections	
4.3	Modes of Injections	Hot or cold split/splitless, Pulsed split/splitless, Solvent vent and Direct	
4.4	Column compatibility	50 to 320 mm ID Capillary Columns	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-20			
Equipment Name: Gas Chromatograph Mass Spectrophotometer (GC-MS)			
Quantity: 3 (Three) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
4.5	Provisions for	Overheat Protection , Septum Purge and Gas Saver	
4.6	User Settings	User adjustable setting of Split Ratio, Purge Flow and Purge Time	
4.7	Temperature Range	50°C to 450°C	
4.8	Temperature Increments	Minimum 1°C in the entire operating range	
4.9	Temperature programming capability	Up to 7 ramps at up to 450 °C/min or above.	
4.10	Temperature Programme Ramps	At least 3	
4.11	Temperature Ramp Rate Range	From 0.1 to 120°C/min	
4.12	Pressure programming capability	Yes	
4.13	EPC Pressure Range	0 to 100 psi	
4.14	Operation Modes	Constant Pressure, Ramped Pressure, Constant Flow and Ramped Flow	
4.15	Total Flow setting range	N ₂ : 0.1 to 100 ml/min, He: 0.1 to 100 ml/min, H ₂ : 0.1 to 1000 ml/min	
4.16	Maintenance	Quick and easy maintenance provisions	
5.0	OVEN		
5.1	Volume	More than 13 Litres; should have provision to accommodate minimum two nos. Capillary columns or more at a time.	
5.2	Column Compatibility	Capillary (0.10 / 0.20 / 0.32 / 0.53 mm ID)	
5.3	Temperature Range	50°C to 450°C or more	
5.4	Temperature Increments	Minimum 1°C	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-20			
Equipment Name: Gas Chromatograph Mass Spectrophotometer (GC-MS)			
Quantity: 3 (Three) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
5.5	Temperature Accuracy	± 1% for the entire range	
5.6	Temperature Stability	± 0.1°C	
5.7	Column Overheat Protection	User defined setting	
5.8	Oven Safety Features	Oven power must turn off automatically when the lid / door is opened automatic carrier gas shut off if inlet pressure drops significantly.	
5.9	Temperature Programming	Minimum six Ramps and seven Plateaus	
5.10	Programming Rate Range	0.1 to 120 °C/min	
5.11	Heat Up Time	Less than 2.0 min (50°C or lower to 250°C)	
5.12	Cool Down Time	Less than 4.0 min (450°C to 50°C)	
5.13	Resetting of Program	Automatic by user defined sequence	
5.14	Maximum Run Time	Minimum 650 minutes	
5.15	Injector Compatibility	Split / Splitless Injector and Multimode Injector	
5.16	Detector Compatibility	Mass Spectrometer (MS) and ECD	
6.0	ELECTRONIC PNEUMATICS CONTROL (EPC) SYSTEM		
6.1	Type	Dual column, dual flow	
6.2	Control of inlet pressure, flow rate of the carrier gas and split ratio	Through the Application Software	
6.3	Parameters Display	On-screen digital display	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-20			
Equipment Name: Gas Chromatograph Mass Spectrophotometer (GC-MS)			
Quantity: 3 (Three) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
6.4	Pressure and flow programming	Time programmable between the run	
6.5	Dean's pressure switch	For bifurcating the column eluents to two different columns	
7.0	CAPILLARY COLUMNS	Low Bleed Capillary Columns with following Dimensions	
7.1	HP-5MS or equivalent	60 m x 0.25 mm x 0.25 µm	
7.2	Uncoated deactivated Silica Column (Guard Column)	5m x 0.25 mm	
8.0	MASS SPECTROMETER (DETECTOR)		
8.1	Control	Provisions for automatic Start and Shut Down through Application Software. Parameters should be set and controlled through the Software	
8.2	GC Interface	Short heated Interface	
8.3	Interface Temperature range	100°C to 350°C	
8.4	Mass Source	Should have EI, CI, Positive CI, Negative CI facility with automatic tuning and acquire both SIM and scan data from single injection.	
8.5	Electron Source	Easy access heated inert Filament	
8.6	EI / CI Source Change-over	Easy & Quick changeover by user	
8.7	Source Temperature Range	125°C to 300°C	
8.8	Analyser Type	Transmission Quadrupole with pre-filter	
8.9	Noise Reduction	Heated Quadrupole Pre-filter / Entrance lens / any other proven	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-20			
Equipment Name: Gas Chromatograph Mass Spectrophotometer (GC-MS)			
Quantity: 3 (Three) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		means for noise reduction.	
8.10	Analyser Temperature Range	150°C to 200°C	
8.11	Mass Range	10 to 1000 amu or more	
8.12	Mass Stability	Less than ± 0.1 amu accuracy over 48 hours	
8.13	Ionisation Modes	Electron Ionisation, Positive / Negative Chemical Ionisation	
8.14	Electron Ionisation Voltage	10 – 100 eV	
8.15	Vacuum Pump	200 L/sec or better highly efficient Turbo-Molecular Pump	
8.16	Pump Down Time	For air / water < 3 minutes	
		For qualitative stability < 15 minutes	
		For quantitative stability < 90 minutes	
8.17	Detector	Electron Multiplier or Photo Multiplier	
8.18	Mass Tuning Standard	PFTBA (FC-43), BFB, DFTPP	
8.19	Resolution	1 amu or better	
8.20	Scan Rate	Fully variable 10000 amu / sec or more	
8.21	Scan Step Size	0.1 amu or less	
8.22	Acquisition Rate	50 Full Scans or better / sec depending on mass range	
8.23	Linear Dynamic Range	Concentration 10 ⁵	
		Electronic 10 ⁶ – 10 ⁷ dependent on acquisition rate	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-20			
Equipment Name: Gas Chromatograph Mass Spectrophotometer (GC-MS)			
Quantity: 3 (Three) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
8.24	Number of SIM Groups / Run	Minimum 30 Groups	
8.25	Number of Ions / Group	Minimum 30 Ions	
9.0	SENSITIVITY (DETECTION LIMITS)		
9.1	EI Scan	1 pg of OFN at S/N of 600:1 RMS	
9.2	EI SIM Scan	100 fg of OFN at S/N of 25:1 RMS	
10.0	MASS SPECTRAL LIBRARIES		
10.1	NIST Mass Spectral Library	Version Year 2011 or latest preloaded on Data Station and Licensed backup CD Compatible with operation software.	
10.2	NIST Chemical Structures Database	Latest version available on date of quotation preloaded on Data Station and backup Licensed CD compatible with operation software.	
11.0	ADDITIONAL CAPABILITIES		
11.1	Acquisition	Simultaneous Full Scan as well as SIM Acquisition	
11.2	Ability to split column effluent	To ECD in addition to MS with dual signal capability	
11.3	Applying constant flow rate	To the MS regardless of column flow rate (use of any column at any flow rate)	
11.4	Column replacement	Without cooling and venting the MS	
11.5	Injector Maintenance	Without cooling and venting the MS / Back flushing	
12.0	Electron Capture Detector (ECD)		
12.1	Linear Dynamic Range should be	10 ⁴ or Higher	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-20			
Equipment Name: Gas Chromatograph Mass Spectrophotometer (GC-MS)			
Quantity: 3 (Three) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
12.2	Departure from linearity should be	Less than $\pm 1\%$ for the entire range	
12.3	Operating temperature (maximum)	400 °C	
12.4	Pressure / Flow control	Electronic pressure/flow control	
12.5	Sensitivity	Less than 10 fg/sec of Lindane	
12.6	Makeup Gas	Argon / 5% Methane or Nitrogen	
13.0	AUTOSAMPLER		
13.1	Number of Sample Vials	Capable of accommodating 100 Vials or more	
13.2	Syringe capacity	Capable of accommodating up to six different syringe capacity	
13.3	Injection volume	Selectable between 1 and 10 microlitre or more should be available	
13.4	Washing solvent	Up to four different washing solvents in 4 ml Vials	
13.5	Programming	Sequence and repetition programmable from workstation software	
14.0	OPERATING CONDITIONS		
14.1	Power Supply	230 \pm 10 Volts; 50 \pm 1 Hz AC Power supply	
14.2	Operating Temperature	15°C to 30°C	
14.3	Relative Humidity	40 to 80 %, non-condensing	
15.0	DATA STATION		
	Application Software	Multitasking software with programming facility	
	Capabilities	Accurate and Reproducible Integration	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-20			
Equipment Name: Gas Chromatograph Mass Spectrophotometer (GC-MS)			
Quantity: 3 (Three) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		Reintegration / Replot	
		Baseline Correction	
		Multilevel Calibration	
		Background Subtraction	
		Library Search	
		Quantitative Analysis	
		Customizable Report Formats	
	Software control	The whole system including GC - MSD, Injectors and additional Detector (ECD)	
	Parameters control	Flow, Temperature, Pressure and Vacuum System	
	System Auto Tuning	Through Tuning Standards	
	Analytical Quality Control	Calibration check samples	
		Spike recoveries	
		Calibration verification and	
		QC limits	
16.0	COMPUTER SYSTEM		
	Make	Reputed brand such as HP/Compaq/Dell	
	Processor	Intel Core i7 (3 rd Generation) processor	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZO's)			
Code Number: ICB-20			
Equipment Name: Gas Chromatograph Mass Spectrophotometer (GC-MS)			
Quantity: 3 (Three) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	RAM	4 GB DDR RAM (upgradeable to 8 GB)	
	HDD	500 GB SATA	
	Monitor	21" TFT-LCD Flat Colour (Digital)	
	DVD Writer	DVD- Multi-drive	
	Ports	2 Serial, 1 parallel and 2 USB front 3 Rear USB2 Port, 1VGA 4 bays (2 external & internal) with LAN 1PS, 2 mouse port	
	Key board	Latest multimedia (HP / Microsoft)	
	Mouse	Optical mouse with pad	
	Ethernet	32 bit auto selectable 10/100 MBPS	
	Graphics	Internet ready with integrated Graphics	
	Sound	Integrated sound card and inbuilt stereo speakers	
	Printer	HP LaserJet Colour Printer 1200 x 1200 dpi 12 PPM color	
	Softwares	Pre-loaded Windows 7 Professional or latest operating system with Licensed CD	
		MS Office 2010 Professional with media, manual and Licensed CD	
		Preloaded Norton Antivirus with latest version of 3 years lifetime along with Licensed CD	
17.0	SPARES & CONSUMABLES		
	Column nut	2 Nos.	
	Washer	2 Nos.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-20			
Equipment Name: Gas Chromatograph Mass Spectrophotometer (GC-MS)			
Quantity: 3 (Three) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	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	1 No.	
	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	
	Any Other	Any other spares and consumables sufficient for three years trouble free operation should also be included in the offer and supplied with each system	
18.0	ACCESSORIES		
18.1	Operation and maintenance manual	Two Sets	
18.2	Application notes for the analysis of	VOCs, PCBs, PAHs, Pesticides, Carbamates and Carbonyl compounds	
18.3	Service manual	One set	
18.4	Requisite Tools	One set	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-20			
Equipment Name: Gas Chromatograph Mass Spectrophotometer (GC-MS)			
Quantity: 3 (Three) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
18.5	List of spare parts & consumables	One set	
18.6	Troubleshooting Guide	One set	
18.7	High capacity carrier gas purifier	2 each	
18.8	Consumables for three years operation	One set	
18.9	Operation Kit	One set containing all essentials accessories and spares such as Column nut washers, inlet septa, O-rings copper tubing with connector, micro syringes, copper tube cutter, column cutter, brass / stainless steel nuts, brass / stainless steel ferules.	
18.10	Gas Purification Panel	Complete with Gas purification traps moisture trap – silica gel – Molecular sieve 50:50 length 10 inch – Two Nos.	
		Hydrocarbon trap – Activated Charcoal filter for hydrocarbon removal length 10 inch – Two Nos.	
		Oxygen trap – High capacity oxy trap capacity more than 125 CC – Two Nos.	
18.11	Gas Cylinders	- High Pressure Stainless Steel cylinder fitted with high purity 99.99% analytical gases (as mentioned ahead) having gas capacity 7m ³ (water capacity 47 ltrs). Cylinder should be ISI marked confirming to IS 7285 flat bottom fitted with valve as per IS:3224 complete with neck ring and cap painted as specified under Gas Cylinder Rules 1981.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-20			
Equipment Name: Gas Chromatograph Mass Spectrophotometer (GC-MS)			
Quantity: 3 (Three) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		<ul style="list-style-type: none"> - Gas cylinder should be supplied with hydraulic test certificate and explosive certificate from Chief Controller of Explosives, Nagpur. <li style="padding-left: 40px;">Helium – One No. <li style="padding-left: 40px;">Nitrogen – One No. <li style="padding-left: 40px;">Hydrogen – One No. 	
18.12	Gas Cylinder Trolley	<p>One No.</p> <ul style="list-style-type: none"> - Gas cylinder trolley for transporting gas cylinder from transport vehicle to Gas Room / Laboratory. - Stainless Steel Trolley heavy duty construction with rugged polypropylene straps, stainless steel cinch buckles with 8 inch wheel made up of high strength polymer material for safe easy and convenient transfer of single gas cylinder upto 12" in dia meter. 	
19.0	WARRANTY	Comprehensive warranty with spares for 3 years from the date of installation of the instrument should be covered. The AMC charges to be mentioned for next two years after warranty is over.	
20.0	TRAINING	The principal supplier has to impart on site operation training at the time of installation followed by complimentary one week training (all expenditure inclusive) to minimum two Scientist on operation, method development, maintenance, software training, data interpretation (qualitative and quantitative) at instrument manufacturer's application laboratory including application for	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-20			
Equipment Name: Gas Chromatograph Mass Spectrophotometer (GC-MS)			
Quantity: 3 (Three) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		analysis of VOCs, PAHs, PCBs, Pesticides and other hazardous organic compounds	
21.0	GENERAL CONDITIONS OF SUPPLY	<ol style="list-style-type: none"> 1. The instrument and all its sub units should operate on 230 ± 10 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 principal should provide a certificate that they will provide the spares in future for at least ten years. 5. The main unit and all the sub units of the instrument should be serviced by the Indian representative of supplier. 6. The Bidder should be a manufacturer / authorized representative of a manufacturer, who must have designed, manufactured, tested and supplied two numbers of such equipment in the past five years similar to the type specified, which shall be in successful operation for atleast 2 years as on the date of bid opening. 7. The bidder should furnish the information on past supplies and their satisfactory performance. 8. Bidders shall invariably furnish documentary evidence (client's certificate – atleast two) in support of the satisfactory operation of the equipment as specified above. 	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF GAS CHROMATOGRAPH WITH METHANIZER

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-21			
Equipment Name: Gas chromatograph with Methanizer			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	INSTRUMENT COMPOSITION		
	Gas chromatograph	One set	
	FID Detector	One set	
	FPD Detector	One set	
	Autosampler	One set	
	Capillary Column with Accessories	One set	
	Data Processing / Automatic Data Station	One set	
2.0	TECHNICAL SPECIFICATIONS		
2.1	GC System Type	Computer controlled, Data workstation compatible Gas Chromatograph (GC) with built in diagnostics and comprehensive self test	
	Temperature programming	At least three ramp oven temperature programming.	
	Heated Zones	At least five heated zones (2 inlets, 2 detectors and one auxiliary) in addition to the oven.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-21			
Equipment Name: Gas chromatograph with Methanizer			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Functional Display	Functional keyboard with four line alphanumeric display. Display should include 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. A dedicated key should allow unattended and automated system leak simultaneous check.	
	Memory Protection	Power fail memory protection. Storage of atleast 5 methods and automated sequences.	
	Interface	RS-232 interface and LAN	
	Injector / Detector mounting	System should be compatible for 2 injectors and 2 detectors simultaneous mounting. System should be compatible for automatic / manual injection.	
	Column Mounting	Capable to hold 100 µm to 530 µm different diameter capillary to mega bore columns.	
	Purge System	Effective gas saver and septum purge system.	
	Start / Stop facility	Remote start / stop facility.	
2.2	Column Oven	High performance, large capacity oven accommodating capillary column and mega bore column	
	Volume	More than 10 litres	
	Operating temperature	Maximum 4 °C above ambient upto 400 °C Cryo cooling with LN ₂ -40 °C or below	
	Temperature set point	±1 °C	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-21			
Equipment Name: Gas chromatograph with Methanizer			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Temperature stability	± 0.01 °C for 1 °C ambient change	
	Ramp rate	45 °C /minute or more	
	Heating time	Maximum 8 mins for (50 – 400 °C)	
	Cooling time	Maximum 5 mins for (400 – 50 °C)	
	Column bleed compensation facility Vent temperature control	Computer control in automatic sequence and fast.	
2.3	Flow / Pressure Controller	Sufficient Electronic Pneumatics Control (EPC) Channels for inlets, detectors, or auxiliary gases through Data Processor with Screen display of pressure / flow.	
	Pressure adjustment	Pressure may be adjusted by increment of 0.01 psi. Atmospheric pressure compensation for altitude and ambient temperature variations	
	Pressure programming	2 or more pressure / flow programming ramps.	
	EPC Setting	EPC setting facility should be included in computer work station system.	
	EPC Sensor	EPC sensor should be provided in inlets and detectors for all gases (carrier gas, make up gas and support gas in detectors, and carrier and split vent gas in inlets).	
	Flow / Pressure set points	Flow/pressure set points on each inlet on detector parameter screen.	
	Flow Sensor	Flow sensor for control and storage of split ratio in split / splitless and PTV injector.	
2.4	Injector Mounting	Two injectors mounting, one split / splitless and one Gas phase sample injection system.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-21			
Equipment Name: Gas chromatograph with Methanizer			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Injector Operation	Ambient and sub-ambient operations (-40 °C or below)	
	Injector accessories	With heater, temperature sensor and protection from overheating.	
	Injector capability	Should be capable to hold all types and all sizes of capillary columns and mega bore columns	
	Purge System	Efficient septum purge system, purge time adjustable.	
	Inlet	Split/Splitless inlet should be compatible for Solid Phase Micro Extraction (SPME) system	
2.5	Split/Splitless Injector	Injector should have forward inlet pressure programming with an optimised modular, uniform thermal profile for split / splitless injections.	
	Injection Volume	Injector should permit large volume splitless injections.	
	Flow Control	Electronic pressure/flow control.	
	Operating temperature	Upto 400 °C operating temperature for split/splitless injector with 1 °C increment	
	Solvent rejection / back flush	Software controlled facility for solvent rejection and back flush	
2.6	Gas Phase Injector	Gas phase should have a single 10-port GC sample injection valve or a group of valves sufficiently fitted with a sample loop (1 ml or more) and back flush facility compatible to on column injection.	
	Pressure / Flow control	Electronic pressure/flow control.	
	Operating temperature	Operating temperature should be upto 400 °C.	
	Temperature programming ramp	Atleast 3 temperature programme ramps	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-21			
Equipment Name: Gas chromatograph with Methanizer			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
3.0	DETECTORS	Detector combinations would be FID-FPD.	
	Temperature range	Temperature range upto 400 °C	
	Pressure control	All the detectors should have Electronic Pressure Control (EPC) and electronic on/off facility for all detector gases.	
	Detector	Detector with makeup gas and automatic zeroing facility and over heat protection	
3.1	FID	Programmable Electronic Pressure/Flow Control	
	Operating temperature	Operating temperature (maximum) should not be less than 400 °C (1.0 °C step)	
	Flame detection	Flame out detection facility	
	Minimum detection limit	<5 pg carbon/sec	
	Linear dynamic range	< ± 10%, 10 ⁷ with N ₂	
	Ignition	Auto ignition facility through computer	
3.2	FPD	Electronic pressure control.	
	Wave length version	Dual wavelength with interchangeable filters.	
	Operating temperature	Temperature operating limit should not be less than 250 °C.	
	Dynamic range	Should be better than 10 ⁶ .	
4.0	AUTOSAMPLER		

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-21			
Equipment Name: Gas chromatograph with Methanizer			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Syringe capacity	Should accommodate upto three different capacity syringes ranging from 1 to 200 microlitre or more.	
	Injection volume	Selection of the injection volume between 1 and 200 microlitre or more.	
	Washing solvent	Should accommodate upto four different washing solvents.	
	Injection capability	Should be capable to access two injections without requiring an additional tower.	
	Internal standard calibration	Should allow automated internal standard calibration and "sandwich" technique.	
	Programming	Should be completely programmed by either a dedicated controller or the GC keyboard.	
5.0	METHANIZER	Should be compatible to be attached with main GC system.	
	Gas phase injection	Automatic gas phase injection after proper reduction of samples (for CH ₄ , and Non-Methane Organics)	
	Reduction catalyst	Should have a Reduction catalyst packed with 100-mesh pure nickel powder to convert CO and CO ₂ to CH ₄ .	
	Reduction catalyst tube	Reduction catalyst tube should be mounted vertically in atleast 400°C furnace.	
	GC connection	Catalyst sections should have independent channels to be connected to GC gas injection system for calibration check.	
	Control	Should also be operated and controlled by computer.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-21			
Equipment Name: Gas chromatograph with Methanizer			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
6.0	COLUMNS	DB 1701 or equivalent 30 m x 0.25 mm ID having 0.25 µm film thicknesses Film – 14% cyanopropyl phenyl and 86% dimethyl polysyloxene co-polymer column	
		HP-5-MS 60 m X 0.25 mm ID with 0.25 µm film thickness Ultra-low bleed column Film – 5% di-phenyl and 95% dimethyl polysyloxene copolymer column	
		DB 624 or equivalent 50 m X 0.32 mm ID with 1.8 µm film thickness	
7.0	DATA STATION		
7.1	Application Software	Basic Programming facility	
		Provide accurate and reproducible integration	
		Compatible for atleast two simultaneous chromatograms	
		Data acquisition. Reintegration report, multilevel calibration, baseline correction, area calculation, background subtraction and custom/tailored report format facility	
		Battery backup for memory protection is required.	
		Facilities for data Export/Transformation to data base software i.e. Excel and Access	
		Software for Quality Control Protocols	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-21			
Equipment Name: Gas chromatograph with Methanizer			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		Software for data display, handling, data export/import and reporting	
7.2	Computer System		
	Make	Reputed brand such as HP/Compaq/Dell	
	Processor	Intel Core i7 (3 rd Generation) processor	
	RAM	4 GB DDR RAM (upgradeable to 8 GB)	
	HDD	500 GB SATA	
	Monitor	21" TFT-LCD Flat Colour (Digital)	
	DVD Writer	DVD- Multi-drive	
	Ports	2 Serial, 1 parallel and 2 USB front 3 Rear USB2 Port, 1VGA 4 bays (2 external & internal) with LAN 1PS, 2 mouse port	
	Key board	Latest multimedia (HP / Microsoft)	
	Mouse	Optical mouse with pad	
	Ethernet	32 bit auto selectable 10/100 MBPS	
	Graphics	Internet ready with integrated Graphics	
	Sound	Integrated sound card and inbuilt stereo speakers	
	Printer	HP LaserJet Printer 1200 x 1200 dpi 12 PPM black	
7.3	Softwares	Pre-loaded Windows XP or Windows 7 Professional latest version operating system with Licensed CD	
		MS Office 2010 Professional with media, manual and Licensed CD	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-21			
Equipment Name: Gas chromatograph with Methanizer			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		Preloaded Norton Antivirus with latest version of 3 years lifetime along with Licensed CD	
8.0	ACCESSORIES	Manufacturers Standard accessories, start up kit including tools, Digital gas flow meter (0.1 ml/min to 1000 ml/min)	
	Operation /maintenance manual	Operation and maintenance manual 1 No.	
	Application note	Application notes (in CD) for pesticides, PAH, PCB's, PCP's, VOC's, THM's, Dioxins & Furans in environmental samples 1 No.	
	Service manual	Service manual 1 No.	
	Hydrogen regulator	H ₂ gas regulator with (2 stage) with necessary tubing and connectors 1 No.	
	Nitrogen regulator	N ₂ gas regulator with (2 stage) with necessary tubing and connectors 1 No.	
	Air regulator	Air regulator with (2 stage) with necessary tubing and connectors 1 No.	
	Carrier gas purifier	High capacity carrier gas purifier 4 Nos.	
	H ₂ gas purifier	High capacity H ₂ gas purifier 2 Nos.	
	Air compressor	Air Compressor (GT free) with air filter and regulator unit 1 No.	
	Air purifier	High capacity air purifier 4 Nos.	
	Moisture trap	Moisture Trap (Silica Gel – Molecular Sieve 50:50; length 10"2 Nos.	
	Hydrocarbon trap	Activated charcoal filter for Hydrocarbon removal length 10"2 Nos.	
	Oxygen trap	High Capacity Oxy trap capacity more than 125 cc 2 Nos.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-21			
Equipment Name: Gas chromatograph with Methanizer			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
9.0	SPARES AND CONSUMABLES	To be supplied for two years trouble free operation	
	Column nut	2 Nos.	
	Washer	2 Nos.	
	Graphite / vespel ferrules	20 Nos.	
	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.	
	Gas tight syringe (100 µl)	4 Nos.	
	Copper tube cutter	1 No.	
	Column cutter	1 No.	
	Brass/Stainless Steel Nuts	1/8 inch – 10 Nos.	
	Brass/Stainless Steel Ferrules	1/8 inch – 10 Nos.	
	Tees	1/8 inch – 10 Nos.	
10.0	OPTIONAL ITEMS		
	Propane gas standard	Gas standards of Propane (one each for 20 ppm, 200 ppm and 3000 ppm) in air	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-21			
Equipment Name: Gas chromatograph with Methanizer			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	CO ₂ gas standard	CO ₂ standard gas (one each for 50 ppm, 500 ppm and 1 %) in air	
	Gas mixture standard	Gas mixture standard containing 50 ppm CO, 50 ppm CH ₄ 1 % CO ₂ and 20 ppm C ₃ H ₈ prepared in Air	
	Hexane / air standard	Gas mixture standard containing 50 ppm Hexane in Air.	
	Toluene / air standard	Gas mixture standard containing 20 ppm Toluene in Air	
	Methanol / air standard	Gas mixture standard containing 100 ppm Methanol in Air	
	BTX Standard	Gas mixture standard containing 100 ppb each of Benzene, Toluene and Xylene.	
	Gas canisters	Stainless steel canister with electro polished interior wall (Suma or equivalent) having high quality vacuum pressure gas sampling off/on valves capacity 6 litre - 3 Nos.	
11.0	OPERATION AND MAINTENANCE TRAINING	Complimentary (all expenditure inclusive) one weeks training to at least two scientists on application, routine maintenance and software training at their application laboratory in the country.	
12.0	GENERAL CONDITIONS OF SUPPLY	<ol style="list-style-type: none"> 1. The instrument and all its sub units should operate on 230 ± 10 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 	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-21			
Equipment Name: Gas chromatograph with Methanizer			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		<p>serviced by the Indian representative of supplier.</p> <p>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 atleast 2 years as on the date of bid opening.</p> <p>6. The bidder should furnish the information on past supplies and their satisfactory performance.</p> <p>7. Bidders shall invariably furnish documentary evidence (client's certificate – atleast two) in support of the satisfactory operation of the equipment as specified above.</p> <p>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.</p> <p>9. Comprehensive warranty with spares for 3 years from the date of installation of the instrument should be covered.</p>	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF GC-MS WITH ATD

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-22			
Equipment Name: GC-MS with ATD			
Quantity: 2 (Two) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	INSTRUMENT COMPOSITION		
	Gas chromatograph	One set	
	Mass Detector	One set	
	FID	One set	
	ATD	One set	
	Injectors	Two	
	Capillary Column with Accessories	One set	
	Data Processing / Automatic Data Station	One set	
1.1	Application Notes for VOCs Carbonyls, Alcohols, Alkanes & Alkenes / Operational Manuals / Troubleshooting – maintenance Manuals	One set of each	
1.2	Calibration standards for VOCs, Carbonyls, Alcohols, Alkanes, Alkenes & PAHs of reputed make	One set of one ml ampoules of each standard with high purity preferably NIST traceable	
1.3	Solid Phase Micro Extraction System	One set	
2.0	TECHNICAL SPECIFICATIONS		
2.1	GC System Type	Computer controlled, Data workstation compatible Gas Chromatograph (GC) with built in diagnostics and comprehensive self test	
	Temperature programming	At least seven or more ramp oven temperature programming.	
	Heated Zones	At least five heated zones (2 inlets, 2 detectors and one auxiliary) in	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-22			
Equipment Name: GC-MS with ATD			
Quantity: 2 (Two) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		addition to the oven.	
	Functional Display	Functional keyboard with two or more line alphanumeric display. Display should include 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. It should have unattended and automated system leak check facility.	
	Memory Protection	Power fail memory protection. Storage of atleast 5 methods and automated sequences.	
	Interface	RS-232 interface and LAN	
	Injector / Detector mounting	System should be compatible for 2 injectors and 2 detectors simultaneous mounting. System should be compatible for automatic / manual injection.	
	Column Mounting	Capable to hold 110 µm to 530 µm different diameter capillary / mega bore columns.	
	Purge System	Effective gas saver and septum purge system.	
	Start / Stop facility	Remote start / stop facility.	
2.2	Column Oven	High performance, large capacity oven accommodating capillary column and mega bore column	
	Volume	More than 10 litres	
	Operating temperature	Maximum 4 °C above ambient upto 450 °C Cryo cooling option with LN ₂ -80 °C or below if required in future.	
	Temperature set point	±1 °C	
	Temperature stability	± 0.01 °C for 1 °C ambient change	
	Ramp rate	100 °C /minute or more	
	Heating time	Maximum 8 mins for (50 – 400 °C) or less	
	Cooling time	Maximum 5 mins for (400 – 50 °C) or less+	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-22			
Equipment Name: GC-MS with ATD			
Quantity: 2 (Two) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Column bleed compensation facility Vent temperature control	Computer control in automatic sequence and fast.	
2.3	Flow / Pressure Controller	Sufficient Electronic Pneumatics Control (EPC) Channels for inlets, detectors, or auxiliary gases through Data Processor with Screen display of pressure / flow.	
	Pressure adjustment	Pressure may be adjusted by increment of 0.01 psi.	
	Pressure programming	2 or more pressure / flow programming ramps.	
	EPC Setting	EPC setting facility should be included in computer work station system.	
	EPC Sensor	EPC sensor should be provided in inlets and detectors for all gases (carrier gas, make up gas and support gas in detectors, and carrier and split vent gas in inlets).	
	Flow / Pressure set points	Flow/pressure set points on each inlet on detector parameter screen.	
	Flow Sensor	Flow sensor for control and storage of split ratio in split / splitless	
2.4	Injector Mounting	Two injectors mounting split / splitless and one Gas phase sample injection system.	
	Injector accessories	With heater, temperature sensor and protection from overheating.	
	Injector capability	Should be capable to hold all types and all sizes of capillary columns and mega bore columns	
	Purge System	Efficient septum purges system, purge time adjustable.	
2.5	Injectors Split/Splitless Injector with back flushing	Injectors should have forward inlet pressure programming with an optimised modular, uniform thermal profile for split / splitless	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-22			
Equipment Name: GC-MS with ATD			
Quantity: 2 (Two) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	facility(two port one for direct liquid injection into capillary column & another for ATD Transfer line)	injections.	
	Flow Control	Electronic pressure/flow control.	
	Operating temperature	Upto 400 °C operating temperature for split/splitless injector with 1 °C increment	
2.6	Gas Phase Injector(Additional Item)	Gas phase should have a single 10-port GC sample injection valve (with auxiliary EPC and heating upto 325°C or a group of valves sufficiently fitted with a sample loop (1 ml, 2 ml – 2 each in number) and back flush facility compatible to on column injection.	
	Pressure / Flow control	Electronic pressure/flow control.	
2.7	Swafer Inlet Switching	For switch over inlet injection material from two injectors to single column whichever is required one by one.	
3.0	DETECTORS	Detector combinations would be MS AND FID.	
	Temperature range	Temperature range upto 400 °C	
	Pressure control	All the detectors should have Electronic Pressure Control (EPC) and electronic on/off facility for all detector gases.	
	Detector	Detector with makeup gas and automatic zeroing facility and over heat protection	
3.1	FID	Programmable Electronic Pressure/Flow Control	
	Operating temperature	Operating temperature (maximum) should not be less than 400 °C (1.0 °C step)	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-22			
Equipment Name: GC-MS with ATD			
Quantity: 2 (Two) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Minimum detection limit	=/< 3 pgC/sec or better	
	Linear dynamic range	10 ⁶ or better	
3.3	MASS DETECTOR	Quadrupole Transmission Type	
	Mass Spectrometer Detector with EI & in built NCI/PCI ion meter gauge	with Software to accurately identifying and trace components that coelute with other analytes and Peak Integration facility	
	Mass range	upto 1000 Da or Better	
	Mass stability	+ / - 0.1m /z mass accuracy over 48 hours or more	
	Ionization	Sealed Electron Ionization system	
	EI voltage	10-95 ev or more	
	Single Turbo Vacuum pumps	>250 L / second or better., Air cooled Turbomolecular Pump	
	Ion volume temperature	50 Deg C to more than 300Deg C independently heated	
	Scan rate -	Continuously variable scan rate upto 10000 Da / sec. or higher with 0.1 amu step size	
	EI full scan detection limit	1 ul injection of 1 pg/ul of octafluoronaphtalene scanning from 50-300u should give min. signal: noise ratio of 400 :1 or better	
	SENSITIVITY (DETECTION LIMITS)		
	EI Full Scan	1 pg of OFN at S/N of 600:1 RMS	
	EI SIM Scan	100 fg of OFN at S/N of 25:1 RMS	
	Positive CI Full Scan	10 pg of benzophenone at S/N of 10:1 RMS	
	Positive CI SIM Scan	1 pg of benzophenone at S/N of 10:1	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-22			
Equipment Name: GC-MS with ATD			
Quantity: 2 (Two) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Negative CI Full Scan	1 pg of OFN at S/N of 20:1 RMS	
	Negative CI SIM Scan	1 pg of OFN at S/N of 300: 1 RMS	
	Number of SIM Groups / Run	Minimum 30 Groups	
	Number of Ions / Group	Minimum 30 Ions	
	LIBRARIES		
	NIST Mass Spectral Library	Version year 2011 or latest Preloaded on Data Station and Licensed CD compatible with operation software	
	NIST Chemical Structures Database	Latest version available Preloaded on Data Station and Licensed CD compatible with operation software	
	ADDITIONAL CAPABILITIES		
	Acquisition	Simultaneously for Full Scan as well as SIM Scan	
4.0	SPECIAL FEATURE	It should have the controlled splitting facility of the sample so that it can be splitted in a single run to both Mass and FID detector if desired.	
5.0	COLUMNS	HP-VOC or J&W DB1 or equivalent: 60 m x 0.20 mm x 1.00 µm	
		HP 624 , 30 m x 0.25 mm ID having 0.25 µm film thicknesses or equivalent	
		DB5/ HP– Ultra 2 , 30m – 60 m X 0.22 – 0.25 mm ID with 0.25 – 0.33 µm film thickness (5% phenyl and 95% dimethyl polysiloxene) or equivalent	
		Rxi®-5 Sil MS, 30m, 0.25mm ID, 0.25µm or equivalent	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-22			
Equipment Name: GC-MS with ATD			
Quantity: 2 (Two) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		<p>It should have automated sampling of up to 50 tubes, incorporating programmable pneumatic control. Supports pressure, flow and velocity control of the carrier gas through the GC column. It should also incorporate loading of internal standard into clean tubes to provide sample-integrity validation and to improve precision (repeatability) of the analysis. It should allow the ability to condition tubes during chromatography to minimize downtime and enhance productivity and also includes a separate trap-clean-and-test function which saves time and protects the GC column and detector.</p> <p>Hardware</p> <p>Sample tube: Single industry-standard sample tube capacity with 50 industry-standard sample tubes Sample tubes: The glass-lined stainless steel sample tubes to be quoted (Pred filled with Tenax TA & Chromosorb 106 , 20 each =Total 40 Tubes . Each tube should be etched with a unique serial number for traceability. Stainless steel tubes should also be fitted with clips that accept adhesive labels for identification. Tubes should be pre-packed with a variety of adsorbents as per our application.</p> <p>Desorption's Up to 98 or continuous.</p> <p>PPC/APC Provides control of carrier pressure, desorbs flow rate, inlet split flow rate, outlet split flow rate.</p> <p>Tube and trap Provides more efficient moisture removal.</p> <p>Sample split Allows sample re-collection on same or different tubes to enable repeat analysis.</p>	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-22			
Equipment Name: GC-MS with ATD			
Quantity: 2 (Two) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		Primary desorption oven with Temp range 50 °C to 400 °C; Desorption time 1.0 min to 999.0 min Quartz cold trap : Low temp range -30 °C to +150 °C (Peltier cooling – standard); -100 °C to +150 °C (LN2 cooling – optional)	
6.	<u>Automated Thermal Desorber (ATD) System (With sample re-collection facility on same(parent) or different tubes to enable repeat analysis)</u>	High temp range -30 °C or -100 °C to 400 °C Time at high temp 0.0 to 999.0 min Heating rates 5 °C/sec, 20 °C/sec, 40 °C/sec and ballistic Gas-flow direction Back flush flow for optimal use of traps with multiple adsorbents during trap heating Heated Transfer line to GC : long Temp range: 50 °C to 300 °C Sulfinert™ deactivated tubing (standard),also allows direct connection of the column or fused silica tubing Pneumatics Carrier gas: Programmable Pneumatic control Pressure: 0 to 60 psig (0 to 400 kPa); Split flow: 0 to 200 mL/min; A composite measure of fraction of original sample transferred to GC column should be displayed; Desorb flow setting range from 0 to 200 mL/min; Carrier gas flow: 0-2 mL/min; Velocity: 0 to 200 cm/s. Pneumatic valve need an external supply of dry (dew point -50 °C or below) compressed air in the pressure range actuation of 70 to 90 psig (480 to 620 kPa). Consumption rate: 0.5 L/min (TD), 0.7 L/min (ATD).	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-22			
Equipment Name: GC-MS with ATD			
Quantity: 2 (Two) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		<p>Sample protection: Initial check for adequate carrier gas pressure prior to tube loading.</p> <p>Sequence leak and pressure test completed on sample tube and cold trap before tube desorption. Ambient temperature carrier gas purge of sample tube to remove air prior to desorption. Purge effluent is routed through the cold trap to avoid loss of volatile compounds.</p>	
6.1	ATD Tubes and Thermal desorber Starter kit	It should also includes the packed conditioned sample tubes 25 nos. each Tenax GR 60/80 & Chromasorb 60/80 and Thermal desorber Starter kit with empty tubes about 50 with required packing to work with the existing upgradation system.	
6.2	Long Heated Transfer line to GC	Fused silica deactivated tubing (standard), with 0.53 mm capillary of 1800mm length or so that allows direct connection of the GC capillary column to fused silica tubing.	
6.3	ATD Software control package :	<p>Thermal desorber should be a Stand-alone, self-contained and should have controlled operation through a color graphical touch-screen user interface with</p> <ul style="list-style-type: none"> • Simple, one-touch operation • Single-method operation • Sequence-based, multi-method operation of up to eight methods • Password protection 	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-22			
Equipment Name: GC-MS with ATD			
Quantity: 2 (Two) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		<ul style="list-style-type: none"> Ten operating methods can be stored in the instrument 	
6.4	Functional features :	It should be available to operate ATD instruments from a Microsoft® Windows environment. The control software should offer graphical representation offer graphical representation of instruments and parameters with intuitive interaction.	
6.5	System Software control package	Calibration & Internal standard used to introduce a known quantity of a gaseous/liquid standard into the sample tube for internal-standard addition calibration and quality assurance.	
7.0	Calibration & Internal standard/ Mass Tuning Standard	one ml ampoule one each high purity Calibration standards for VOCs, Carbonyls, Alcohols, Alkanes , Alkenes & PAHs of reputed make and PFTBA (FC-43), BFB, DFTPP etc	
8.0	Data Station		
8.1	Software (with Basic Programming facility with retention time locking software	Provide accurate and reproducible integration & multi calibration & storage facility	
		Compatible for at least two simultaneous chromatograms	
		Data acquisition. Reintegration report, multilevel calibration, baseline correction, area calculation, background subtraction and custom/tailored report format facility	
		Battery backup for memory protection is required.	
		Facilities for data Export/Transformation to data base software i.e. Excel and Access	
		Software for Quality Control Protocols	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-22			
Equipment Name: GC-MS with ATD			
Quantity: 2 (Two) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		Software for data display, handling, data export/import and reporting	
		Software for data display, handling, data export/import and reporting	
8.2	Computer		
	Make	Reputed brand such as HP/Compaq/Dell	
	Processor	Intel Core i7 (3 rd Generation) processor	
	RAM	4 GB DDR RAM (upgradeable to 8 GB)	
	HDD	500 GB SATA	
	Monitor	21" TFT-LCD Flat Colour (Digital)	
	DVD Writer	DVD- Multi-drive	
	Ports	2 Serial, 1 parallel and 2 USB front 3 Rear USB2 Port, 1VGA 4 bays (2 external & internal) with LAN 1PS, 2 mouse port	
	Key board	Latest multimedia (HP / Microsoft)	
	Mouse	Optical mouse with pad	
	Ethernet	32 bit auto selectable 10/100 MBPS	
	Graphics	Internet ready with integrated Graphics	
	Sound	Integrated sound card and inbuilt stereo speakers	
	Printer	HP LaserJet Printer 1200 x 1200 dpi 12 PPM black	
8.3	Softwares	Pre-loaded Windows XP Professional latest version operating system with Licensed CD	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-22			
Equipment Name: GC-MS with ATD			
Quantity: 2 (Two) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		MS Office 2010 Standard with media, manual and Licensed CD	
		Preloaded Norton Antivirus with latest version of 3 years lifetime along with Licensed CD	
9.0	ACCESSORIES	Manufacturers Standard accessories, start up kits including tools, Digital gas flow meter (0.1 ml/min to 1000 ml/min) Operation and maintenance manual 1 No.	
	Application note	Application notes (in CD) for VOC's, PAH, PCB's, PCP's, THM's, pesticides, Dioxins & Furans in environmental samples 1 No.each	
	Operation /maintenance manual Service manual		
	Air purifier	High capacity carrier gas purifier 4 Nos.	
	Carrier gas purifier	High capacity H ₂ gas purifier 2 Nos.	
	H ₂ gas purifier	High capacity H ₂ gas purifier 2 Nos.	
	Moisture trap	Moisture Trap (Silica Gel – Molecular Sieve 50:50; length 10"2 Nos.	
	Hydrocarbon trap	Activated charcoal filter for Hydrocarbon removal length 10"2 Nos.	
	Oxygen trap	High Capacity Oxy trap capacity more than 125 cc 2 Nos.	
	Gas Cylinders	- High Pressure Stainless Steel cylinder fitted with high purity 99.99% analytical gases (as mentioned ahead) having gas capacity 7m ³ (water capacity 47 ltrs). Cylinder should be ISI marked confirming to IS 7285 flat bottom fitted with valve as per IS:3224 complete with neck ring and cap painted as specified	-

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-22			
Equipment Name: GC-MS with ATD			
Quantity: 2 (Two) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		under Gas Cylinder Rules 1981. - Gas cylinder should be supplied with hydraulic test certificate and explosive certificate from Chief Controller of Explosives, Nagpur. Helium – One No. Nitrogen – One No. Hydrogen – One No.	
10.0	SPARES AND CONSUMABLES	To be supplied for two years trouble free operation	
	Column nut	2 Nos.	
	Washer	2 Nos.	
	Graphite / vespel ferrules	20 Nos.	
	Inlet Septa (self sealing for injectors)	200 Nos.	
	O ring	25 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.	
	Gas tight syringe (100 µl)	4 No.	
	Copper tube cutter	2 Nos.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-22			
Equipment Name: GC-MS with ATD			
Quantity: 2 (Two) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
11.0	Column cutter	1 No.	
	Brass/Stainless Steel Nuts	1/8 inch – 10 Nos.	
	Brass/Stainless Steel Ferrules	1/8 inch – 10 Nos.	
	Tees	1/8 inch – 10 Nos.	
	Installation & Training	Free of Cost Installation in CPCB Lab in Delhi & operational Training at CPCB as well as one week training to concerned 2-3 Scientists at application laboratory in India.	
12.0	Warranty	Three year comprehensive warranty: routine maintenance, breakdowns including all spares parts & accessories necessary to make the whole system operational.	
13.0	OPTIONAL ITEMS		
	Liquid nitrogen Container / Dewar	Liquid nitrogen for operation of the cold trap to -100 °C. Quote pressurized liquid nitrogen dewar with pressure cooling release valve set to 25 psi (180 kPa).	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF GAS MIXTURE (NIST CERTIFIED) - SULPHUR DIOXIDE (SO₂) GAS MIXTURE 120 PPM

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-23			
Equipment Name: Gas Mixture (NIST Certified) - Sulphur Dioxide (SO₂) Gas Mixture 120 PPM			
Quantity: 5 (Five) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Description	Sulphur Di-oxide 120 PPM + Balance Nitrogen in Aluminium Cylinder (highly polished) with pressure regulator double stage valve SS 316, SS diaphragm with certificate of BIS or ISO.	
2.0	Cylinder Capacity	10 Litre	
3.0	Cylinder Pressure	120 Kg/Cm ²	
4.0	Preparation Tolerance	± 10%	
5.0	Certification Accuracy	± 2%	
6.0	Stability	Minimum One Year	
7.0	Traceability	Certified and Traceable to NIST Standard alongwith certificate	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF GAS MIXTURE (NIST CERTIFIED) - NITRIC OXIDE (NO) GAS MIXTURE 250 PPM

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-23			
Equipment Name: Gas Mixture (NIST Certified) - Nitric Oxide (NO) Gas Mixture 250 PPM			
Quantity: 5 (Five) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Description	Nitric Oxide 250 PPM + Balance Nitrogen in Aluminium Cylinder (highly polished) with pressure regulator double stage valve SS 316, SS diaphragm with certificate of BIS or ISO.	
2.0	Cylinder Capacity	10 Litre	
3.0	Cylinder Pressure	120 Kg/Cm ²	
4.0	Preparation Tolerance	± 10%	
5.0	Certification Accuracy	± 2%	
6.0	Stability	Minimum One Year	
7.0	Traceability	Certified and Traceable to NIST Standard alongwith certificate	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF GAS MIXTURE (NIST CERTIFIED) - CARBON MONOXIDE (CO) GAS MIXTURE 110 PPM

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-23			
Equipment Name: Gas Mixture (NIST Certified) - Carbon Monoxide (CO) Gas Mixture 110 PPM			
Quantity: 5 (Five) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Description	Carbon Mono-oxide 110 PPM + Balance Nitrogen in Aluminium Cylinder (highly polished) with pressure regulator double stage valve SS 316, SS diaphragm with certificate of BIS or ISO.	
2.0	Cylinder Capacity	10 Litre	
3.0	Cylinder Pressure	120 Kg/Cm ²	
4.0	Preparation Tolerance	± 10%	
5.0	Certification Accuracy	± 2%	
6.0	Stability	Minimum One Year	
7.0	Traceability	Certified and Traceable to NIST Standard alongwith certificate	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF GAS MIXTURE (NIST CERTIFIED) - AMMONIA (NH₃) GAS MIXTURE 10 PPM

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-23			
Equipment Name: Gas Mixture (NIST Certified) - Ammonia (NH₃) Gas Mixture 10 PPM			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Description	Ammonia Gas 10 PPM + Balance Nitrogen in Aluminium Cylinder (highly polished) with pressure regulator double stage valve SS 316, SS diaphragm with certificate of BIS or ISO.	
2.0	Cylinder Capacity	10 Litre	
3.0	Cylinder Pressure	120 Kg/Cm ²	
4.0	Preparation Tolerance	± 10%	
5.0	Certification Accuracy	± 2%	
6.0	Stability	Minimum One Year	
7.0	Traceability	Certified and Traceable to NIST Standard alongwith certificate	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF GAS MIXTURE (NIST CERTIFIED) - METHANE (CH₄) GAS MIXTURE 100 PPM

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-23			
Equipment Name: Gas Mixture (NIST Certified) - Methane (CH₄) Gas Mixture 100 PPM			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Description	Methane Gas 100 PPM + Balance Nitrogen in Aluminium Cylinder (highly polished) with pressure regulator double stage valve SS 316, SS diaphragm with certificate of BIS or ISO.	
2.0	Cylinder Capacity	10 Litre	
3.0	Cylinder Pressure	120 Kg/Cm ²	
4.0	Preparation Tolerance	± 10%	
5.0	Certification Accuracy	± 2%	
6.0	Stability	Minimum One Year	
7.0	Traceability	Certified and Traceable to NIST Standard alongwith certificate	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF GAS MIXTURE (NIST CERTIFIED) - PROPANE (C₃H₈) GAS MIXTURE 10 PPM

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-23			
Equipment Name: Gas Mixture (NIST Certified) - Propane (C₃H₈) Gas Mixture 10 PPM			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Description	Propane Gas 10 PPM + Balance Nitrogen in Aluminium Cylinder (highly polished) with pressure regulator double stage valve SS 316, SS diaphragm with certificate of BIS or ISO.	
2.0	Cylinder Capacity	10 Litre	
3.0	Cylinder Pressure	120 Kg/Cm ²	
4.0	Preparation Tolerance	± 10%	
5.0	Certification Accuracy	± 2%	
6.0	Stability	Minimum One Year	
7.0	Traceability	Certified and Traceable to NIST Standard alongwith certificate	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF HIGH PERFORMANCE LIQUID CHROMATOGRAPH (HPLC)

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-24			
Equipment Name: High Performance Liquid Chromatograph (HPLC)			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	INSTRUMENT COMPOSITION		
	High Pressure Liquid Chromatograph	One set	
	Scanning Fluorescent Detector	One set	
	Ultraviolet Detector	One set	
2.0	TECHNICAL SPECIFICATIONS		
2.1	System Type	Computer Controlled, Modular type High Pressure Liquid Chromatograph (HPLC) System	
2.2	Operation Requirements	Dual piston pumping system	
		Gradient mixer should provide gradient mode upto two or more solvents and also usable in isocratic mode	
		Gradient Mixer and Central Processor Unit controlled through Computer Software via a interface through PC	
2.3	Pumping System		
	Gradient System	Binary gradient system upgradeable to quaternary and permitting the mobile phase to be composed of two or more solvents under computer control	
	Flow Mode	Constant flow modes, with inbuilt facility for degassing of the solvents	
	Flow Range	Atleast 10 ml/min, programmable in the 0.01 ml/min or smaller increments	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-24			
Equipment Name: High Performance Liquid Chromatograph (HPLC)			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Flow Accuracy	Flow accuracy and stability of $\pm 0.1\%$ or better	
	Flow Precision	Flow precision of $\pm 0.3\%$ RSD or better.	
	Pressure/Flow compensation	Automatic compressibility correction and automatic compensation for changes in operating pressure to ensure accurate flow rates	
	Solvent Mixture composite	Solvents mixtures composition should range from 0 to 100% in 0.1% increments.	
	Operating Pressure range	Operating pressure range normal to 6000 psi pressure with user selectable upper and lower limits	
	Gradient Mixture range	Gradient Mixer System should be higher pressure gradient system coupling both pumps, user programmable through the computer data station	
	Display	Digital display of operating parameters and pressure	
	Operating parameter	Flow rate, gradient curve, stroke volume, upper and lower pressure limits and %A and %B of the solvents in gradient mode	
	Battery backed storage	Battery backed storage facility for upto atleast 8 methods including time programming. Automatic start up and shut down methods. Editing of the stored methods should be possible during a run.	
2.4	Injector	Rheodyne design with auto start switch.	
	Sample loops	Sample loops (one each) of 2 μ l, 5 μ l, 10 μ l, 20 μ l capacity.	
2.5	Column Oven	Thermostatically controlled with an adjustable temperature range of atleast upto 80 $^{\circ}$ C.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-24			
Equipment Name: High Performance Liquid Chromatograph (HPLC)			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
2.6	Columns	Columns of length and diameter suitable for the analysis of pesticides, PAHs, and phenols alongwith scavenger columns and guard columns to be provided.	
		Selectivity to reverse phase analysis for C ₈ and C ₁₈ with a particle size of less than or equal to 5 µ or equivalent columns (two each).	
		Amino bonded spherical silica with a particle size of less than or equal to 7 µ or equivalent columns (two numbers).	
2.7	Scanning Fluorescent Detector	Programmable detector	
	Excitation range	Extraction range of 230 – 700 nm	
	Emission range	Emission range of 230 – 900 nm	
	Wave length repeatability	Wavelength repeatability of ± 1 nm or better	
	Accuracy	Accuracy of ± 2 nm or better	
	Flow cell	Flow cell 5 µl capacity	
2.8	Ultraviolet Detector (Diode Array Detector)	Light source, D2 Tungsten lamp	
	Wave length range	190-800 nm wavelength range	
	Adjustment	Adjustable in 1 nm or smaller increments	
	Silt programme	Slit programme 1 to 16 nm continuous spectra band width (SBW) 5 nm or less	
	Accuracy	Accuracy ± 1 nm or better	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-24			
Equipment Name: High Performance Liquid Chromatograph (HPLC)			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Noise	Noise $\pm 1.0 \times 10^{-5}$ AU peak to peak or less	
	Drift	Drift 2×10^{-4} AU per hour or less	
	Flow cell volume	Flow cell volume capacity should be anywhere between 8-15 μ l	
	Path length	10 mm	
3.0	COMPUTER DATA STATION	Should have basic programming facility for method development and simulation concerning analysis of PAH, phenols, pesticides, Herbicides, 2-4-D & its derivatives, phthalate esters, poly-acrylic and carbonyl compounds in environmental samples	
3.1	Application Software	Capable of providing accurate and reproducible Integration, reintegration/report and multilevel calibration, software for diode array should appear.	
		Recording of run detail (e.g. pressure, time profile, pump condition etc.)	
		Reporting of elution profile with comparison of stored standard profile	
		Reporting of data with elution profile	
		Baseline correction, area calculation, data subtraction and report formats.	
		Provision for statistical analysis and representation of data in all possible graphical format, trouble shooting	
3.2	Computer System		
	Make	Reputed brand such as HP/Compaq/Dell	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-24			
Equipment Name: High Performance Liquid Chromatograph (HPLC)			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Processor	Intel Core i7 (3 rd Generation) processor	
	RAM	4 GB DDR RAM (upgradeable to 8 GB DDR RAM)	
	HDD	500 GB SATA	
	Monitor	21" TFT-LCD Flat Colour (Digital)	
	DVD Writer	DVD- Multi-drive	
	Ports	2 Serial, 1 parallel and 2 USB front 3 Rear USB 2 Port, 1VGA 4 bays (2 external & internal) with LAN 1PS, 2 mouse port	
	Key board	Latest multimedia (HP / Microsoft)	
	Mouse	Optical mouse with pad	
	Ethernet	32 bit auto selectable 10/100 MBPS	
	Graphics	Internet ready with integrated Graphics	
	Sound	Integrated sound card and inbuilt stereo speakers	
	Printer	HP LaserJet Printer 1200 x 1200 dpi 12 PPM black	
3.3	Softwares	Pre-loaded Windows XP or Windows 7 Professional operating system with Licensed CD	
		MS Office 2010 Professional with media, manual and Licensed CD	
		Preloaded Norton Antivirus with latest version of 3 years lifetime along with Licensed CD	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-24			
Equipment Name: High Performance Liquid Chromatograph (HPLC)			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
4.0	ADDITIONAL ITEMS		
	Application Notes	Application Notes (CD-ROM) for HPLC Analysis of organo-chlorine pesticides, herbicide, 2-4-D and its derivatives, PAH'S, Phenols, Phthalate Esters, Poly-acrylic acid and carbonyl compounds.	
	Operation & Maintenance Manual	Operation & Maintenance Manual	
	Dust cover	Dust cover	
	Spares and consumables	Spares and consumables for two years of operation for each of the following sub-system: <ul style="list-style-type: none"> • Pumping system • Injector • Column oven • Detectors – including D2 lamp (2 nos.); Halogen lamp (2 nos.); Xenias lamp (1 no.); check valves (2 sets); seal for injectors (5 nos.) 	
	Analytical manual	Analytical manual alongwith application notes for the analysis of PAH compounds, pesticides and phenols.	
	Service manual	Service manual	
	Starting kit	Starting kit with one set of required tools for each system/unit	
	Spare Parts catalogue	Spare Parts catalogue	
	Trouble shooting charts	Trouble shooting charts	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-24			
Equipment Name: High Performance Liquid Chromatograph (HPLC)			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Methodology package software	Comprehensive EPA methodology package software (CD-ROM) for environmental application	
	Micro syringe	Micro syringe (two each) of 2 µl, 5 µl, 10 µl, 25 µl capacity	
	Sample filtration cartridges	Sample filtration cartridges for reverse phase analysis (150 cartridge), normal phase analysis (150 cartridge)	
	Membrane Filters	Millipore membrane filter for organic and inorganic solvents with dia as per filter holder size alongwith pre filter.	
5.0	OPERATION & MAINTENANCE TRAINING COMPONENT	Two weeks training to two scientists on operation, maintenance and trouble shooting aspect of the instrument at manufacturers facility/application laboratory in India.	
6.0	GENERAL CONDITIONS OF SUPPLY	<ol style="list-style-type: none"> 1. The instrument and all its sub units should operate on 230 ± 10 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 atleast 2 years as on the date of bid 	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-24			
Equipment Name: High Performance Liquid Chromatograph (HPLC)			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		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 – atleast 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. Comprehensive warranty with spares for 3 years from the date of installation of the instrument should be covered.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF HIGH PRECISION PRESSURE CUM VACUUM GAUGE (ANALOG) (MASTER GAUGE)

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-25			
Equipment Name: High Precision Pressure Cum Vacuum Gauge (Analog) (Master Gauge)			
Quantity: 8 (Eight) sets			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Resolution/Least count	0.005 bar	
2.0	Accuracy	0.1% of full scale	
3.0	Bourden tube	Beryllium copper alloy	
4.0	Socket material	316, LSS (Low carbon stainless steel)	
5.0	Case	Aluminum black painted	
6.0	Dial	Aluminum green with black markings and anti-parallax	
7.0	Dial Diameter	10" (250 mm)	
8.0	Range	-1.0 bar to 1.5 bar	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF INDIVIDUAL VOC ANALYSER

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-26			
Equipment Name: Individual VOC Analyser			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	General	Portable (hand-held) battery operated Total Volatile Organic Compound Monitor for direct assessment / monitoring of fugitive / source emissions with calibration gas and dilution probe.	
2.0	Accuracy	± 5% of reading or ± 1ppm, whichever is greater	
3.0	Precision	One percent of calibration (calibrated with 100 ppm isobutylene).	
4.0	Lower Detection Limit	1.0 ppm as isobutylene or better	
5.0	Resolution	0.1 ppm	
6.0	Drift	Zero gas: < 0.1 ppm (as isobutylene) over 24 hours. Span gas : For 100 ppm isobutylene, < 3 % over 24 hours	
7.0	Operating Concentration Range	0 – 1000ppm /10,000 ppm	
8.0	Response Factor/ Response Time	< 10 sec for most compounds to 90% of final reading ,using isobutylene cal. Gas/ < 5 sec.	
9.0	PID Lamp	10.6 eV (life span > 6000 hrs)	
10.0	Batteries	Rechargeable, Intrinsically safe, Minimum 8 hours operation capacity	
11.0	Dilution Probe	With suitable length to monitor stack emissions (1–2m)	
12.0	Materials in sample stream	Stainless steel, teflon, polypropylene, butadiene rubber, nickel	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-26			
Equipment Name: Individual VOC Analyser			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
13.0	Pump Flow Rate	0.3 – 0.6 L/ min with low flow alarm, auto shut off at low flow conditions	
14.0	Inlet filter	Replaceable Teflon/Polypropylene, 1 µm	
15.0	Operating Temperature Range	0 – 40°C	
16.0	Operating Humidity Range	0 – 95% relative humidity (non-condensing)	
17.0	Data Output	Serial Output – RS232 for downloading of data to window-based PC	
18.0	Data Display, Alarms, Storage & Software	Digital Direct read-out of VOC concentration by volume, average, high and low values, Fault, TWA and STEL alarms with auto storage of monitor serial number, user ID, site ID, date and time	
		Data storage of approx. 15000 data points or more with software capability of processing data in various averaging time (1, 2, 4, 8, 12, 24 hrs) in the form of min. max. average & std. deviation etc. in excel format.	
19.0	Calibration	Calibration of Zero and standard reference gas, calibration memory of >5 calibration (spell) gases, alarm limits and calibration date	
20.0	Calibration Gas Certification	± 2%	
21.0	Power	230 ± 10V, 50 / 60 Hz AC	
22.0	Accessories		
	Calibration Gas Concentration (certified & traceability certificate)	Two calibration gas cylinders with 100 ppm, 2000 ppm of isobutylene in Nitrogen, 34 L in volume (NIST traceable)	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZO's)			
Code Number: ICB-26			
Equipment Name: Individual VOC Analyser			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Tedlar Bags	3 & 5L capacity – 50 Nos.	
	Spare PID lamps	10.6 eV (life span > 6000 hrs) & 11.7 eV (life span ≈140 hrs) one each	
	Battery pack	1 additional rechargeable battery pack with each unit	
	Operation & maintenance Manuals	1 set	
	Toolkit	1 set	
	Carrying case	One	
	Consumables /Spares	Should include required consumables / spares for two years of trouble free operation.	
23.0	Installation, Onsite Training & Warranty	Satisfactory Installation & hands on training to concerned officials and three years comprehensive warranty.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF INDUCTIVELY COUPLED PLASMA (ICP) SPECTROPHOTOMETER

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-27			
Equipment Name: Inductively Coupled Plasma (ICP) Spectrophotometer			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	INSTRUMENT COMPOSITION		
	RF System	One unit	
	Nebulizer & Spray Chamber	One unit	
	Peristaltic Pump	One unit	
	Plasma Torch	One unit	
	Mass Spectrometer	One unit	
	Auto Sampler / Diluter	One unit	
	Data Work Station	One unit	
2.0	TECHNICAL SPECIFICATION		
2.1	System Application	Computer controlled fully automatic, data workstation based, ICP-MS System	
		Sub-ppt analysis, simultaneous multi-elemental analysis with exceptional sensitivity and stability of diverse range of environmental, biological, geological and industrial samples.	
2.2	System Operation	Computer Controlled Solid State RF Generator, without any consumable parts.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-27			
Equipment Name: Inductively Coupled Plasma (ICP) Spectrophotometer			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		Auto start from Switch or computer keyboard	
		Automatic detector system controlled by Multitasking Windows based operating software with built-in diagnostics	
		High-speed data acquisition system, quality control protocols, calibration, auto optimization and auto tuning of system with status display	
2.3	RF System	Solid State, auto start RF generator (27 MHz or more), without any consumable parts.	
	Wattage	Computer controlled from 750 Watt to 1500 Watt in 1 watt increment with auto tuning.	
	Power Efficiency	Greater than 75% with < 0.1% variation in output power stability. Should provide high efficiency, superior performance for elements such as As, Se and Hg.	
2.4	Sample Introduction System	Corrosion resistant to various acids and Aqua Regia. Capillary nozzle tip with guaranteed flow rate of fine aerosol mist and controlled sample uptake flow	
2.5	Micro flow Nebulizer	Ultrasonic nebulizer	
2.6	Spray Chamber	Corrosion resistant to most acids including Hydrofluoric acid and Aqua-Regia	
	Location	Glass cyclonic spray chamber should be located in a thermally controlled area	
2.7	Plasma Torch	Easily demountable Quartz Torch for plasma. The. Computer	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-27			
Equipment Name: Inductively Coupled Plasma (ICP) Spectrophotometer			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		controlled plasma torch adjustment/alignment for optimal analytical positioning relative to ion sampler interface.	
	Torch design	Several multiple loops of an induction coil with three concentric tubes. Central tube to inject sample aerosol and carrier gas introduction, middle tube for plasma gas (argon) and outermost tube for Auxiliary gas	
	Corrosion Resistance	Torch should be full corrosion resistant to all acids including Aqua-Regia	
	Torch Adjustment	Computer controlled plasma torch adjustment / alignment for optimal analytical positioning relative to ion sample interface	
	Neutral Plasma	Capable to produce electrically neutral plasma fully controllable through PC	
2.8	Plasma Gas Control	Computer Controlled Plasma Gas (Argon) flow controlled by Mass Flow Controller	
	Range	Range 0-20 LPM in 1 LPM increment	
2.9	Safety Interlock	Monitoring and display the shear gas pressure, plasma gas pressure, sample compartment door closure, water flow, plasma stability, interlock status.	
	Automation	Automatic shutdown of plasma, in case any of the features is interrupted.	
2.10	Plasma Ignition	Computer controlled Plasma ignition. Software should have capability to ignite Plasma automatically at user determined time to warm up the system prior to analysis.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-27			
Equipment Name: Inductively Coupled Plasma (ICP) Spectrophotometer			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Power Control	Automatic turn off of plasma after analysis.	
2.11	Cooling System	Water re-circulating cooling system with appropriate flow & pressure and temperature between 15 to 25 °C.	
2.12	Peristaltic Pump	Computer controlled, multi channel (3-4) pumps.	
	Speed	0.2 to 5.0 mL/min in 0.1 ml/min increments, precise computer controlled pumping of the sample	
	Pump operation	Should be auto-fast for rapid rinse out, washout and analysis time	
	Location	Located close to spray chamber for faster rise.	
3.0	MASS SPECTROMETER	High Resolution Magnetic	
3.1	Detector	Solid state dual stage dynode discrete over 8 orders of magnitude with count response range of 2×10^6 (low resolution) to 2×10^4 (high resolution) cps / ppb.	
		Should be unique log amplifier circuit, features a high speed analog mode for transient signals and a true nine orders dynamic range.	
		Minimum dwell time 100 μ s (in both pulse count and analog modes)	
3.2	Dynamic Range	Complete periodic table inclusive of all isotopes, dynode electron multiplier detector or equivalent.	
		Capable of analysis of all measurable elements including of high ionization potential in a single run including As, Hg, Sb, Bi, Se elements in upto ppt level.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-27			
Equipment Name: Inductively Coupled Plasma (ICP) Spectrophotometer			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
3.3	Vacuum system	Air cooled turbo molecular pump having capacity of producing 1×10^{-5} torr or less pressure in analyzer.	
3.4	Quadrupole	Quadrupole system should have 3.0 MHz or more quad resolution, best resolution and mass accuracy. Made of gold coated ceramic for a very low coefficient of thermal expansion.	
3.5	Mass Calibration stability	Better than 0.05 amu/day.	
3.6	Nebulizer	Cross flow.	
3.7	Mass Range	2 – 260 amu or better.	
3.8	Detection Limit (ng/l)	9 Be <9.0; 40 Ca <5; 56 Fe <1; 59 Co <2.0; 115 In <0.5	
3.9	Sensitivity	Should be capable to quantify from ppt to high ppm without dilution. 24 Mg >10 m cps / mg/l; 115 In >40 m cps / mg/l; 238.	
4.0	ION EXTRACTION	Ion extraction from plasma through two cone (sampler and shimmer) type interface, sampling cone orifice diameter shall be 0.8 mm or greater.	
4.1	Cone Tip	Standard sampling cone tip and sharpener cone tip of Nickel. Additional 2 Nos. Ni sampling cone and skimmer cone and 2 Nos. platinum sampling cone and skimmer cone. Shimmer cone servicing shall be without the need of venting the high vacuum portion of spectrometer use. Should specify the life of sampler cone / shimmer cone with cone HNO ₃	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-27			
Equipment Name: Inductively Coupled Plasma (ICP) Spectrophotometer			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
4.2	Stability	Long term stability <4% RSD for >2-4 Hrs for 24 Mg 63Ca, 114 Cd; 208 Pb.	
		Short term stability <4% RSD for 24 Mg; 63 Cu; 114 Cd; 208 Pb.	
4.3	Background Signal	Less than 5 cps for mass 220	
4.4	Abundance sensitivity	Low mass <5.0 x 10 ⁻⁷ – high mass <1 x 10 ⁻⁷	
4.5	Ion Beam Detection	Dual stage discrete dynode electron multiplier with a count response range of 2 x 10 ⁹ cps / sec.	
4.6	High TDS capability	Should be able to perform direct analysis of 1% solids or greater without dilution. The direct analysis must also be automatically tuned for robustness depending on solid content via integrated software.	
5.0	WATER CHILLER	Efficient thermal management, noise free, re-circulating heat exchange water chiller of reputed make.	
6.0	HYDRIDE GENERATION ASSEMBLY	Compatible hydride generation assembly for ultra trace analysis of Hydride forming metallic elements such as As, Se, Te, Hg etc.	
7.0	AUTO SAMPLER/DILUTER	Highly effective Auto sampler/Diluter compatible with operation along with ICP-MS without user intervention.	
	Capacity	Auto sampler with 150 or more tubes holder space and cover with 500 nos. 15 ml capacity tubes.	
	Programming facility	Programmable complete with inert PTFE coated probe with PTFE inner tubing	
	Extension tube	Spare extension tube complete with 20 ml syringe for programmed auto dilution	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-27			
Equipment Name: Inductively Coupled Plasma (ICP) Spectrophotometer			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Auto Sampler Accessories	Complete with all accessories, racks, bottles, tubing assembly, dust cover etc.	
8.0	DATA WORK STATION		
8.1	Application Software (Features)	Programme facility with multitasking software displaying method sample and analysis status.	
		Instrument control reintegration/report, multi level calibration, automatic data acquisition and processing.	
		Calculation of data and report formatting.	
		External and dilution calibration, automatic correction for interferences and measurement with internal standards.	
		Measurement of transient signals, self diagnosis, remote diagnostics and LAN connectivity.	
		Quality control protocols including preparation blanks, multiple quality control standards, calibration, check samples, spike recoveries, duplicates calibration failure and QC limits.	
		Storage of complete spectrum of elements for future reference.	
		Provision for statistical analysis, printer/plotter function and battery backup for memory protection.	
		Linear least squares – weighted linear least squares, linear forced through zero least squares.	
		Standard additions methods, addition calibration.	
		Real time graphics with ability to display transient and continuous signal profile.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-27			
Equipment Name: Inductively Coupled Plasma (ICP) Spectrophotometer			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		Should control whole ICP system sample introduction, calibration, quantitative analysis, data retrieval data acquisition and reporting.	
		Auto optimization of plasma parameter customizable instrument status display software control of MS and other accessories.	
8.2	Computer System	Two Nos. (with similar technical specifications as below) - One online and additional for offline analysis.	
	Make	Reputed brand such as HP/Compaq/Dell	
	Processor	Intel Core i7 (3 rd Generation) processor	
	RAM	4 GB DDR RAM (upgradeable to 8 GB DDR RAM)	
	HDD	500 GB SATA	
	Monitor	21" TFT-LCD Flat Colour (Digital)	
	DVD Writer	DVD- Multi-drive	
	Ports	2 Serial, 1 parallel and 2 USB front 3 Rear USB 2 Port, 1VGA 4 bays (2 external & internal) with LAN 1PS, 2 mouse port	
	Key board	Latest multimedia (HP / Microsoft)	
	Mouse	Optical mouse with pad.	
	Ethernet	32 bit auto selectable 10/100 MBPS.	
	Graphics	Internet ready with integrated Graphics.	
	Sound	Integrated sound card and inbuilt stereo speakers.	
	Printer	HP LaserJet Printer 1200 x 1200 dpi 12 PPM black.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-27			
Equipment Name: Inductively Coupled Plasma (ICP) Spectrophotometer			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
8.3	Softwares	Pre-loaded Windows XP Professional or Windows 7 Professional operating system with Licensed CD compatible with operational software	
		MS Office 2010 Professional with media, manual and Licensed CD compatible with operational software.	
		Preloaded Norton Antivirus with latest version of 3 years lifetime along with Licensed CD	
9.0	ADDITIONAL ITEMS		
9.1	Reference Standards	Multi elemental calibration standards having at least 23 elements should be supplied in 100 ppm range – 5 Nos.	
9.2	Manual	Operation and maintenance manual for each unit.	
9.3	Application notes	Application notes (CD-ROM) for elemental analysis in environmental, geological, metallurgical, biological and industrial samples.	
9.4	Methodology package	Comprehensive EPA methodology package software (CD-ROM) for environmental application.	
9.5	Service manual	Service manual with set of required tools for each system/unit.	
9.6	Spare parts catalogue	One set	
9.7	Trouble shooting charts	Trouble shooting charts of all sub units.	
9.8	Dust cover	Dust cover for all sub units.	
9.9	Operation kit	Operation kit comprising all required items pump tubings, transfer tubings, work coils etc. for start up/regular operation of instrument.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-27			
Equipment Name: Inductively Coupled Plasma (ICP) Spectrophotometer			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
9.10	Consumables	Consumables for three years operation of the system for main ICP unit, spare torches, nebulizer, tunings, moisture trap are required to be quoted.	
10.0	LOCAL SUPPLIES		
10.1	Stainless steel Hood and Duct	Corrosion resistant stainless steel hood and duct for exhausting of acidic fumes. May be quoted per meter basis.	
10.2	Pressure Regulator	Corrosion resistant / stainless steel two stage Argon and Nitrogen gas regulators with max cylinders pressure 4000 psi / 280 kg /cm ² and line pressure 230 psi / 16 kg/cm.	
10.3	Argon and Nitrogen gas cylinders	Four Argon and two Nitrogen gas cylinders. High pressure seamless steel cylinder filled with High purity 99.999% Argon gas, and another Nitrogen gas with having gas capacity 7m ³ water capacity 47 litres, cylinders should be ISI marked, conforming to IS:7285. Specification, flat bottom fitted with valve as per IS:3224, complete with neck ring and cap, painted as specified under Gas Cylinders Rules, 1981 along with Hydraulic test certificate, ISI Inspection / Test certificate, Explosive certificate from Chief Controller of Explosives, Nagpur India as per BIS Standard with 47 liter cylinder: Argon – Four cylinder filled Nitrogen – Two cylinder filled	
10.4	Air Compressor	Air compressor with auto-cut device max. pressure upto 160 psi or 11 bar.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-27			
Equipment Name: Inductively Coupled Plasma (ICP) Spectrophotometer			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
11.0	OPERATION AND MAINTENANCE TRAINING COMPONENT	One-site comprehensive training for scientific personnel operating the system and support services till customer satisfaction with the system followed by complimentary (all expenditure inclusive) two weeks comprehensive training to two Scientists on operation and maintenance aspect of the instrument at manufacturer's laboratory abroad.	
12.0	WARRANTY	Comprehensive warranty with spares for 3 years from the date of installation of the instrument should be covered. The AMC charges to be mentioned for next two years after warranty is over.	
13.0	GENERAL CONDITIONS OF SUPPLY	<ol style="list-style-type: none"> 1. The instrument and all its sub units should operate on 230 ± 10 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 atleast 2 years as on the date of bid opening. 	9.

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-27			
Equipment Name: Inductively Coupled Plasma (ICP) Spectrophotometer			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		<p>6. The bidder should furnish the information (Address, Telephone Nos. & E-Mail) on past supplies made during last 5 years and their satisfactory performance.</p> <p>7. Bidders shall invariably furnish documentary evidence (client's certificate – atleast two) in support of the satisfactory operation of the equipment as specified above.</p> <p>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.</p>	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF ISOKINETIC STACK SAMPLING ASSEMBLY (STACK MONITORING KIT SUITABLE FOR EPA METHODS 5, 23A, 26A, 29 ETC.)

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-28			
Equipment Name: Isokinetic Stack Sampling Assembly (Stack Monitoring Kit Suitable For EPA Methods 5, 23A, 26A, 29 etc.)			
Quantity: 6 (Six) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Description	Isokinetic Stack Sampling Assembly to carry out isokinetic stacks sampling in accordance with USEPA test methods 5, 23A, 26A and 29 (Emissions sampling for particulate phase & Gas phase, dioxins/furans, Halides and metals from industrial emission sources).	
2.0	Isokinetic Source Sampling Control Panel (One set)	Calibrated Direct Reading Metric Unit Dry Gas Meter, 10 Liter per Revolution, 0.1 Liter Resolution. Calibrated to 1.0 ± 0.05 , Deviation from average less than 2%.	
		Dual Inclined Manometer, 254 mm Vertical Scale, 25.4 mm Incline, 0.1 mm Incline Resolution, Positive Brass Shutoff Valves for Transport. Data display in metric unit.	
		Individual Programmable, Digital Solid-State Temperature Controllers for Probe and Filter Oven Circuits	
		LED Temperature Readout for K-Type Thermocouple with 7-Station Selector Switch, -105°C to 1,372°C to Range	
		Auxiliary Thermocouple Jack for Handheld Temperature Readout	
		Power, Pump, Timer, Null Solenoids and Orsat Pump Switch Controls	
		Individually Fused Circuitry Located on Easily Accessible Fuse Panel	
		4-pin military style amphenol power distribution connector meets AN-3057-6 specifications	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-28			
Equipment Name: Isokinetic Stack Sampling Assembly (Stack Monitoring Kit Suitable For EPA Methods 5, 23A, 26A, 29 etc.)			
Quantity: 6 (Six) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		Resettable Elapsed Digital Timer	
		Modular Electrical and Plumbing Panels	
		Fully Removable Front and Rear Access Doors	
		Lightweight portable	
		230 ± 10 V AC / 50Hz Power supply operated with electronic plug	
		Stainless Steel Valves and Quick Connects	
		Complete Orsat Option Assembly: Orsat Pump, Rotameter, Valve and Quick Connects	
		Leak free Quick connections for gas, pressure and vacuum lines	
		Lockable transport case with soft foam	
3.0	Vacuum Pump Assembly (One set)	Fully Enclosed Rotary Vane Vacuum Pump or equivalent	
		Leak Free Vacuum Pump, 1/4HP, 88LPM @ 2.5 cm Hg, 57 LPM @ 38 cm Hg, 66 cm Hg Maximum Vacuum	
		Equipped with 2 m Vacuum Hoses and Nonreversible Stainless Steel Quick Connects to Eliminate the Possibility of Cross Connection	
		230 ± 10 V AC/50Hz power supply operated	
		Lockable transport case with soft foam inner.	
4.0	Description		
5.0	Long Umbilical Cable with Quick Connects (One Set)	30 meter in length	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-28			
Equipment Name: Isokinetic Stack Sampling Assembly (Stack Monitoring Kit Suitable For EPA Methods 5, 23A, 26A, 29 etc.)			
Quantity: 6 (Six) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		Flexible Construction with Expandable Abrasion Resistant Low Friction Over braid Jacket	
		One High Vacuum Sample Line (300 psi) with appropriate Quick Connect Couplings, Three Pressure Lines, Two for Pitots with appropriate Quick Connect Couplings and One for Orsat Line with appropriate Quick Connect Coupling	
6.0	Type K Thermocouple Lines (Five Nos.)	One 5-conductor electrical cable with 4-pin amphenol connector or equivalent	
		One full length stranded nylon strain relief cable	
7.0	Short Umbilical Cable with Quick Connects (One set)	10 meter +/- 3 meters in length	
		Flexible Construction with Expandable Abrasion Resistant Low Friction Overbraid Jacket	
		One High Vacuum Sample Line (300 psi) with appropriate Quick Connect Couplings, Three Pressure Lines, Two for Pitots with appropriate Quick Connect Couplings and One for Orsat Line with appropriate Quick Connect Coupling	
		(5) Type K Thermocouple Lines	
		One 5-conductor electrical cable with 4-pin amphenol connector or equivalent	
		One full length stranded nylon strain relief cable	
8.0	Set of Isokinetic Sampling Nozzles (One set)	7 Sizes from #4 (1/8") to #16 (1/2") packed in a Foam Lined Case	
		One set each of Stainless Steel and Glass Nozzle Set, includes 5/8 "	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-28			
Equipment Name: Isokinetic Stack Sampling Assembly (Stack Monitoring Kit Suitable For EPA Methods 5, 23A, 26A, 29 etc.)			
Quantity: 6 (Six) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		Stainless Steel nuts and ferrules(both steel and Teflon)	
9.0	Short Sample Probe/S-Type Pitot Tube/Thermocouple Assembly (One set)	316 Stainless Steel welded construction - 1 meter effective length – 1 No.	
		Stainless steel Type S Pitot Tube manufactured according to the design specifications and dimensional requirements stated in USEPA Method 2	
		K-type thermocouple assembly attached	
		Orsat sample tube attached	
		Pyrex glass liner with #28 ball with O-ring	
		Removable probe liner heater compatible with 220VAC/50Hz Power	
		Heated probe shall be able to attain maximum temperature of 200 °C.	
		Cyclone for PM ₁₀ cut shall be provided with necessary accessories and joints	
10.0	Long Sample Probe/S-Type Pitot Tube/Thermocouple Assembly (One set)	316 Stainless Steel welded construction - 2 meter effective length (One No.)	
		Stainless steel Type S Pitot Tube manufactured according to the design specifications and dimensional requirements stated in USEPA Method 2	
		K-type thermocouple assembly attached	
		Orsat sample tube attached	
		Pyrex glass liner with #28 ball with O-ring fitted under the probe	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-28			
Equipment Name: Isokinetic Stack Sampling Assembly (Stack Monitoring Kit Suitable For EPA Methods 5, 23A, 26A, 29 etc.)			
Quantity: 6 (Six) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		Removable probe liner heater compatible with 230 ± 10 V AC/50Hz Power supply	
11.0	Heated Box Assembly	Heated box assembly. One set modular heated box assembly to hold the filter outside the stack	
		Proper heating system capable to heat the box up to 200 ° C.	
		Fitted with temp. sensor to continuously monitor the temperature.	
12.0	Ball Joint with O-Ring Glassware Sets and Transport Cases (4 Sets)	Four complete trains of glassware including filter assemblies, Impinger bottles with stems, associated connecting glassware and impinger clamps for conducting isokinetic sampling in accordance with EPA Method 5	
		Glassware is Heavy Wall Borosilicate Glass with Precision Ground #28 Ball with O-Ring and Sockets Connections, Leak-Free Seal with or without O-Rings Lockable transport cases with soft foam to accommodate glassware for Shipping	
13.0	Cold Boxes For Impingers (2 sets)	Impinger box insulated and water proof and hold 6 to 8 impingers	
		Has stout handle with centering loop and mounting locations for the aluminum slide block on opposing sides for the impinger inlet strain relief and impinger outlet adapter	
14.0	Umbilical Adaptors (2 sets)	316 Stainless steel construction equipped with #28 socket, compatible thermocouple, appropriate male quick-connect and support arm that inserts in the impinger box slide bracket	
15.0	Suspension Rail Systems (2 sets)	Suspension Rail systems constructed of 16 gauge galvanized steel and 3 meters in length to support the modular sample case and other	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-28			
Equipment Name: Isokinetic Stack Sampling Assembly (Stack Monitoring Kit Suitable For EPA Methods 5, 23A, 26A, 29 etc.)			
Quantity: 6 (Six) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		trains with adjustable hangers to allow safe alignment and maneuvering of the probe into the port	
		Includes a dual roller trolley for each rail, snap hooks for quick set-up and dismantling	
16.0	Cleanup and Recovery Kit (2 sets)	The kit include following items	
		Glass Funnel	
		Polypropylene Funnel	
		All Teflon ½" probe brush	
		¼ in Teflon Probe brush Extension with 3/8 " coupler – 4 meter length	
		1-Liter Polypropylene Wash Bottles - 2 Nos.	
		500 mL TFE Wash Bottle - 2 Nos.	
		Nylon Nozzle Brush Set: ½ " , 3/16", 5/16" sizes – One set	
		Teflon-coated Tweezers	
		Portable balance, 1-2000g with 0.5 g resolution	
		Programmed calculator for field calculation.	
17.0	Equipment Calibration Kit (1 set)	1 Set of critical orifices for routine dry gas meter/orifice calibration	
		1 set of digital calipers for measuring nozzle diameters.	
18.0	Other Requirement	All necessary accessories in accordance with the methods 5, 23A, 26A and 29 have to be supplied (as example submersible pump for cooling in method 23).	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-28			
Equipment Name: Isokinetic Stack Sampling Assembly (Stack Monitoring Kit Suitable For EPA Methods 5, 23A, 26A, 29 etc.)			
Quantity: 6 (Six) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		All the components like Manometer, Pitot tube, DGM, Thermocouple, Sets of Nozzel etc, should be supplied with calibration certificate traceable with National/International agency.	
		A digital calibrated Anneroid barometer (with certificate) should be supplied along with the kit.	
		The supply shall include all the spares and consumables required for at least 3 years of hassle free operation.	
		The system should be under warranty for at least 3 years	
19.0	WARRANTY	Comprehensive warranty with spares for 3 years from the date of installation of the instrument should be covered. The AMC charges to be mentioned for next two years after warranty is over.	
20.0	GENERAL CONDITIONS OF SUPPLY	<ol style="list-style-type: none"> 1. The instrument and all its sub units should operate on 230 ± 10 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 	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-28			
Equipment Name: Isokinetic Stack Sampling Assembly (Stack Monitoring Kit Suitable For EPA Methods 5, 23A, 26A, 29 etc.)			
Quantity: 6 (Six) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		<p>the type specified in the past five years, which shall be in successful operation for atleast 2 years as on the date of bid opening.</p> <p>6. The bidder should furnish the information (Address, Telephone Nos. & E-Mail) on past supplies made during last 5 years and their satisfactory performance.</p> <p>7. Bidders shall invariably furnish documentary evidence (client's certificate – atleast two) in support of the satisfactory operation of the equipment as specified above.</p> <p>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.</p>	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF ION CHROMATOGRAPH FOR WATER ANALYSIS

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZO)s			
Code Number: ICB-29			
Equipment Name: Ion Chromatograph for Water Analysis			
Quantity: 4 (Four) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Instrument Composition		
	Ion Chromatograph with High Pressure Gradient Pump	One set of two pumps	
	Autosampler System	One set	
	Injectors	Two sets	
	Detectors	Two sets	
2.0	Technical Specification		
	System type	Computer controlled, modular system made of non-metallic, preferably inert material like PEEK (polyetheretherketone), impact resistant and corrosion resistant.	
	System application	For reliable, precise and specific measurement of anions and cations in extracted air particulate samples and water samples.	
	System configuration	System should use solvent delivery system, self-regenerating suppressor system for both anions and cations	
	Power failure memory protection	Power failure memory protection.	
	Self testing diagnostics	Built in diagnostics for self-testing	
	Data acquisition	Data acquisition and system control through software.	
2.1	Injector	Manual injection port or user selectable injection loop. Internal pump for continuous automatic sampling and analysis.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-29			
Equipment Name: Ion Chromatograph for Water Analysis			
Quantity: 4 (Four) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
2.2	Flow system	Computer controlled Binary gradient (two pump) system with pulse dampener and high pressure mixing.	
	Flow pump	Dual piston pump	
	Display	Digital and screen display of pressure and flow rate	
	Flow rate	0.1 to 5.0 ml/min	
	Flow rate accuracy	± 2% of set value	
	Flow rate precision	± 0.1%	
	Pressure Range	0 - 5000 psi	
	Pressure fluctuation	± 0.5% of set value	
	Liquid contact material	Liquid contact material should be non interfering type preferably inert with 10 µm porosity ceramic suction filler	
	Safety feature	Safety features such as leak sensor with signal	
	Accessories	With maintenance kit, reservoir tray, degasser and automatic rinsing kit	
2.3	Suppressor system	Proper facilities for suppression of conductance signal for eluent used for both cations and anions with auto suppression support.	
	Stability	High sensitivity and excellent baseline stability.	
	Flush	Regeneration and flushed alternatively and automatically.	
	Switching	Switching should be effected simultaneously with injection of sample.	
	Regeneration	Effective and suitable regeneration facilities for both anions & cations.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-29			
Equipment Name: Ion Chromatograph for Water Analysis			
Quantity: 4 (Four) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Suppression Failure Signal	Percentage of peak broadening should be indicated with the status of suppressor column.	
2.4	Detector	Built in conductivity detector with cell temperature stabilization (Thermostated programmable cell) for ppb level analysis	
	Operating temp. range	10 to 45 °C	
	Temperature stability	± 0.01 °C	
	Range	0 to 15000 µS (Full scale) Auto ranging or with 0 to 100, 200, 500, 1000, 5000 µS/cm ranges	
	Accuracy	± 5% of full scale	
	Noise (electronic)	≤ 0.003% of selected range	
	Temperature drift	Should be negligible	
	Electronic drift	≤0.0015% of selected range/h/ °C	
	Zero adjustment	Automatic with auto zero facility	
	Cell volume	2.0 µl or less	
	Cell constant	10 – 20 user adjustable	
	Display	Digital display for set status and output	
	Diagnostic test	Option for both self diagnostic test and user diagnostic test	
2.5	Autosampler System		
	Injection volume	1 to 250 µl	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-29			
Equipment Name: Ion Chromatograph for Water Analysis			
Quantity: 4 (Four) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Injection mode	Sequential / Programmable (both) with LCD display	
	No. of sample vials	25 or more	
	Sample vial size	2 to 5 ml or more	
2.6	Columns (For Anions and Cations)	Two columns for cation analysis and two columns for anions analysis. Each column should be provided with its compatible guard column	
	Temperature range	5 to 80 °C	
	Back pressure	250 bar	
	Column Dimension	Suitable to be accommodated inside the chromatography enclosure	
	Column fittings and tubing	Appropriate in sizes and length as per application	
2.7	Chromatography Enclosures	For housing of injector, suppressor unit, column unit and detector unit in an electrically and thermally insulated manner	
	Ambient temperature range	10 to 45 °C	
	Operating temperature range	10 to 45 °C	
	Insulation	99.99% for heat and electricity	
	Suppressor	Should have high loading and high back pressure tolerance with continuous regeneration.	
3.0	Data Work Station		
3.1	Application Software Control	Multitasking software displaying method sample and analysis status, instrument control, reintegration/report multi level calibration	
		Calculation of data and report formatting	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-29			
Equipment Name: Ion Chromatograph for Water Analysis			
Quantity: 4 (Four) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		Automatic correction of interferences and measurement with standards	
		Comprehensive quality control protocols including blank, multiple quality control standards, calibration, calibration failure with QA/QC audit trails.	
		Provision for statistical analysis, printer / plotter function and battery backup for memory protection.	
		System suitability, system security and system check functions such as calibration, quantitative analysis	
		Data retrieval, data acquisition and customizable instrument status display.	
		Extractable data format and direct conversion to Excel spreadsheet through macro	
3.2	Computer System		
	Make	Reputed brand such as HP/Compaq/Dell	
	Processor	Intel Core i7 (3 rd Generation) processor	
	RAM	4 GB DDR RAM (upgradeable to 8 GB DDR RAM)	
	HDD	500 GB SATA	
	Monitor	21" TFT-LCD Flat Colour (Digital)	
	DVD Writer	DVD- Multi-drive	
	Ports	2 Serial, 1 parallel and 2 USB front 3 Rear USB 2 Port, 1VGA 4 bays (2 external & internal) with LAN 1PS, 2 mouse port	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-29			
Equipment Name: Ion Chromatograph for Water Analysis			
Quantity: 4 (Four) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Key board	Latest multimedia (HP / Microsoft)	
	Mouse	Optical mouse with pad	
	Ethernet	32 bit auto selectable 10/100 MBPS	
	Graphics	Internet ready with integrated Graphics	
	Sound	Integrated sound card and inbuilt stereo speakers	
	Printer	HP LaserJet Printer 1200 x 1200 dpi 12 PPM black	
3.3	Softwares	Pre-loaded Windows XP Professional or Windows 7 Professional operating system with Licensed CD	
		MS Office 2010 Professional with media, manual and Licensed CD	
		Preloaded Norton Antivirus with latest version of 3 years lifetime along with Licensed CD	
4.0	Auto Dilution and Calibration	In built multi level calibration using single calibration standard. Auto dilution system should be automatic, programmable, should generate various concentration of standards from single standards and sealed calibration conc.	
5.0	Filtration Assembly	Complete filtration assembly with pump 45 mm, 0.22 µ pre size filter papers (500 Nos. i.e. 5 packets), filtration flask tubings etc.	
6.0	Additional Items		
	Manufacturer's standard kit	Standard operation kit including all required items, fittings for start up / regular operation of instrument.	
	Operation and Maintenance Manual	Operation and Maintenance Manual for each unit	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZO's)			
Code Number: ICB-29			
Equipment Name: Ion Chromatograph for Water Analysis			
Quantity: 4 (Four) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Application note	Application note for anions and cations analysis in environmental, biological, geological, metallurgical and industrial samples	
	Methodology package	Comprehensive EPA methodology package software (CD-ROM) for environmental application	
	Service manual	Service manual with set of required tools for each system/unit	
	Spare parts catalogue	Spare parts catalogue	
	Trouble shooting charts	Trouble shooting charts	
	Operation kit	Operation kit including all required items, tubing, fitting for start up / regular operation of instrument	
	Spares and consumables	All spares and consumables for two years of operations should be quoted.	
7.0	Operation & Maintenance Training Component	Complimentary (all expenditure inclusive) two-four weeks training to two scientists on operation and maintenance aspect of the instrument at manufacturers facility /Application Laboratory in India.	
8.0	General Conditions of Supply	<ol style="list-style-type: none"> 1. The instrument and all its sub units should operate on 230 ± 10 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. 	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-29			
Equipment Name: Ion Chromatograph for Water Analysis			
Quantity: 4 (Four) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		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 atleast 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 – atleast 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. Comprehensive warranty with spares for 3 years from the date of installation of the instrument should be covered.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF ION ANALYSER WITH FLUORIDE, NITRATE, NITRITE, CYANIDE AND AMMONIA ELECTRODES

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-30			
Equipment Name: Ion Analyser with Fluoride, Nitrate, Nitrite, Cyanide and Ammonia Electrodes			
Quantity: 6 (Six) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Description	Should be Microprocessor controlled with RS-232-C output facility. The front panel should be splash proof, corrosion resistant and impact resistant.	
2.0	Mode	pH, Concentration, temperature, MV	
3.0	pH Range	0- 00 - 14	
	Resolution	0.001	
	Accuracy	± 0.005	
	Slope	80 - 120%	
	Calibration	Auto three to five points calibration (automatic buffer recognition)	
	Temperature Compensation	Automatic throughout the range	
4.0	Concentration Range	0.001 to 19900 ppb / ppm	
	Resolution	Atleast one significant digit	
	Accuracy	± 0.5%	
5.0	Temperature Range	- 10 to 130 °C	
	Resolution	± 0.1 °C	
	Accuracy	± 1.0 °C	
6.0	Millivolt Range	± 1500	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-30			
Equipment Name: Ion Analyser with Fluoride, Nitrate, Nitrite, Cyanide and Ammonia Electrodes			
Quantity: 6 (Six) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Resolution	0.1 mV	
	Accuracy	± 2.0 mV or ± 0.05%	
7.0	Timer	Date and time can be called up and recorded any time.	
8.0	Display	Graphic LCD display, LCD dot matrix 128 / 64 dps panel with backlight and feather touch keys.	
9.0	Ready	Indication of stable value reached	
10.0	Blank	Optional entry of blank or back ground solution. correction	
11.0	Power	9 volts line adaptor for (230 ± 10) volts/50 Hz AC.	
12.0	Requirement	In case of power failure, secure storage of all calibration and programme data.	
13.0	Input	2 BNC/DEIN, 2 pin tip/banana, ground, ATC, power, RS-232-C, printer	
14.0	Drift	<50 micro volts / °C	
15.0	Electrode	Complete electrodes sets for single junction, Double junction reference Ammonia, Fluoride, Nitrate, Nitrite, Cyanide, Chloride, Phosphate, Sulfate, Calcium & pH alongwith instruction / application sheet standard accessories including electrolytes, standard solutions (ppm) etc.	
16.0	Others	The instrument should be complete with connecting cable, 9 volts adaptor for 230 ± 10 volts AC 50 Hz power supply, dust cover, electrode stand (adjustable), operation and maintenance manual alongwith the accessories with spares and consumables for two years of trouble free operation.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF KARL FISCHER COULOMETER WITH OVEN FOR MOISTURE ANALYSIS

PART-A: COULOMETRIC

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-31			
Equipment Name: Karl Fischer Coulometer with Oven for Moisture Analysis			
Quantity: 4 (Four) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Description	Karl fisher titrator should be dedicated instrument for determining water content in the samples.	
2.0	Principle of operation	Coulometric	
		Should have large high contrast liquid crystal display showing actual status of system even during the operation sequence.	
		Methods for sample titrations and the collection of blank values should be pre-assigned to start the titration directly after installation and system should accept local Karl Fisher Reagents.	
3.0	Generator electrode	Diaphragm type	
4.0	Measuring Range	10 µg to 100 mg / 1 ppm to 5%	
5.0	Sensitivity	0.1 µg	
6.0	Accuracy/Precision	0.3% at 1 mg water	
7.0	Drift Compensation	Automatic	
8.0	Number of methods	Atleast 10	
9.0	Measuring speed	Max. 2 mg/min	
10.0	Background correction	Automatic	
11.0	Other features	GLP compliance	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZO's)			
Code Number: ICB-31			
Equipment Name: Karl Fischer Coulometer with Oven for Moisture Analysis			
Quantity: 4 (Four) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		Automatic selection of the correct calculation formula	
		Facility to connect with balance, printers and PC	
12.0	Pump specifications	Free volume flow - air-: flow rate 2.25 l / min	
		Delivery pressure max.: 1.5 bar	
		Flow rate liquid medium ca. 0.8 l / min	
		Stirring speed: 50 to 1000 U/min	
13.0	Power supply	230 ± 10 V; 50 Hz AC power Input	
14.0	Operating conditions	Ambient temperature: + 10 to + 40 °C for operation and storage	
		Humidity : EN 61 010, part 1: Compliant	
		Maximum relative humidity 0 % for temperatures up to 31 °C,	
		Linearly decreasing up to 50 % relative humidity with a temperature of 40 °C	
15.0	Accessories	One generator electrode with frit	
		One Indicator dual platinum electrode	
		KF reagents – One set	
		Water standards – One set	
		Instructions Manual - 2 Nos.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF KARL FISCHER TITRATOR FOR MOISTURE ANALYSIS

PART-B: VOLUMETRIC

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-31			
Equipment Name: Karl Fischer Coulometer with Oven for Moisture Analysis			
Quantity: 4 (Four) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Description	The Karl fisher titrator should be dedicated instrument for determining water content in the powdered samples, waste oil etc.	
2.0	Principle of operation	Volumetric	
		The Volumetric Titrator should have large high contrast liquid crystal display showing actual status of system even during the operation sequence and system should accept local Karl Fisher Reagents	
3.0	Indicator Electrode	Dual platinum electrode	
4.0	Measuring Range	100 ppm to 100%	
5.0	Drift compensation	Automatic	
6.0	Number of methods	Atleast 8	
7.0	Background correction	Automatic	
8.0	Other Features	GLP compliance	
		Automatic selection of the correct calculation formula	
		Facility to connect with balance, printers and PC	
9.0	Pump specifications	Free volume flow - air-: flow rate 2.25 l / min	
		Delivery pressure max.: 1.5 bar	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-31			
Equipment Name: Karl Fischer Coulometer with Oven for Moisture Analysis			
Quantity: 4 (Four) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		Flow rate liquid medium ca. 0.8 l / min	
		Stirring speed: 50 to 1000 U/min	
10.0	CE-Mark	EMV - compatibility according to Council Directive 89/336/EWG;	
	Generic emissions	according to norm EN 50 081, part 1	
	Generic immunity	according to EN 50 082, Part 2	
	Low voltage directive	Compliant to Council Directive 73/23/EWG, (amended by Council Directive 93/68/EWG), Test criteria EN 61 010, part 1	
11.0	Power supply	230 ± 10 V; 50 Hz AC power	
12.0	Operating conditions	Ambient temperature: + 10 to + 40 °C for operation and storage Humidity : EN 61 010, part 1: Compliant Maximum relative humidity 0 % for temperatures up to 31 °C, Linearly decreasing up to 50 % relative humidity with a temperature of 40 °C	
13.0	Accessories	Dual platinum Electrode KF reagents – One set Water standards – One set Instructions Manual - 2 Nos.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF LABORATORY GLASSWARE WASHER & DRYER

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-32			
Equipment Name: Laboratory Glassware Washer & Dryer			
Quantity: 5 (Five) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Description	Laboratory Glassware with air drying system for washing and drying of various types and sizes of laboratory glasswares	
2.0	Features	Washer to accept a variety of interchangeable standard & injection baskets.	
2.1	Electrical connection	3 phase/50hz	
2.2	Power Washer + Dryer	Max upto 8 kW	
2.3	Noise	Max upto 56 dB (A)	
2.4	Dryer blower	Upto 50m ³ / hr	
2.5	Baskets	Minimum two Baskets should be included alongwith system.	
		Lower Basket should take care of washing & drying Test tubes, Petri plate, beakers	
		Upper Basket should only be with jets	
3.0	Air Drying	Forced air drying with adjustable time & temperature setting.	
4.0	Interface	RS 232 port with printer connection for monitoring and Validating washing phases.	
5.0	Display	LCD display with minimum 40 adjustable washing programs.	
6.0	Glassware loading features	Telescopic bearing rails to enable easy and safe loading / unloading of the glassware.	
7.0	Washing injection system	Two levels.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-32			
Equipment Name: Laboratory Glassware Washer & Dryer			
Quantity: 5 (Five) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		Inner cabinet, washing arms and tank filter should be made of high quality SS 316 L stainless steel.	
8.0	Washing injection system & drying:	Atleast two levels.	
9.0	Water filtering system:	Triple water filtering system to capture residue preventing, Re-circulation and better pump life.	
10.0	Liquid dispensers	Atleast two; Automatic.	
11.0	Accessories	Accessories and consumables required for the system should be quoted.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF LIQUID CHROMATOGRAPH MASS SPECTROMETER (LC-MS)

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-33			
Equipment Name: Liquid Chromatograph Mass Spectrometer (LC-MS)			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
A.	TECHNICAL SPECIFICATIONS		
1.0	Liquid Chromatography System	One Set	
1.1	Pump	Quaternary Gradient Pump	
1.2	Flow range	0.01 to 2.00 ml / min or better with 0.001 ml increments	
1.3	Pressure Range	15000 psi or more	
1.4	Flow Accuracy	± 1% or 10 µL/min whatever is better	
1.5	Flow precision	≤ 0.075 % RSD	
1.6	Degasser	Online degasser with automatic system control	
1.7	Auto Sampler	Having a capacity of 96 positions or more with Programmable needle wash facility.	
		2 ml Capacity vials – 1000 Nos.	
		Injection volume range: 0.1-50 uL with 0.1 uL increments	
		Sample delivery precision : < 0.3% RSD	
		Sample Carry over : < 0.05%	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-33			
Equipment Name: Liquid Chromatograph Mass Spectrometer (LC-MS)			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		Column oven Temperature Range: Ambient to 80 ⁰ C	
1.8	Diode Array Detector	DAD with more than 500 diode	
		Appropriate Flow Cell (10 – 60 mm)	
		Wave length range 190 – 800 nm	
		Programmable slit	
1.9	Columns	C-18 columns with suitable guard column for EPA recommended method for analysis of following:	
		- PAH (25 cm x 4.6 mm, 5 µm) – 2 Nos.	
		- Herbicide (15 cm x 4.6 mm, 5 µm) – 2 Nos.	
		- Phenolic Compounds (25 cm x 4.6 mm, 5 µm) – 2 Nos.	
		- Carbamate (15 cm x 4.6 mm, 5 µm) – 2 Nos.	
2.0	MS Spectrometry:		
2.1	Mass Analyzer	Quadrupole (with pre-filters or Triple Quadrupole)	
2.2	Mass Range	10 to 2000 amu	
2.3	Mass Resolution	Better than unit mass resolution 1 amu or less	
2.4	Mass accuracy	0.1 amu or better	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)				
Code Number: ICB-33				
Equipment Name: Liquid Chromatograph Mass Spectrometer (LC-MS)				
Quantity: 1 (One) No.				
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)	
2.5	Dynamic range	10 ⁵ or better		
2.6	Scan speed/rate	5000 amu/sec or better		
2.7	Ionization sources	ESI source capable to handle flow rate upto 2ml/min		
2.8	Sensitivity	1 pg of Peserpine injected on Column with S/N ratio equal to or better than 1000:1		
2.9	Operating modes	Should be capable of performing Full MS scan		
2.10	Vacuum System	A fully protected air cooled vacuum system with minimum maintenance and utility requirements. Vacuum read backs and automated vent system in case of power failure.		
2.11	Detector	PMT/ EMT or other suitable detection system		
3.0	DATA STATION			
	Application Software	Multitasking software with programming facility		
	Capabilities	Accurate and Reproducible Integration		
		Reintegration / Replot		
		Baseline Correction		
		Multilevel Calibration		
		Background Subtraction		
Quantitative Analysis				

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZO)			
Code Number: ICB-33			
Equipment Name: Liquid Chromatograph Mass Spectrometer (LC-MS)			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		Customizable Report Formats	
	Software control	Single point of control	
	System Auto Tuning	Through Tuning Standards	
	Analytical Quality Control	Calibration check samples	
		Spike recoveries	
		Calibration verification and	
		QC limits	
COMPUTER SYSTEM			
	Make	Reputed brand such as HP/Compaq/Dell	
	Processor	Intel Core i7 (3 rd Generation) processor	
	RAM	4 GB DDR RAM (upgradeable to 8 GB DDR RAM)	
	HDD	500 GB SATA	
	Monitor	21" TFT-LCD Flat Colour (Digital)	
	DVD Writer	DVD- Multi-drive	
	Ports	2 Serial, 1 parallel and 2 USB front 3 Rear USB 2 Port, 1VGA 4 bays (2 external & internal) with LAN 1PS, 2 mouse port	
	Key board	Latest multimedia (HP / Microsoft)	
	Mouse	Optical mouse with pad	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZO)s			
Code Number: ICB-33			
Equipment Name: Liquid Chromatograph Mass Spectrometer (LC-MS)			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Ethernet	32 bit auto selectable 10/100 MBPS	
	Graphics	Internet ready with integrated Graphics	
	Sound	Integrated sound card and inbuilt stereo speakers	
	Printer	HP LaserJet Color Printer 1200 x 1200 dpi 12 PPM	
	Softwares	Pre-loaded Windows XP Professional or Windows 7 Professional latest operating system with Licensed CD	
		MS Office 2010 Professional with media, manual and Licensed CD	
		Preloaded Norton Antivirus with latest version of 3 years lifetime along with Licensed CD	
4.0	Accessories	All the required accessories	
5.0	Spares	Sufficient consumable spares including syringes should be supplied for operation for 3 years.	
6.0	Manuals	Hard copies of Instruction operation and service manuals should be supplied.	
7.0	OPERATION & MAINTENANCE TRAINING COMPONENT	Two weeks training to two scientists on operation, maintenance and trouble shooting aspect of the instrument at manufacturers facility/application laboratory in India.	
8.0	GENERAL CONDITIONS OF SUPPLY	<ol style="list-style-type: none"> The instrument and all its sub units should operate on 230 ± 10 volts 50 Hz power supply. All the operation and maintenance manuals, circuit diagrams, application notes and application softwares to be supplied 	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-33			
Equipment Name: Liquid Chromatograph Mass Spectrometer (LC-MS)			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		<p>should be in English language.</p> <p>3. The supplier / manufacturer should have Indian agent to provide after sales service.</p> <p>4. The main unit and all the sub units of the instrument should be serviced by the Indian representative of supplier.</p> <p>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 atleast 2 years as on the date of bid opening.</p> <p>6. The bidder should furnish the information on past supplies and their satisfactory performance.</p> <p>7. Bidders shall invariably furnish documentary evidence (client's certificate – atleast two) in support of the satisfactory operation of the equipment as specified above.</p> <p>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.</p> <p>9. Comprehensive warranty with spares for 3 years from the date of installation of the instrument should be covered.</p>	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF MASS FLOW CONTROLLERS WITH DIGITAL READOUT AND CONTROL UNIT

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-34			
Equipment Name: Mass Flow Controllers with Digital Readout and Control Unit			
Quantity: 4 (Four) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Descriptions	The unit shall be used for Mass flow control of Gaseous flow of various gases such as Sulphur Dioxide, Nitric Oxide, Carbon monoxide and Zero air.	
2.0	Features	Storage of polynomial calibration function (max 8 per channel)	
		Internal/external set point control mode.	
		Master/slave control mode.	
		Set point slope control.	
3.0	Digital Readout and Control system/unit	The instrument should be 19" rack mounted model with facilities for fixing the instrument from front side.	
		The instrument should operate at operating voltage 230 V ± 10% and 50 Hz ± 3%, AC supply and the plug should be adaptable to Indian main socket.	
		The model should be for eight (8) channels, suitable for flows control.	
		Input 0-5 V DC from mass flow controller (MFC)	
4.0	Technical specifications		
	Output/set point signal	0-5 V DC	
	Front	2 line x 16 Character Backlit LCD	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-34			
Equipment Name: Mass Flow Controllers with Digital Readout and Control Unit			
Quantity: 4 (Four) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Connection	Sub-miniature D connector socket for instruments	
	Accuracy	± 0.5% of reading + 0.1% of FS	
	Operating temp. range	0 to + 50°C	
	Configuration	Through key pad on front panel including power supply for MFC's	
5.0	Mass Flow Controllers with Digital Readout & Control Unit	Mass flow controller in ml range shall be used for gases SO ₂ , NO, CO etc. and in litre range for zero air supply. Details specification / requirement are in Annexure-I.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Annexure-I

Mass Flow Controllers with Digital Readout & Control Unit - Detailed Specifications

Parameter	Sulphur Dioxide	Nitric Oxide	Carbon Monoxide	Air	Air	Air
Flow range	0.1 – 5.0 ml/min	01 – 50 ml/min	10 - 500 ml/min	0.1 – 5.0 l/min	1 – 50 l/min	2-100 l/min
Operating Temp.	25 °C (should not exceed 70°C)	25 °C (should not exceed 70°C)	25 °C (should not exceed 70°C)	25 °C (should not exceed 70°C)	25 °C (should not exceed 70°C)	25 °C (should not exceed 70°C)
Up stream Pressure(Bar g)	1.5	2	2	2	4	4
Down stream Pressure(Bar g)	0	0	0	0	0	0
Pressure Rating (Bar a)	64	10	64	64	64	64
Max. Static Pressure (Bar a)	10	10	64	64	64	64
Material of construction	SS 316 body	SS 316 body	SS 316 body	SS 316 body	SS 316 body	SS 316 body
Supply Voltage	15 – 24V DC	15 – 24V DC	15 – 24V DC	15 – 24V DC	15 – 24V DC	15 – 24V DC
Output Signal	0-5 V DC	0-5 V DC	0-5 V DC	0-5 V DC	0-5 V DC	0-5 V DC
Accuracy	± 1% FS	± 1% FS	± 1% FS	± 1% FS	± 1% FS	± 1% FS
End Connections	Compression type, 1/8" O.D.	Compression type 1/8" O.D.	Compression type 1/4" O.D.	Compression type 1/4" O.D.	Compression type 1/4" O.D.	Compression type 1/4" O.D.
Seals	EPDM (SO ₂)	Kalrez (NO)	Viton (CO)	Viton (Air)	Viton (Air)	Viton (Air)

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF METEOROLOGICAL STATION

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-35			
Equipment Name: Meteorological Station			
Quantity: 6 (Six) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Description	The meteorological instrumentation should be interfaced directly with the Data Acquisition System after passing through a lightning protection isolation box. A crank – up telescoping meteorological 10 meters tower to be used to mount the meteorological instrumentation. The wind speed, wind direction, temperature, relative humidity and solar radiation sensors should be mounted on the tower.	
2.0	WIND DIRECTION SENSOR	The sensor to provide low starting threshold, fast response and accuracy over a wide operating range in adverse environmental conditions. Specifications are as follows:	
	Accuracy	± 5 degrees or better	
	Resolution	1 degree	
	Wind Direction Operating Range	0 to 360	
	Threshold	0.5 m/s or less	
	Sensor type	Ultrasonic	
	Response time	10 seconds or better	
3.0	WIND SPEED SENSOR	The anemometer to provide a low starting threshold, wide dynamic response and high accuracy over a wide range of wind speeds and a variety of environmental conditions.	
	Operating Range	0 – 60 m/s	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-35			
Equipment Name: Meteorological Station			
Quantity: 6 (Six) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Accuracy	± 0.5 m/sec or better	
	Sensor type	Ultrasonic	
	Response Time	10 sec or better	
	Temperature Range	- 10 ° to 60 ° C	
	Threshold	0.5 m/sec or less	
	Power Requirement	12 V DC	
4.0	AMBIENT TEMPERATURE	Temperature measurement system specifications are as follows:	
	Calibrated Temperature Range	-10 ° C to 60 ° C	
	Response	10 seconds or better	
	Resolution	0.1 °C	
	Accuracy	± 0.2 °C or better with radiation shield	
	Sensor type	Resistance type	
5.0	RELATIVE HUMIDITY SENSOR	Relative Humidity Measurement system. Specifications are as follows	
	Measuring Range	0 to 100% RH	
	Accuracy	± 3% or better	
	Response time	10 sec or better	
	Resolution	1% or better	
	Sensor type	Capacitive / Solid state	
6.0	PRESSURE		

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-35			
Equipment Name: Meteorological Station			
Quantity: 6 (Six) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Range (with single sensor)	600 to 1100 hPa	
	Accuracy	± 0.2 hPa or better	
	Resolution	0.1 hPa	
	Sensor type	Solid state	
	Response time	10 sec or better	
7.0	SOLAR RADIATION	The detector should be able to measure short – wave radiation which comprises the direct component of sunlight and the diffuse component of skylight.	
	Range	0 to 3000 w/m ³ or above	
	Accuracy	± 5% or better	
	Resolution	5 w/m ²	
	Temperature dependence	0.15% per ° C Max	
	Response Time	10 microseconds	
	Linearity	1 % from 0 to 3000 watts m ²	
	Cosine Response	Corrected up to 80 angle of incidence	
	Orientation	No effect on instrument performance	
	Calibration	Calibrated against an Eppley Precision. Spectral Pyranometer (PSP) under natural day light conditions. Absolute error under these conditions is 5% maximum, typically 3%	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-35			
Equipment Name: Meteorological Station			
Quantity: 6 (Six) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
8.0	RAINFALL SENSOR		
	Measuring range	0.2 mm to 100 mm / hr	
	Accuracy	± 5% or better	
	Resolution	0.2 mm	
	Sensor type	Tipping bucket rain a gauge or any other suitable sensor	
9.0	TELESCOPING CRANK – UP METEOROLOGICAL TOWER	The wind direction, wind speed, relative Humidity, temperature and radiation sensors are to be mounted on the Meteorological Tower. The tower is to be a free standing four section telescoping tower provided with a hand crank to raise and lower instruments mounted on the top section	
	Extended Height	10 meters	
	Retracted Height	2 metres	
	Wind load Limit	0.7896 sq. m. (8.5 sq. ft) at 50 mph	
	Construction material	Galvanised steel or aluminium Note: Humidity and temperature sensors to be supplied with weather and thermal radiation shield made of anodized aluminium and sensor should be supplied with all necessary cables, connector and mounting arrangements as required	
10.0	SPECIFICATIONS OF DATA LOGGER	Data logger with 8 analog and 24 digital inputs. Ability to log channels at different intervals	
		Should have capability of averaging and displaying real time data and averaged data over a period of 1 min, 15 min, ½ hr, 1 hr, 4 hrs,	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-35			
Equipment Name: Meteorological Station			
Quantity: 6 (Six) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		8 hrs, 24 hrs, 1 month and year.	
		Communication between data logger and computer using standard multi drop RS 232 Connector.	
		Distance between data logger and the computer inside the room may be upto 100 m.	
		The data logger should have internal battery with charger with USB Port for downloading of data through pen drive, if required.	
		The data logger should support PSTN line or GSM modem for data transfer.	
		The GSM Modem also to be provided with data logger.	
	Power Supply	230V AC, ± 10 V AC, 50 Hz, over voltage protection unit for power supply line.	
11.0	SOFTWARE FOR DATA ANALYSIS	Software should be compatible to Window 7 Professional. For analysis like averaging for different timings including daily and monthly averages, plotting diurnal variation and daily variation, making wind roses etc.	
12.0	COMPUTER		
	Make	Reputed brand such as HP/Compaq/Dell	
	Processor	Intel Core i7 (3 rd Generation) processor original motherboard	
	RAM	4 GB DDR RAM (upgradeable to 8 GB)	
	HDD	500 GB SATA	
	Monitor	21" TFT-LCD Flat Colour (Digital)	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-35			
Equipment Name: Meteorological Station			
Quantity: 6 (Six) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	DVD Writer	DVD- Multi-drive	
	Ports	2 Serial, 1 parallel and 2 USB front 3 Rear USB 2 Port, 1VGA 4 bays (2 external & internal) with LAN 1PS, 2 mouse port	
	Key board	Latest multimedia (HP / Microsoft)	
	Mouse	Optical mouse with pad	
	Ethernet	32 bit auto selectable 10/100 MBPS	
	Graphics	Internet ready with integrated Graphics	
	Sound	Integrated sound card and inbuilt stereo speakers	
	Other features	Energy star compliant, screen blinking, hard disc & system idle mode in power on set up, password, power supply source protected.	
	Software	Windows 7 Professional or Latest version with media documentation and certificate of authenticity alongwith original CD	
		Preloaded Norton Antivirus with latest version of 3 years lifetime along with Licensed CD	
13.0	COLOUR LASER PRINTER		
	Speed (pages per minute)	At least 12	
	Resolution	1200 x 1200 dpi	
	RAM	Minimum 32 MB	
	Main tray Capacity	At least 250 sheets	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-35			
Equipment Name: Meteorological Station			
Quantity: 6 (Six) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Interface	Parallel & USB	
	Operating System	Windows XP / 7 Professional Compatible	
	Power supply	230 ± 10 V AC, 50 Hz,	
14.0	Installation / Warranty	Free of Cost installation and two year comprehensive warranty + one year extended warranty for complete system.	
15.0	Calibration certificate	Calibration certificates for all sensors are to be provided, which should be traceable to National / International Standards.	
16.0	Operation & Maintenance Training	Complimentary all expenditure inclusive one week training to be provided on operation and preventive maintenance of the system to concerned CPCB official.	
17.0	Spares / Consumables	Required spares / consumables for 3 years of continuous operation	
18.0	General Condition of Supply	<ol style="list-style-type: none"> 1. The instrument and all its sub units should operate on 230 ± 10 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 	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-35			
Equipment Name: Meteorological Station			
Quantity: 6 (Six) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		<p>the type specified in the past five years, which shall be in successful operation for atleast 2 years as on the date of bid opening.</p> <p>6. The bidder should furnish the information on past supplies and their satisfactory performance.</p> <p>7. Bidders shall invariably furnish documentary evidence (client's certificate – atleast two) in support of the satisfactory operation of the equipment as specified above.</p> <p>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.</p> <p>9. Comprehensive warranty with spares for 3 years from the date of installation of the instrument should be covered.</p>	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF MICROWAVE DIGESTION SYSTEM

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-36			
Equipment Name: Microwave Digestion System			
Quantity: 7 (Seven) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.	Description	Microwave Digestion System must have 10 high throughput closed vessel microwave. Digestion / extraction / synthesis workstation suitable for AAS spectrophotometer samples for the best digestion. This workstation meets the need of batch processing of samples and raises safety and reaction control accuracy with following features	
2.	Chamber	Chamber capacity -65 L, with double magnetron microwave emission, with the highest microwave output power of 1800W; the operating power realizes automatic variable frequency control (VFC) and non-pulse continuous microwave heating via reaction temperature and pressure feedback.	
3.	Chamber Door	Six-layer steel structure armored glass explosion proof chamber door is equipped with an automatic pop-up buffer structure and electronic and mechanical dual-control door lock.	
4.	Reaction Vessel	High pressure reaction vessel must have a fully closed anticorrosive super strength composite fiber outer vessel under the support of high strength frame structure and vertical explosion pressure relief technique, with max. Sustained pressure of 15MPa (2250psi) and the highest sustained temperature of 300°C.	
5.	Control & Display	System have piezoelectric crystal pressure sensor controls and displays the internal pressure and pressure rise curve of reaction vessel in real time, with pressure control range of 0 to 10 MPa (1500psi) and control precision of 0.0 1 MPa.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-36			
Equipment Name: Microwave Digestion System			
Quantity: 7 (Seven) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
6.	Control & Display	System have high precision platinum resistor sensor controls and displays the internal temperature and temperature rise curve of the reaction vessel in real time, with temperature control range of 0 to 270°C and the precision of ± 1 °C.	
7.	Reaction Vessels Table	Should be high throughput reaction rotary table can bear up to 15 high pressure reaction vessels with the capacity of 100ml simultaneously, and system should have the facility to increase or decrease such vessels according to need.	
8.	Technical Specification:		
	Maximum sustained pressure	15MPa (2250psi)	
	Temperature	300°C	
	Inner vessel capacity	100 ml	
	Outer vessel material	fully closed anticorrosive super strength composite fiber	
	Inner vessel material	TFM (intensified Polytetrafluoro Ethylene)	
	Cooling mode	automatic air cooling inside chamber/natural cooling outside chamber	
Sample processing capacity	more than 10 pieces per time		

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF MOISTURE ANALYSER

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-37			
Equipment Name: Moisture Analyzer			
Quantity: 3 (Three) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.	Description:	Fully automatic Moisture Analyzer (Moisture balance) to measure moisture in soil, sediments, dry powder, solid waste, hazardous waste samples.	
2.	Analysis & display mode	Percent moisture	
		Percent dry weight	
		Weight loss (mg)	
		Residual weight	
3.	Weighing capacity	150 gm	
4.	Pan size	90 mm (3.5")	
5.	Sample quantity	Minimum 5 – 10 gm	
6.	Readability	1 mg / 0.01%	
7.	Accuracy	1 mg	
8.	Measuring range	0.01 to 100% moisture	
9.	Repeatability	0.01 %	
10.	Heating	Infra red, quartz heater	
11.	Heating mode	Standard & Gentle drying with fully automatic timer setting 0.1 – 99 minutes	
12.	Temp. increment	1 °C	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZO's)			
Code Number: ICB-37			
Equipment Name: Moisture Analyzer			
Quantity: 3 (Three) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
13.	Power supply	230 V ± 10 V; 50 Hz	
14.	Drying Temp.	40 – 160 °C	
15.	Analysis mode	Automatic mode, Semi automatic mode, Timer mode	
16.	Operational	Printer Permission	
		RS – 233 interface for transfer of data to printer / computer	
		Bar code scanner connectivity	
		Access to sample chamber through Hinged cover	
		Facilities for programme memories should be available	
		Operation, maintenance and service manual – one set	
17.	Calibration	External calibration (optional) with external calibration weight	
18.	Warranty	Atleast 3 years from date of installation	
19.	General Condition of Supply	<ol style="list-style-type: none"> 1. The instrument and all its sub units should operate on 230 ± 10 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. 	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-37			
Equipment Name: Moisture Analyzer			
Quantity: 3 (Three) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		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 atleast 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 – atleast 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. Comprehensive warranty with spares for 3 years from the date of installation of the instrument should be covered.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF MULTI GAS ANALYSER FOR INDOOR AMBIENT AIR QUALITY MONITORING

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-38			
Equipment Name: Multi Gas Analyser for Indoor Ambient Air Quality Monitoring			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Description	Multigas analyzer for ambient air quality monitoring shall capable of measuring SO ₂ , NO ₂ , CO, NH ₃ , O ₃ , H ₂ S, CH ₄ present in ambient air. It shall have an inbuilt rechargeable battery operated air sampling pump enable to draw air samples from ambient air to the analyzer with built in flow indicator and flow controller.	
2.0	Flow Range	The operational flow range is 0 to 3 litre/min.	
3.0	Principal	Employ one of the technique viz., Electro chemical sensors, Pellister as the case may be.	
4.0	Range	Should have minimum of three working ranges viz., ppb, ppm & percentage levels.	
5.0	Calibration facility	It shall have calibration facility for all gases with adjustment screw preferably Internal Calibration facility, Calibration of Zero and standard reference gas, calibration memory of 3 calibration levels gases standards, and calibration date, method storage & reactivation.	
6.0	Accuracy	Accuracy of 5% of reading traceable to NIST calibration gas.	
7.0	Logging facility	Should have logging facilities for the parameters like Time and date, concentration data, temperature, gas cell pressure, system operating and diagnostic parameters, and data fit parameters	
8.0	Housing	Entire assembly is housed in a High Impact Plastic (NEMAIP40) weather proof body according to Indian field conditions.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-38			
Equipment Name: Multi Gas Analyser for Indoor Ambient Air Quality Monitoring			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
9.0	Portability	Handy, easy to carry and monitor the ambient air.	
10.0	Demonstration	The Instrument shall be delivered & demonstrated at Central Pollution Control Board, Nisarga Bhawan, 7 th D Main, Thimmaiah Road, Shivnahalli, Bangalore – 560010	
11.0	Technical specifications		
11.1	Display	Backlit Alphanumeric LCD	
11.2	Sampling	Diffusion or Suction	
11.3	Range	O ₂ 0-30%V CO 0-500 µg/m ³ H ₂ S 0-2000 µg/m ³ , SO ₂ 0-500 µg/m ³ , NH ₃ 0-1000 µg/m ³ , NO 0-500 µg/m ³ , NO ₂ 0-500 µg/m ³ and O ₃ 0-500 µg/m ³ .	
11.4	Calibration	Automatic zero & span with fresh air sample & Calibration gases	
11.5	Response Time	<10 seconds at 95% variant	
11.6	Power Supply	Internal Li ion battery	
11.7	Working Temperature	-5°C to 55° C	
11.8	Storage Temperature	-20°C to 45°C	
11.9	Case	High Impact Plastic (NEMAIP40)	
11.10	Accessories	Battery charger, operation manual	
12.0	Multi Gases Specifications	As detailed in Annexure-I	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Annexure-I

Technical Specifications for Multi Gas Analyzer for Ambient Air Quality Monitoring

S. No	Parameters	SO ₂	NO ₂	NH ₃	O ₃	CO	H ₂ S	CH ₄
01.	Principle	Pulsed UV Fluorescence	Chemi luminescence	Chemi luminescence	UV Photometric	Non Dispersive Infra-Red (NDIR) with Gas Filter Correlation	Electrochemical sensor	Laser absor - ption technique
02.	Measurement	Sulphur Dioxide in Ambient Air	NO ₂ in Ambient Air	Ammonia in Ambient air	Ozone in Ambient Air	Carbon Monoxide in Ambient Air	Hydrogen Sulphide in Ambient air	Methane in ambient air
03.	Display	Digital, backlit Alphanumeric LED						
04.	Ranges	Auto ranging 500 µg/m ³	Auto ranging 500 µg/m ³	0-1000 µg/m ³	Auto ranging 0 - 500 µg/m ³	At least four ranges upto 10000 µg/m ³	At least three ranges 0.5 – 10, 5-100, 100-2000 µg/m ³	500 to 20,000ppb
05.	Min. Detectable Limit	1 µg/m ³	1 µg/m ³		1.0 µg/m ³	1 µg/m ³	1 µg/m ³	1 µg/m ³
06.	Zero Noise	1% of the reading						
07.	Zero Drift	< 1 µg/m ³ /24 Hrs. With automatic zero compensation						
09.	Calibration	Calibration gas portable cylinder with known concentration has to be provided alongwith the instrument for calibration purpose. It should also have pressure gas valve for Zero and Span gas.						
10.	Consumables and spares	Recommended requirements of 3 years operation						
11.	Linearity	± 1% of full scale						
12.	Sample Flow Rate	0.5-3 Liters / Minute						
13.	Analog Output	0 – 1 V, 0 – 10 V, 0 – 20 mA, 4 – 20 mA						
14.	Digital Output	Multi drop RS 232 port						
15.	Precision	1% reading whichever is greater						

Note: The technique to be used is in accordance with the methods prescribed in the National Ambient Air Standards. But it is cumbersome to use the Analyzers for field monitors unless it is fitted in a suitable vehicle preferably in a Tempo Traveler so that the optical system is not disturbed and sanctioned with a post of driver. Otherwise the utilization of these analyzers will be very limited.

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF NOISE LEVEL METER WITH DATA LOGGER

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-39			
Equipment Name: Noise Level Meter with Data Logger			
Quantity: 10 (Ten) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.	Measurement range	20 - 140 dBA	
2.	Frequency weighing	Switchable to A, Linear, Octave and 1/3rd Octave	
3.	Accuracy	Min. IEC 804 (BS 6698) Grade I or ANSI Type I	
4.	Resolution	0.1 dB over Full Range	
5.	Display	Digital (Leq, SPL, L _{max} and L _{min})	
6.	Time weighting	Switchable to different time intervals i.e. 1/8 Sec., 1 Sec., 10 Sec. etc. or slow, fast, max.	
7.	Power supply	Rechargeable battery system	
8.	Computer interface	Data logging system with RS 232 interface	
9.	Calibration	Automatic calibration	
10.	Temperature	0°C to 50°C	
11.	Memory	Sufficient memory to store atleast 8 hrs data for all parameters given in modes and octave band analysis.	
12.	Accessories Required	<ol style="list-style-type: none"> 1. Calibrator (see specifications) 2. Microphone (spare, see specifications) 3. Tripod stand 4. Wind screen 5. Rechargeable batteries 6. Carrying case or kit 	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-39			
Equipment Name: Noise Level Meter with Data Logger			
Quantity: 10 (Ten) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		7. Extension cable with pre amplifier	
13.	Specifications		
	Calibrator		
	Level (dB)	Two - one each in lower and higher range	
	Frequency	1 khz.	
	Accuracy	± 0.3 dB at 25 ⁰ C	
	Adaptors	25mm, 12.5 mm, 6.25 mm	
	Microphone		
	Type	Premacharge air-condenser unit	
	Polarisation Voltage	Not required	
	Response Type	Free Field '0' degree incidence	
	Response Accuracy	min IEC 651 type I	
	Operating Temperature	0 to 55°C	
	Range	20 - 140 dB(A)	
14.	Data logger	Communications with data logger should be possible using a standard RS 232 cable along with compatible modems in order to provide communications facilities (Radio/Telephone). A compatible software supplied with the data logger shall be able to handle all communication requirement.	
15.	Built-in information	Leq in bytes	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZO's)			
Code Number: ICB-39			
Equipment Name: Noise Level Meter with Data Logger			
Quantity: 10 (Ten) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		Built in memory in byte	
		Whether data logger in-built in the unit or is a separate system	
		Details of software, in-built/spread sheet	
16	System compatibility for measurement of other parameters like meteorology	Please mention details	
17.	Other features	Whether octave provided or not. If yes; its range	
		Whether the software has facility for: a) Retrieval of short (1 sec) leq elements b) Post processing to produce Leq and Ln measurements over any period automatic event detection etc.	
18.	Warranty	Atleast 3 years from date of installation	
19.	General Condition of Supply	<ol style="list-style-type: none"> 1. The instrument and all its sub units should operate on 230 ± 10 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 	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-39			
Equipment Name: Noise Level Meter with Data Logger			
Quantity: 10 (Ten) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		<p>specified in the past five years, which shall be in successful operation for atleast 2 years as on the date of bid opening.</p> <p>6. The bidder should furnish the information on past supplies and their satisfactory performance.</p> <p>7. Bidders shall invariably furnish documentary evidence (client's certificate – atleast two) in support of the satisfactory operation of the equipment as specified above.</p> <p>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.</p> <p>9. Comprehensive warranty with spares for 3 years from the date of installation of the instrument should be covered.</p>	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF OIL SEALED MECHANICAL VACUUM PUMP

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-40			
Equipment Name: Oil Sealed Mechanical Vacuum Pump			
Quantity: 4 (Four) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Description	The Oil Sealed Mechanical Vacuum pump should be Two Stage Rotary Vane type.	
	Nominal Pumping Speed 50 Hz	9.7 m ³ /h	
	Pneurop Pumping Speed 50 Hz	8.5 m ³ /h	
	Ultimate partial pressure	10 ⁻⁴ mbar	
	Ultimate total pressure closed gas ballast	2.10 ⁻³ mbar	
	Ultimate total pressure open gas ballast	10 ⁻² mbar	
	Water vapour capacity	125 g/h	
	Water vapour pressure 50 Hz	20 mbar	
	Power requirement	230 ± 10 V AC, 50 Hz Single phase	
	Operating temperature	10 °C - 45 °C	
	Oil capacity	1.0 litre	
	Inlet flange	DN 25 ISO-KF	
	Exhaust flange	DN 25 ISO-KF	
2.0	Oil Filter	Should be equipped with oil filter / oil mist eliminator	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-40			
Equipment Name: Oil Sealed Mechanical Vacuum Pump			
Quantity: 4 (Four) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
3.0	Maintenance Kit	Maintenance kit consisting of lip seals, shaft sleeves, valves, shaft seals, O' rings, vanes, springs and plugs etc. should be provided for complete overhauling of the vacuum pump.	
4.0	Oil Specifications	Paraffin based mineral oil	
	Vapor pressure	$1.3 \cdot 10^{-6}$ mbar at 54 °C	
	Viscosity	118 cst at 40 °C	
		12.5 cst at 100 °C	
	Density	0.886	
Flash Point	260 °C		

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF PERMEATION TUBES FOR SO₂ NIST CERTIFIED

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-41(a)			
Equipment Name: Permeation Tubes for SO₂ NIST Certified			
Quantity: 6 (Six) Nos. (5 Nos. at 40°C and 1 No. at 50°C)			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Range & Accuracy	400- 450 ng/min ± 5% Accuracy	
2.0	Temperature	Certified at 40°C; as well as 50°C separately	
3.0	Length	4.6 cm	
4.0	Diameter	1.6 cm	
5.0	Useful Life	More than one year	
6.0	Traceability	Certified and Traceable to NIST Standard alongwith certificate	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF PERMEATION TUBES FOR SO₂ NON-NIST CERTIFIED

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-41(b)			
Equipment Name: Permeation Tubes for SO₂ Non-NIST Certified			
Quantity: 5 (Five) Nos. (3 Nos. at 40°C and 2 No. at 50°C)			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Range & Accuracy	400- 450 ng/min \pm 10 – 15% Accuracy	
2.0	Temperature	Certified at 40°C; as well as 50°C separately	
3.0	Length	4.6 cm	
4.0	Diameter	1.6 cm	
5.0	Useful Life	More than one year	
6.0	Traceability	Traceable to any National/International standard alongwith certificate	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF PERMEATION TUBES FOR NO₂ (NIST) CERTIFIED

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-41(c)			
Equipment Name: Permeation Tubes for NO₂ NIST Certified			
Quantity: 6 (Six) Nos. (5 Nos. at 40°C and 1 No. at 50°C)			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Range & Accuracy	600 - 650 ng/min ± 5% Accuracy	
2.0	Temperature	Certified at 40°C; as well as 50°C separately	
3.0	Length	4.6 cm	
4.0	Diameter	1.6 cm	
5.0	Useful Life	More than one year	
6.0	Traceability	Certified and Traceable to NIST Standard alongwith certificate	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF PERMEATION TUBES FOR NO₂ (NITROGEN DIOXIDE) (NON-NIST) CERTIFIED

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-41(d)			
Equipment Name: Permeation Tubes for NO₂ (Nitrogen Dioxide) (Non-NIST) Certified			
Quantity: 5 (Five) Nos. (3 Nos. at 40°C and 2 Nos. at 50°C)			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Range & Accuracy	600 - 650 ng/min ± 10 – 15 % Accuracy	
2.0	Temperature	Certified at 40°C as well as 50°C separately	
3.0	Length	4.6 cm	
4.0	Diameter	1.6 cm	
5.0	Useful Life	More than one year	
6.0	Traceability	Traceable to any National/International standard alongwith certificate	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF PERMEATION TUBES FOR BTX ANALYZER (NIST CERTIFIED) – (i) BENZENE

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-41(e)			
Equipment Name: Permeation Tubes For BTX Analyzer (NIST Certified) – (i) Benzene			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Range & Accuracy	20 - 25 ng/min \pm 5% Accuracy	
2.0	Temperature	Certified at 40°C	
3.0	Length	4.6 cm	
4.0	Diameter	1.6 cm	
5.0	Useful Life	More than one year	
6.0	Traceability	Certified and Traceable to NIST Standard alongwith certificate	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF PERMEATION TUBES FOR BTX ANALYZER (NIST CERTIFIED) – (ii) TOLUENE

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-41(e)			
Equipment Name: Permeation Tubes for BTX Analyzer (NIST Certified) – (ii) Toluene			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Range & Accuracy	70 - 80 ng/min \pm 5% Accuracy	
2.0	Temperature	Certified at 40°C	
3.0	Length	4.6 cm	
4.0	Diameter	1.6 cm	
5.0	Useful Life	More than one year	
6.0	Traceability	Certified and Traceable to NIST Standard alongwith certificate	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF PERMEATION TUBES FOR BTX ANALYZER (NIST CERTIFIED) – (iii) ETHYL-BENZENE

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-41(e)			
Equipment Name: Permeation Tubes for BTX Analyzer (NIST Certified) – (iii) Ethyl-Benzene			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Range & Accuracy	7 – 15 ng/min ± 5% Accuracy	
2.0	Temperature	Certified at 40°C	
3.0	Length	4.6 cm	
4.0	Diameter	1.6 cm	
5.0	Useful Life	More than one year	
6.0	Traceability	Certified and Traceable to NIST Standard alongwith certificate	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF PERMEATION TUBES FOR BTX ANALYZER (NIST CERTIFIED) – (iv) XYLENE-M&P

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-41(e)			
Equipment Name: Permeation Tubes for BTX Analyzer (NIST Certified) – (iv) Xylene-M&P			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Range & Accuracy	7 – 20 ng/min \pm 5% Accuracy	
2.0	Temperature	Certified at 40°C	
3.0	Length	4.6 cm	
4.0	Diameter	1.6 cm	
5.0	Useful Life	More than one year	
6.0	Traceability	Certified and Traceable to NIST Standard alongwith certificate	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF PERMEATION TUBES FOR BTX ANALYZER (NIST CERTIFIED) – (v) XYLENE-O

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-41(e)			
Equipment Name: Permeation Tubes for BTX Analyzer (NIST Certified) – (v) Xylene-O			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Range & Accuracy	20 - 30 ng/min \pm 5% Accuracy	
2.0	Temperature	Certified at 40°C	
3.0	Length	4.6 cm	
4.0	Diameter	1.6 cm	
5.0	Useful Life	More than one year	
6.0	Traceability	Certified and Traceable to NIST Standard alongwith certificate	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF pH METER - ONLINE

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-42			
Equipment Name: pH Meter - Online			
Quantity: 2 (Two) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.	Range	pH 0.00 to 14.00 pH	
		Temp. ambient to 50.0°C	
2.	Resolution	pH -0.01 pH	
		Temp. 0.1 °C	
3.	Accuracy	pH ± 0.01 pH ± 1 LSD	
		Temp ± 0.1 °C ± 1 LSD	
4.	Technical requirement		
	pH	pH Temp Compensation Auto - ambient to 50 °C	
		pH Buffer Recognition 4.00 to 10.01 (5 points)	
		pH Electrode Offset Recognition ± 100 mV at pH 7.00 - 91.7 to +108.3 mV at pH 6.86	
		pH Electrode Slope Recognition ± 30 % at pH 4.00, 4.01, 9.18 or 10.01	
		Input Impedance >1013 ohms	
		Calibration End Point Sensing	
	Temperature	Temperature Sensor Thermistor, 10.00 k ohm at 25 °C	
		4-20 mA Analog Output:	
Current Output Range 4 to 20 mA			

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-42			
Equipment Name: pH Meter - Online			
Quantity: 2 (Two) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		Maximum Load 500 ohm	
		Accuracy : ± 0.02 mA	
	Relays	Control Type ON/OFF controls	
		2.5 A at 230 V AC, resistive load	
	Other requirement	Power Supply 230 ± 10V AC at 50/60 HZ OR 115 V AC with Adaptor for 230 V ± 10 V AC	
		Communication RS-485	
		Fuse 0.315 A / 250 V fast acting glass tube	
		Display graphical LCD with backlight	
		Ambient Temp. Range 0 to 50 °C	
		Case IP65, 1/4 DIN case, 160 mm or less depth	
Light weight, portable			

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF PM_{2.5} SAMPLER

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-43			
Equipment Name: PM_{2.5} Sampler			
Quantity: 23 (Twenty Three) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Sampler	PM _{2.5} Dichotomous Sampler Conforming to USEPA Manual Reference Method (Method No. RFPS-0789-073) housed in a weather resistant module for routine/compliance monitoring for PM ₁₀ and PM _{2.5})	
2.0	Sampling Module	10 µm inlet and 2.5 µm virtual impactor assembly	
3.0	Filter Holders	37 mm coarse and fine particulate filter holders	
4.0	Control Module	Frame mount, control module with diaphragm vacuum pump, Brushless Motor, clean exhaust	
5.0	Flow Controller	Pneumatic constant flow controller, 5% Accuracy at 1.0 m ³	
6.0	Rotameters	Total and coarse flow rotameters	
7.0	Gauges	Total and Course Flow vacuum gauges	
8.0	Recorder	24 hour flow / event recorder	
9.0	Indicator	Digital timer / programmer or 7 days skip timer and elapsed time indicator	
10.0	Flow Rate	1 cubic meter per hour (16.7 LPM)	
11.0	Calibration System	Provided alongwith the sampler for calibration of air flow	
12.0	Optional		
	Filter Paper Supply	Pure Nylon membrane filters (1 µm thickness, 37 mm dia) developed specially for acidic dry deposition	3 packets (pack of 100 filters each)

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-43			
Equipment Name: PM_{2.5} Sampler			
Quantity: 23 (Twenty Three) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		measurements	
		PTFE membrane filter with PMP (poly methyl pentene) support ring (2 µm thickness, 37 mm dia)	3 packets (pack of 100 filters each)
		Pure Quartz filter (max. operating temp. >1000 °C) 37 mm dia	3 packets (pack of 100 filters each)
13.0	General Conditions of Supply	<ol style="list-style-type: none"> 1. The instrument and all its sub units should operate on 230 ± 10 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 atleast 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 – atleast two) in support of the satisfactory operation of 	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-43			
Equipment Name: PM_{2.5} Sampler			
Quantity: 23 (Twenty Three) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		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. Comprehensive warranty with spares for 3 years from the date of installation of the instrument should be covered.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF PORTABLE CALIBRATOR

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-44			
Equipment Name: Portable Calibrator			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.	Generation Principle	Dilution air flow rate adjusted from 30 to 300 L / H and standard gas diffusion by temperature controlled permeation source from 20°C to 50°C ± 1%.	
2.	Permeation Source	2 sources (1 or 2 gases among SO ₂ , NO ₂ , H ₂ S, NH ₃ or other).	
3.	External Source	External inlet for connecting a third titrated gas from a cylinder at low pressure.	
4.	Ventilating Source	Regulated by a proportional command circuit with temperature compensation.	
5.	Operating Temperature	Guaranteed performance between 10°C and 50°C.	
6.	Dilution air flow rate	Continuously adjustable by potentiometer or control panel (built in pump).	
		Visualised by 20 characters fluorescent display.	
7.	Dilution air flow rate regulation	Through built in mass flow meter (1% precision)	
8.	Programming Commands	16 Keypad on control panel	
9.	Power Supply	230 V ± 10 Volts; 50 Hz AC by internal switching.	
		12 V DC Ni/Cd Rechargeable Battery (NI-CAD)	
		External 12 V DC source power filter	
10.	Internal Battery Autonomy	10 hours, permitting continuous operation of the ventilation micro pump and temperature control of the permeation source.	
11.	Switching to Internal Battery	Automatic	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF PORTABLE HYDROCARBON (METHANE / NON-METHANE HC / THC) ANALYZER

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-45			
Equipment Name: Portable Hydrocarbon (Methane / Non-Methane HC / THC) Analyzer			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	General	Portable Hydro Carbons (Methane/ Non-Methane HC/THC) Analyzer for Source Monitoring complying USEPA Method 25, 18 with suitable hardware & consumables including source-sampling facilities as per method.	
2.0	Instrument Configuration	Explosion proof, Microprocessor controlled system with data logger,	
		Preferably LEL alarm settings facility for HCs.	
		Should be able to rapidly analyze for a wide range of Fixed Gases and Volatile Hydrocarbons i.e. C1-C12/VOC's. in stack or fugitive emissions	
3.0	Principle	The NDIR or Field Portable GC (TCD or other Non FID) or other EPA Technique based instrument	
		Should be capable to measure Methane, non-methane hydrocarbon and total hydrocarbons (with suitable columns) and report separately.	
		Built in temperature compensation. Analytical procedures follow the guidelines set forth in EPA Method 25, 18 with rapid analysis time 5 to 10 analyses during each 1-hour.	
		Typical detection limit should be approx 1.0 ppmv for VOC's and 0.010% for fixed gases preferably.	
4.0	Sample line	Proper heated Sampling probe at about 140 degree Celsius and of suitable length (Minimum 2-3 meter or more) to prevent condensation with proper online filtering system	
5.0	Sampling System	Should be in built (preferably diaphragm pump) which draw the sample	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-45			
Equipment Name: Portable Hydrocarbon (Methane / Non-Methane HC / THC) Analyzer			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		streams through the lines at approximately 1-5 liters per minute, keeping them continually purged and then attached to a sampling manifold which introduces the samples to the analytical system.	
6.0	Sensitivity and Linearity	The Sensor/detector sensitivity should be 1 ppm for Hydrocarbons and linearity should be from MDL to 100% of its maximum range.	
7.0	MDL	2 ppm as Methane, 1 ppm Propane or better	
8.0	Resolution	1 ppm or better	
9.0	Precision	3% of Measured Value	
10.0	Analysis Time	<180 Seconds to 90 % of reading or better	
11.0	Output	Analog Standard as well as Digital display, RS-232 output.	
12.0	Software, Data Exchange	Windows based data station compatible to computer through serial port or USB port.	
		Dynamic data exchange compatibility for converting analytical results into EXCEL / WORD etc.	
		In-built Printer for printing reports	
13.0	Power	Rechargeable battery with one additional pack of battery	
14.0	Accessories	Operation and Maintenance Manual in English language	
		Sampling probe & Calibration adapter	
		Toolkit – One set	
15.0	Calibration Standards	Methane / Propane (20 ppm & 100 ppm) in Helium/Nitrogen with cylinder & regulator sufficient for 2 year regular operation	
16.0	Spares and Consumables	For three years trouble free operation (Provide detailed list).	
17.0	Training & Installation	Free of cost Installation & Training to CPCB officials	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-45			
Equipment Name: Portable Hydrocarbon (Methane / Non-Methane HC / THC) Analyzer			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
18.0	Warranty	Three years comprehensive warranty.	
19.0	General Conditions of Supply	<ol style="list-style-type: none"> 1. All the operation and maintenance manuals, circuit diagrams, application notes and application softwares to be supplied should be in English language. 2. The supplier / manufacturer should have Indian agent to provide after sales service. 3. The main unit and all the sub units of the instrument should be serviced by the Indian representative of supplier. 4. 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 atleast 2 years as on the date of bid opening. 5. The bidder should furnish the information (Address, Telephone Nos. & E-Mail) on past supplies made during last 5 years and their satisfactory performance. 6. Bidders shall invariably furnish documentary evidence (client's certificate – atleast two) in support of the satisfactory operation of the equipment as specified above. 7. 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. 	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF PUF SAMPLER (FOR SAMPLING OF AMBIENT VOC, DIOXINS)

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-46			
Equipment Name: PUF sampler (for sampling of Ambient VOC, Dioxins)			
Quantity: 9 (Nine) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Description	High Volume sampler for Ambient particulate and volatile / semi volatile organic sampling (VPAH, PCBs, Dioxin / Furan, VOCs etc.)	
2.0	Regulatory status	Should conform sampling and quality assurance of USEPA Methods TO-4A, TO-9A and TO-13A	
3.0	Inlet (size cut off)	PM ₁₀	
4.0	Flow controller	Motor speed control / Elapsed Time Indicator	
5.0	Flow rate	User selectable (200 – 280 LPM)	
6.0	Elapsed time indicator	Up to 9999 hours with two decimals	
7.0	Motor Blower	Diaphragm type, brush less motor OR 2 Stage Vacuum Motor Or Equivalent	
8.0	Timer	Mechanical / Electronic Programmable timer	
9.0	Power requirement	230 ± 10 V AC, 50 Hz	
10.0	Filter Media	10 cm diameter (4" Dia) circular filter attachment / mounting platform	
11.0	Calibration Unit	Calibration unit to calibrate the flow rate of the instrument	
12.0	PUF / XAD Holding Cartridges	10 Nos. Stainless steel Cartridges for PUF and 10 Nos. Removable	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-46			
Equipment Name: PUF sampler (for sampling of Ambient VOC, Dioxins)			
Quantity: 9 (Nine) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		glass cartridges with Stainless steel jacket for XAD.	
		Both types of cartridges should fit to the system and it should be leak proof.	
		Necessary number of gaskets and other accessories should be included in offer.	
13.0	Software support (Optional)	Built in software support for flow calibration, audit and leak check	
14.0	Instrument Housing	Entire assembly is housed in a weather proof metal carrying case / Anodized aluminum cabinet with SS fasteners.	
15.0	Operation Kit	Manufacturer's standard operation kit including all required items, fittings for start up / regular operation of instrument.	
16.0	Operational & Maintenance Manual	One No.	
17.0	Calibration manual	One No.	
18.0	Additional accessories, Spares and consumables	For two years trouble free operation / sampling at once a week over 52 weeks to be provided along with list of items including Glass fiber filters, PUF & XAD sampling at once a week over 52 weeks.	
		4" Dia PUF Block – 200 Nos.	
		4" Dia Glass holding cartridge – 10 Nos.	
		Micro quartz filter media 4" round for PUF – 5 Boxes containing 100 Nos. each.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF ROTATORY EVAPORATOR WITH VACUUM PUMP & CHILLER

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-47			
Equipment Name: Rotatory Evaporator with Vacuum Pump & Chiller			
Quantity: 3 (Three) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Equipment Composition		
1.1	Rotavapor	One Set	
1.2	Heating Bath	One Set	
1.3	Vacuum Controller	One Set	
1.4	Glass Assembly	One Set	
1.5	Vacuum Pump	One Set	
1.6	Re-circulating Chiller (Optional)	One Set	
2.0	General Specifications		
2.1	Operating Voltage	230 ± 10 Volts 50 Hz AC	
2.2	Power On / Off Switch	Separate for each component	
2.3	Footprint	Less than 0.20 m ²	
3.0	Technical Specifications		
3.1	Rotavapor		
	Rotation Speed	Control and digital display	
	Vapour Temperature	Sensor and Digital display	
	Jack	For elevation and submersion of evaporating flask,	
		Jack operation - electrical by pressing of button as well as manual	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-47			
Equipment Name: Rotatory Evaporator with Vacuum Pump & Chiller			
Quantity: 3 (Three) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
3.2	Heating bath		
	Material	Corrosion resistant coated with PTFE or stainless steel	
	Capacity	About 4.0 Litres	
	Heating Element	Under Pan heating element for ease of bath cleaning	
	Temperature Control and Display	Provision for setting of temperature by user, digital display	
	Temperature Range	Settable from Ambient to 180 °C	
	Temperature Accuracy	1.0 °C	
	Flask Accommodation	50 - 3000 ml	
3.3	Vacuum Controller		
	Vacuum Display	Digital display	
	Vacuum Control	Capable of controlling vacuum set by user for unattended operation	
	Programming Facility	Vacuum programming for evaporating mixture of solvents	
	Programme Storage Facility	Facility to store user customised programmes	
3.4	Glass Assembly		
	Condenser	Vertical, compatible connectivity for vacuum pump & water jet pump	
	Joint Adapter	Press fit type Adapter for connecting evaporating flask to condenser	
	Evaporation Flask Volumes	25 ml, 50 ml, 100 ml, 250 ml and 500 ml	
	Extension Joints	Adapter Joints for smaller volume evaporation flasks	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-47			
Equipment Name: Rotatory Evaporator with Vacuum Pump & Chiller			
Quantity: 3 (Three) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Receiving Flask (Condensed Solvent)	Spherical 1000 ml with ball joint and clamp	
	Clips for assembling of Evaporation Flask	Non corrosive press fit assembly	
3.5	Vacuum Pump		
	Vacuum Pump Type	Mono Block, PTFE Diaphragm type	
	Final Vacuum	About 10 mBar	
	Suction Volume	About 1.5 m ³ / hour or more	
	Communication with Vacuum Controller	Vacuum level communication with vacuum controller	
	Glass Heads	Inert Glass Heads	
	Control of Solvent Vapour built-up	Secondary Condenser for minimization of Laboratory Pollution	
3.6	Re-circulating Chiller (Optional)		
	Type	Compact, bench top type model	
	Water Cooling	Down to about -10 °C (using CFC Free Gas)	
	Water Recirculation	Leak Proof Recirculation of cold water to and from condenser	
	Distribution	Capable of supplying chilled water to atleast two Rotavapor Units	
	Power Consumption	Energy saving, less than 1500 Watts	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF TEOM SAMPLER

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-48			
Equipment Name: TEOM Sampler			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Regulatory Designations	U.S. EPA approved PM _{2.5} equivalent monitor (EQPM-0609-182)	
2.0	Instrument Features	Menu-driven software for user interaction via 1/4 VGA display with touch screen	
		Connecting and Interface Cables, and Vacuum Pump	
		Consumables for average first year's operation (ambient)	
		RPCOMM and ePort Software for Local or Remote Communication	
3.0	Instrument Performance	(3 l/min, 1s, stable conditions)	
	Measurement Range	0 to 1,000,000 µg/m ³ (1 g/m ³)	
	Resolution	0.1 µg/m ³	
	Precision	±2.0 µg/m ³ (1-hour average), ±1.0 µg/m ³ (24-hour ave.)	
	Accuracy for Mass Measurement	±0.75%	
4.0	Data Averaging and Output		
	Real-time Mass Conc. Average	1 hour rolling average updated every six minutes	
	Long-Term Averaging	1, 8, and 24 hr	
	Data Output Rate	Selectable from 10 sec to 24 hour	
5.0	Operating Range	Temperature of the sampled air may vary between -40 and 60 °C.	
6.0	Weather protection	Must be weather protected within the range of 8 to 25 °C.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-48			
Equipment Name: TEOM Sampler			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		Complete Outdoor Enclosure providing complete weather protection (Optional)	
7.0	Sample Flow	Activol flow control system uses the mass flow sensors and the measured ambient temperature and pressure to maintain constant volumetric flow rates.	
8.0	Main Flow Rate	Fine PM filter: 3.0 l/min	
		Coarse PM filter: 1.67 l/min	
		Bypass Flow Rate: 12.0 l/min	
9.0	Data Storage	Internal data logging of user-specified variables; capacity of 500,000 records.	
10.0	Filter Media		
	Sample Filter	Pallflex TX40, 13 mm effective diameter	
	Sample Conditioner Filter	47 mm diameter housed in an FRM-style molded filter cassette, maintained at 4°C. Suitable for collecting and archiving time-integrated PM samples for subsequent laboratory analysis	
11.0	Sample Conditioning	Sample Equilibration System (SES) dryer lowers the main flow relative humidity and allows for mass transducer operation at 5°C over the peak air monitoring station temperature	
		Purge Filter Conditioner contains a heat exchanger that maintains the temperature of the main flow and particle filter at 4°C to efficiently filter the volatile and non-volatile PM in the sample.	
12.0	Data Output and Input	E Port software to view and change system operation from PC	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZO's)			
Code Number: ICB-48			
Equipment Name: TEOM Sampler			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		Touch screen user interface	
		Ethernet with embedded FTP server, USB, RS232, RS485	
		8 User-Defined Analog Outputs (0-1 or 0-5 VDC)	
		2 User-Defined Contact Closure Alarm Circuits	
		4 Averaged Analog Inputs (0-5 VDC) with user-defined conversion to engineering units	
13.0	Power Requirements	230 volts ± 10 volts AC and 50 Hz	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF TKN ASSEMBLY (TKN ANALYZER)

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-49			
Equipment Name: TKN Assembly (TKN Analyzer)			
Quantity: 3 (Three) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Description	The analyzer should be fully automatic / semiautomatic system consisting of a digestion unit, a scrubber unit, and a distillation unit.	
2.0	Digestion unit	Automated with integrated programmable control	
		Should have electrically heated (230 ± 10 Volts, 50 Hz AC) metal blocks	
		should be capable of providing a temperature range from 100C - 440oC With ±10C repeatability	
		Should have inbuilt temperature controller with digital display and LED display along-with manual temperature adjustment.	
		Heating time setting with steps from 1- 150 minutes	
		Should have the capacity to accommodate atleast eight numbers of digestion tubes each of atleast 250ml capacity	
		Should have leak proof integrated condensers (fumes carriers) made up of glass, fixed on a movable panel along-with adopter for outlet to the scrubber unit.	
		Proper digestion exhaust system.	
3.0	Scrubber unit	Should be an oil free centrifugal suction type, with manual vacuum adjustment facility.	
		Corrosion and impact resistant provided with condensate and acid fumes collection vessels	
		Should operate on 230 ± 10 Volts, 50 Hz, AC power supply	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-49			
Equipment Name: TKN Assembly (TKN Analyzer)			
Quantity: 3 (Three) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
4.0	Distillation unit	Fully programmable distillation unit including sample dilution, alkali and receiver addition, distillation and tube draining facility.	
		Validated procedure/ certification for TKN distillation like AOAC, EPA, DIN, ISO etc,	
		Should be made-up of standard quality borosilicate glass.	
		Should possess a steam generator made-up of borosilicate glass along with heater and have 3 step manual control facility i.e. standby, water inlet and distillation.	
		Should have inbuilt bellows pump for accurate reagent (alkali / acid) dispensing.	
		Should have ventilation valve.	
		Should have timer for 5 - 15 minutes with audio signal.	
		Steam inlet tube should be of PTFE.	
		Should have quick clamping device for digestion tube with adaptor.	
		Should operate on 230 ± 10 Volts, 50 Hz, AC power supply.	
		Complete unit should be provided with one set of digestion tubes along-with the servicing, operating and maintenance manuals.	
		Can able to monitor and measurement of distillate temperature	
		Self adjusting cooling water control facility	
		Safe feature for safe distillation	
Can be upgradeable whenever required			
5.0	Accessories	2 set of digestion tubes.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZO)s			
Code Number: ICB-49			
Equipment Name: TKN Assembly (TKN Analyzer)			
Quantity: 3 (Three) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		Digestion tube stand	
		Spillage tray for the condensers	
		Tube removing device	
6.0	Spares	Spares and accessories for its 2 years of continuous use.	
		Digestion tablet 1000 nos.	
7.0	Warranty	Comprehensive warranty with spares for 3 years from the date of installation of the instrument should be covered. The AMC charges to be mentioned for next two years after warranty is over.	
8.0	General Conditions of Supply	<ol style="list-style-type: none"> 1. The instrument and all its sub units should operate on 230 ± 10 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 atleast 2 years as on the date of bid opening. 6. The bidder should furnish the information (Address, Telephone 	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-49			
Equipment Name: TKN Assembly (TKN Analyzer)			
Quantity: 3 (Three) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		<p>Nos. & E-Mail) on past supplies made during last 5 years and their satisfactory performance.</p> <p>7. Bidders shall invariably furnish documentary evidence (client's certificate – atleast two) in support of the satisfactory operation of the equipment as specified above.</p> <p>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.</p>	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF ULTRAPURE WATER SYSTEM

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-50			
Equipment Name: Ultrapure Water System			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	General	Microprocessor controlled Water Purification System should comprise of primary continuous electro-de-ionization system attached to tank followed by secondary ultra pure polishing system of similar make.	
		Should not include any glass or fragile components.	
		Should be capable of preparing two grades water i.e. reagent grade and ultra pure water grade.	
2.0	Power Supply	230 ± 10 volts, 50 Hz.	
3.0	1 st Stage System	The system should operate on municipal water supply, which will be made available to the system from an overhead tank.	
		Should be able to operate further inlet water quality of Total Dissolved Solids (TDS) upto 1000 ppm and free chlorine upto 0.5 ppm	
	1 st State System output water requirement	Resistivity : 10-15 meg Ohms cm	
		Total Organic Carbon : < 30 ppb	
		Flow rate : Atleast 10 litre / hr	
		Silicate rejection : 99.9%	
		Free chlorine : Nil	
1 st State System should comprise	(Activated carbon with anti-scaling compound		
	TFC Polyamide RO cartridge with >100 Dalton cut off having 95-99% of organic and inorganic rejection		

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-50			
Equipment Name: Ultrapure Water System			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		EDI module having nuclear grade MB ion exchange resin where there is continuous regeneration of resin with simultaneous removal of the cation and anion giving product water in a single pass through the module	
		254 mm UV lamp for < 1 CFU / ml bacteria count.	
		Automatic cut off when there is inadequate water in the feed water line and when the intermittent tank is full to the capacity.	
		Should display conductivity, Resistivity, temperature etc. for feed water and product water.	
4.0	Intermittent tank	A cylindrical tank of HDPE material blow molded conical shaped bottom with storage capacity of 100 litres.	
		Tank of same manufacturing make must be fitted with built in sensors for low/medium/high water level and vent filters having CO ₂ and volatile organic adsorbent and membrane filter for particle / biological removal.	
5.0	2 nd Stage System	Ultra Purification Water System should take feed water from stage 1 via intermittent tank and provide output water of following quality:	
		Resistivity : 18.2 meg Ohms cm	
		Total Organic Carbon : 1-5 ppb	
		Microorganism : < 1cfu / ml	
		Flow rate : 1 litre / min	
		Cell constant (Resistivity cell) : 0.01 cm ⁻¹	
	2 nd Stage System should comprise	Should have two separate polishing cartridge where initial one should be feed specific and secondary cartridge application specific capable of	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-50			
Equipment Name: Ultrapure Water System			
Quantity: 1 (One) No.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		effectively removal volatile organic and inorganic to trace levels.	
		On line TOC monitor capable of measuring 1-999 ppb	
		A dual – wavelength UV lamp (185 nm and 254 nm) for low TOC	
		Attached with volumetric dispensing	
		Display panel to provide system performance and operating parameter including alarm signals to enable auto diagnostics.	
6.0	Additional item	Operation and maintenance manual – Two sets	
		Two sets of each cartridges for both 1 st & 2 nd system with two nos. spare UV lamps	
		One maintenance kit for each system	
7.0	Other requirement	Company / authorized distributors must provide five satisfactory performance / installation certificate during last three years.	
		Minimum two years warranty from the date of installation.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF ULTRASONIC WATER BATH

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-51			
Equipment Name: Ultrasonic Water Bath			
Quantity: 4 (Four) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Description	Heavy duty, rectangular water bath having user defined variable ultrasourc frequency selection, temperature selectivity, rust free sturdy, MS body with powder coating outside water bath, tray and cover shall be high quality steel conforming to BIS standards.	
2.0	External Dimensions (LxWxH)	Approx. 450 x 200 x 350 mm	
3.0	Bath construction and dimensions (LxWxH)	Stainless Steel 300 x 150 x 150	
4.0	Volume	Minimum 6 lit or more	
5.0	Insert tray (LxWxH)	Two Nos.; size approx. 280 x 125 x 120 mm built up of Stainless Steel Mesh holder basket 10×10 mm and stainless steel cover with handle on top	
6.0	Ultra Sound level	250 Watt/period, 18KHz or above.	
7.0	Electrical power	230 ± 10V / 50HZ AC	
8.0	Other requirements	Compact & light weight. Should be provided with all spares, accessories, operation manual, dust cover etc.	
		Should ensure safe operation and simple handling.	
		Built-in set timer with 60 minutes countdown for service	
		Digital control panel should consist power switch, convenient touch	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-51			
Equipment Name: Ultrasonic Water Bath			
Quantity: 4 (Four) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
		control, temperature readout, turn heat On / Off, tab for temperature adjustment	
		Temperature setting thermostatically controlled with LED readout	
		Should be able to maintain temperature of 65 °C	
		Suitable drainage facility for bath	
		Should include calibration certificate for temperature controller ultrasonic wave generation	
9.0	Operation & Maintenance Manual	Two sets	
10.0	Dust Cover	One set	
11.0	Warranty / Guarantee	Three years from date of installation.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF VACUUM PUMP (SUCTION PUMP)

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-52			
Equipment Name: Vacuum Pump (Suction Pump)			
Quantity: 8 (Eight) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Description	Pump should be Two Stage Rotary Vane type operated on 230 ± 10V 50 Hz Single Phase AC supply.	
2.0	Nominal Pumping Speed 50 Hz	9.7m ³ /h	
3.0	Pneurop Pumping speed 50 Hz	8.5 m ³ /h	
4.0	Ultimate partial pressure	10 ⁻⁴ mbar	
5.0	Ultimate total pressure closed gas ballast	2.10 ⁻³ mbar	
6.0	Ultimate total pressure open gas ballast	10 ⁻² mbar	
7.0	Water vapour capacity	125 g/h	
8.0	Water vapour pressure 50 Hz	20 mbar	
9.0	Weight	Not more than 30 kg	
10.	Max. nominal power rating 50 Hz	0.5 kW	
11.0	Operating ambient temperature range	10 °C to 45 °C	
12.0	Oil capacity	1.0 L	
13.0	Inlet flange	DN 25 ISO-KF	
14.0	Exhaust flange	DN 25 ISO-KF	
15.0	Oil Filter	Pump should be equipped with oil filter/ oil mist eliminator.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-52			
Equipment Name: Vacuum Pump (Suction Pump)			
Quantity: 8 (Eight) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
16.0	Maintenance Kit	Should include lip seals, shaft sleeves, valves, shaft seals, 'O' rings, vanes, springs and plugs etc for complete overhauling of the vacuum pump.	
17.0	Vacuum Pump Oil Characteristics		
	Type	Paraffin based mineral oil	
	Vapor Pressure	1.3.10 ⁻⁶ mbar at 54 °C	
	Viscosity	118 cst at 40 °C	
		12.5 cst at 100 °C	
	Density	0.886	
Flash Point	260 °C		

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF VELOCITY METER

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-53			
Equipment Name: Velocity Meter			
Quantity: 3 (Three) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Stack Temperature Range	Ambient to 900 °C	
2.0	Type of Temperature	Digital Pyrometer	
3.0	Stack Velocity Range	02 to 100 m/s	
4.0	Thermocouple	Thermocouple sensor in SS 304 casing, length of insertion -1.0 meter with 2.0 m long length.	
5.0	Manometer	Digital type with 0.0 to 1300 mm of H ₂ O ranges with 0.01 mm least count.	
6.0	Pitot tube	Calibrated S type pilot tube of SS 304 with 1.0 meter length extendable.	
7.0	Size & Weight	Should be handy, Compact and light weight with carrying case.	
8.0	Spares / accessories	Instrument panel with 3 years consumables, standard Tool Kit and operation manual, calibration certificate for temperature measurement.	
9.0	Guarantee / Warranty	Comprehensive Guarantee / Warranty should be valid for three years.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF WATER PURIFICATION SYSTEM (RO/BACTERIA FREE)

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-54			
Equipment Name: Water Purification System (RO/bacteria free)			
Quantity: 4 (Four) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Feed water Requirements:		
	Quality	Potable (Tap) Water	
	Conductivity	< 2000 μ S/cm (@ 25 °C)	
	pH	4 - 10	
	Maximum LSI	< 0,3	
	Calcium (as CaCO ₃)	< 300 ppm (when system water recovery More Than 50 %)	
	Total Chlorine level	Should work favourably for Total Chlorine greater than 2 PPM.	
	Fouling index	Should work favourably for fouling index greater than 12.	
	Feed water pressure	2 bar minimum, 6 bar maximum (29 psi min, 86 psi max)	
Flow rate	> 5 l/min at 2 bar (1.3 gal/min at 29 psi)		
2.0	General		
2.1	Water connections		
	Solenoid valve feed	½ inch NPTM or ½ inch M-GAZ	
	System feed	½ inch tubing	
	Product	8 mm tubing	
	RO reject	1 1/2 inch tubing	
2.2	Electrical requirements		

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-54			
Equipment Name: Water Purification System (RO/bacteria free)			
Quantity: 4 (Four) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Power Supply	230 ± 10V 50 Hz AC	
	Data port connection	RS232	
	Drain requirements	> 5 l/min (> 1.3 gal/min)	
2.3	System Performance		
	Product flow rate	Nominal flow rates more than 1L/Min 7- 30 °C, 30 l/h	
	Water recovery	Application Specialist will optimize recovery based on feed water and pretreatment	
	Ion rejection	95-99 %	
	Organic rejection	(MW > 200 Dalton) > 99 %	
	Particles	> 99 %	
	Bacteria	< 1 cfu/ml	
3.0	Guarantee / Warranty	Comprehensive Guarantee / Warranty should be valid for three years.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF WEIGHING MICRO BALANCE (CAPACITY 5.1 G, MINIMUM DISPLAY 0.001 MG)

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-55			
Equipment Name: Weighing Micro Balance (capacity 5.1 g, minimum display 0.001 mg)			
Quantity: 6 (Six) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Capacity	5.1 g	
2.0	Readability	1 µg	
3.0	Repeatability	± 1 micrograms	
4.0	Linearity, micrograms	± 4 micrograms	
5.0	Linearity, 0 -500 µg	± 2 micrograms	
6.0	Operating Temperature	5°C to 40 °C, 85% RH or less	
7.0	Pan Size (mm / in)	ø 30 mm / 1.2 in Std pan ø 50 mm / 1.9 in Std filter	
8.0	Automatic zero tracking	Std feature (can be turned off by menu code)	
9.0	Calibration	Self Calibration	
10.0	Power Source	230 ± 10 V AC with AC adopter with scale	
11.0	Standard Equipment	230 ± 10 V AC Adapter, level indicator, adjustable feet, RS-232, manual	
12.0	Warranty	Minimum 3 years warranty	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF WEIGHING MICRO BALANCE (CAPACITY 220 G, MINIMUM DISPLAY 0.001GM)

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-56			
Equipment Name: Weighing Micro Balance (capacity 220 g, minimum display 0.001gm)			
Quantity: 4 (Four) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Readability	0.01 mg in the range of 40 to 60 grams. 0.1 mg upto at least 220 grams	
2.0	Weighing Range	60 grams for 0.01 mg and 220 grams for 0.1 mg	
3.0	Tarring Facility	Entire range	
4.0	Repeatability	0.02 mg upto 60 grams, less than 0.1 mg upto 220 grams for 0.1 mg accuracy weighing	
5.0	Sensitivity Drift	Maximum ± 2 ppm / $^{\circ}$ C	
6.0	Display	LCD	
7.0	Calibration adjustment	Built in Motorized weight	
8.0	Power Supply	Should operate on 230 ± 10 volts, 50 Hz, AC	
9.0	Standard weights for calibration (Optional)	Standard weight of E1 Class traceable to National / International Standards (50 grams & 100 grams)	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF WEIGHING MICRO BALANCE (CAPACITY 220 G MINIMUM DISPLAY 0.1 MG)

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-57			
Equipment Name: Weighing Micro Balance (capacity 220 g minimum display 0.1 mg)			
Quantity: 3 (Three) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Analytical Balance (Single Pan) with power supply unit windows based communication software with standards RS232C Port & cable with calibration certificate	One	
	Capacity	82 gm / 220 gm	
	Readability	0.01 mg / 0.1 mg	
	Readability	0.01 mg in the range of 82 gm & 0.1 mg for 220 gm	
	Weighing range	82 gm for 0.01 mg and 220 gm for 0.1 mg.	
	Reproducibility	0.01 mg up to 82 gm, 0.05 mg up to 220 gm for 0.1 mg accuracy.	
	Display	LCD with backlit	
	Calibration	Built in motorized weight	
	Pan Size	Ø 80 mm min	
	Weighing units	mg,g	
	Operating Temperature	5 °C to 40 °C	
	Power Supply	Operate on 230 ± 10 volts 50 HZ AC	
2.0	Accessories for Micro Balance :	Standard weight Box- 1 mg to 200 gm with NIST or equivalent conforming calibration certificate	
3.0	Additional Items		

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-57			
Equipment Name: Weighing Micro Balance (capacity 220 g minimum display 0.1 mg)			
Quantity: 3 (Three) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
	Operational and maintenance Manual	Two Set	
	Service Manual	One Set	
	Requisite Tools	One Set	
	Dust Cover	One Set	
4.0	Warranty	Three years from the date of installation.	
5.0	General Condition of Supply	(i) Should Operate on 230 ± 10 volts 50 HZ. (ii) All the operation and maintenance manuals circuit diagrams, application notes should be in English Language. (iii) The supplier/ manufacturer should have Indian agent to provide after sales service. (iv) The principal should provide a certificate that they will provide the space in future for atleast 10 years. (v) The main unit and all the subunits of the Analytical balance should be serviced by the Indian representative of supplier. (vi) Bidders should invariable furnish documentary evidence in support of the satisfactory operation of the Analytical balance. (vii) Demonstration of the Analytical balance should be provided by the bidder at installation site.	

CENTRAL POLLUTION CONTROL BOARD, DELHI

TECHNICAL SPECIFICATIONS OF WEIGHING MICRO BALANCE (CAPACITY 200 G MINIMUM DISPLAY 0.01 MG)

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-58			
Equipment Name: Weighing Micro Balance (capacity 200 g minimum display 0.01 mg)			
Quantity: 2 (Two) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
1.0	Display	Backlit LCD display with touch screen operation	
2.0	Weighing units	various units of weight	
3.0	Maximum Capacity	50 g / 200 g or more	
4.0	Readability	0.01 mg / 0.1 mg or better	
5.0	Tarring Range	0 ~ 200 g or wider	
6.0	Repeatability	0.015 mg upto 50 gm; Less than 0.05 mg upto 200 gm	
7.0	Linearity	± 0.5 mg	
8.0	Settling Time	5 second / 20 second or less	
9.0	Adjustment with internal weights	Push button adjustment	
10.0	Adjustment with external weights	200 g	
11.0	Temperature Sensitivity	± 2.5 ppm / °C	
12.0	Weighing Pan Size	ø 75 mm or larger	
13.0	Free height above weighing pan	200 mm or more	
14.0	Instrument safety	Weighing cell with overload protection	
15.0	Accessories	Protective in-use cover, tweeze, standard tool kit, Instruction / Operation & maintenance manual	

CENTRAL POLLUTION CONTROL BOARD, DELHI

Procurement of instruments / equipment for Central Pollution Control Board Laboratories (HQs & ZOs)			
Code Number: ICB-58			
Equipment Name: Weighing Micro Balance (capacity 200 g minimum display 0.01 mg)			
Quantity: 2 (Two) Nos.			
S. No.	Specifications	Requirement	BIDDER'S RESPONSE: (Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)
16.0	Power	230 ± 10V, 50 Hz AC, Automatic shut-off	
17.0	Calibration	Built-in auto-calibration and 2 x 100 gm weight. Calibration certified from NIST certified or equivalent calibration laboratory should be supplied.	
18.0	Warranty / Guarantee	Comprehensive guarantee should be valid for three years.	

CHECK LIST FOR THE BIDDER

1. Bid on original Tender form only.
2. Separate EMD against each item.
3. Earnest money or necessary documentary proof for exemption of earnest money with the part 1 of the bid.
4. Price bid must be Part II of the bid in the form provided at Annexure II of the tender document.
5. The Basic Price, Taxes, Packing, Forwarding, Handling, Transportation Insurance, Installation charges etc. must be quoted clearly. Do not use vague terms like "As Actual, Approximately etc".
6. Do not use the terms As per Specification of Tender Documents' in respect of instruments. There should be proper write up of production quoted for supported with printed leaflets literature.
7. In case of bidders desirous to quote more than one item, separate envelop should be submitted (technical & price bid) for individual item superscribing item code number and name.
8. **With technical bid, the bidder should provide a copy of the price bid format (giving details of the items, accessories, spares etc.) without specifying the price other than one mentioned in annexure-II of this tender document.**