



क्रय अनुभाग
वन अनुसंधान संस्थान
देहरादून-२४८००६
GSTIN 05AAAAI1708G2Z6
PAN NO. AAAAI1708G

Purchase Section
Forest Research Institute,
DEHRADUN-248006
Phone: 0135-2224205
http://fri.icfre.gov.in/tender/
Email: po_fri@icfre.org



Notice Inviting Tender (E-Procurement mode)

निविदा दस्तावेज/ Tender Document

Ref. No X-75/ECC(SOL)/PBK/AICRP/2019-20

Date: 19/02/2020

Online Bids under two bid systems (Technical and Commercial) are invited at CPP portal (<https://eprocure.gov.in/eprocure/app>) from the reputed manufacturer /authorized supplier/dealer for the following items. Manual bids will not be accepted.

वस्तु की तकनीकी विशिष्टताये / Technical Specification of item:

Sr. No.	Name of item / Specifications/	Qty	Warranty	EMD (Rs.)	Tender Fee (Rs.)
1.	Atomic Absorption Spectrophotometer (AAS)	01	3 Years	40,000/-	1180/-
2.	CHNS Analyzer	01	3 Years	100,000/-	
(For Detailed Technical Specification Plz refer Annexure-VI)					
नोट-1: कृपया वस्तु का मूल्य एवं कर अलग -अलग दर्शाए / Please quote the rate & Taxes of the item separately.					
Note-2: E-way bill is to be issued by the Venders/Transporter					
Note-3: The HSN / SAC Code of the item must be mentioned.					
For Reasonability of Rates, The firm must enclose the last two supply orders for the same item with Financial Bid (Annexure-IV) only.					
Technical Clarifications:	Dr. Parul Bhatt Kotiyal	Forest Soils Discipline(Forest Ecology & Climate Change Division)	Ph: 0135-222-4406 Email: kotiyalpb@icfre.org		
Critical Date Sheet					
1.	Published Date	19.02.2020 5.00 P.M		Newspaper/FRI website and CPP portal	
2.	Bid Document Download Start Date	19.02.2020 6.00 P.M		Central Public Procurement Portal (CPPP)	
3.	Seek Clarifications Start Date	19.02.2020 5.00 P.M		Through Ph/Email	
4.	Seek Clarification End Date	09.03.2020 5.00 P.M		Through Ph/Email	
5.	Pre-Bid Meeting Date	24.02.2020 10:00 A.M		Purchase Section, Main Building, FRI	
6.	Bid Submission Start Date	25.02.2020 9.00 A.M		CPP portal	
7.	Bid Submission End Date	12.03.2020 3.00 P.M		CPP portal	
8.	Technical Bid Opening Date	13.03.2020 3.00 P.M		CPP portal / Purchase Section Main Building, FRI	
9.	Financial Bid Opening Date	To be decided after technical evaluation		CPP portal	

Chapter-1: Instruction to bidders

- The Tender should be enclosed with proper certifications like Agency Certification, Authorization certificate and /or Proprietary Certificate, as the case may be, in support of your offer.
- बोली का जमा किया जाना / Submission of Bids:
 - The bids should be submitted online in two parts:
 - The Technical Bid (Annexure-I, II, III, V & VI)
 - The Financial Bid (Annexure-IV) Price Bid in BoQ.XLS format.

- 2) The bids should be printed on official pad preferably with GST Number of the firm.
- 3) The Bid should bear full details and where possible may be duly supported with CATALOGUES, PAMPHLETS, LITERATURE, samples of the item/items as the case may be for comparing the quality and rates of the item(s).
- 4) The Bid should bear full details of **USER LIST** preferably from Central Govt./State Govt./PSU or reputed institutes like IITs/NITs/AIIMS/IISERs etc. and where possible may be duly supported with their Purchase/Contract Orders as the case may be.
- 5) The Bid should ensure the **genuineness & brand new item** from the Principal and certified that the quoted item(s) is NOT going to be obsolete in near future and ensure the **availability of spares parts** for next five years.
- 6) The transportation cost, insurance charge etc., if any, Percentage/ rate of GST or all other taxes and duties should be clearly mentioned.
- 7) The bids / rates / tenders should remain valid for a minimum period of 90 days from the date of opening.
- 8) **Since this purchase being for research purpose, the Forest Research Institute, Dehradun is registered in DSIR, New Delhi; it is therefore exempted from the payment of custom duty and GST @ 5% as per the Govt. Rules. The bidder should quote accordingly.**
- 9) The rates shall not be subject to escalation of any nature.
- 10) The rates quoted should be applicable to educational institutions and any cost advantage received in lieu thereof should be passed on the Institution.
- 11) While quoting/ sending rates, the firm shall give an undertaking as per Annexure-II.

C. निविदा शुल्क/ Tender Fee एवं/and अग्रिम धन राशि / Earnest Money Deposit (EMD)

The Technical Bid should accompany **non-refundable Tender Fee in form of Demand Draft only** and an **EMD in the form of FDR only of the value mentioned at the first page of this tender document only for the equipment(s) bidding by the bidder**, issued from any of the Commercial Banks of India drawn in favour of "**Director, Forest Research Institute, Dehradun**" valid 90 days beyond the validity period of bid. The Bidder have to fill up Tender Fee and EMD details online as per quoted item(s) and the hard copy of these payment(s) should be deposited in a separate sealed cover super-scribed as Tender Fee and EMD for Tender No. & Item Name, addressed to: Purchase Officer, Purchase Section Forest Research Institute, Dehradun-248006 on or before the Bid Opening date and time as mentioned in Critical date sheet.

Exemption on submission of Tender Fee/EMD will be given against valid MSME/NSIC certificate under valid category and within the validating period of the certificate.

The earnest money shall be refunded to all the unsuccessful firms, without any interest after finalization of the contract. EMD shall be refunded to the successful firm on receipt of PBG/Security Deposit. No interest is payable on the EMD to either the successful firms or the unsuccessful firms.

D. निष्पादन बैंक प्रत्याभूति / Performance Bank Guarantee (PBG):

5% of the cost price in the form of Bank Guarantee or FDR pledged in favour of "**Director, Forest Research Institute, Dehradun**" is required to be submitted by successful bidder before the delivery / installation of the item(s) which should remain valid at least during the warranty period plus sixty days. No interest shall be claimed by the bidder on the PBG submitted. The Bank Guarantee may be forfeited in case of improper services provided by the bidder/firm and duly certified by the concerned Consignee/HOD.

E. बोलियों का खोला जाना / Opening of Bids:

- 1) The Technical Bids will be opened online at CPPP Portal (<https://eprocure.gov.in/eprocure/app>)-Plz refer Critical Date Sheet
- 2) The Financial bids of only the Technically Qualified bidders will be opened. The date and time for opening the Financial Bid will be communicated to the respective firm later by the system (CPP Portal (<https://eprocure.gov.in/eprocure/app>))
- 3) Representatives of the firms(s) may be present at the time of openings, if they so desire.

Chapter-2: Conditions of Contract

A. कार्य अनुबन्ध / Award of Contract:

The final selection of the bidder for the award of the contract will be made on the basis of the lowest commercial bid amongst the Technically Qualified Bidders.

B. पूर्व आपूर्ति निरीक्षण/ Pre-supply Inspection:

Authorized representative of the Institute shall make the final inspection before supply of the item at site of the firm, if required.

C. वस्तु की आपूर्ति / Supply of Item:

The whole supply as per order shall have to be completed within the time mentioned in the order failing which the FRI Dehradun shall have the right to accept or reject any quantity of items ordered. The firm will have to arrange for supply of the material/equipment in good condition.

D. भुगतान की शर्तें / Payment Terms:

- 1) **Payment in INR after SUPPLY/INSTALLATION/TESTING/COMMISSIONING/TRAINING of Item(s) as the case may be:**
Where installation is not required: 100% payment will be made after satisfactory delivery of material duly certified by the Consignee/HOD.
OR
Where installation is required: 100% payment will be made after satisfactory delivery and installation of the material duly certified by the Consignee/HOD.
OR
100% Advance will be paid against submission of 110% Bank Guarantee of the Total Order value.
- 2) **Payment in INR for AMC/CMC/Service:**
Quarterly/Half yearly after satisfactory completion of work/service duly certified by the Consignee/HOD.
- 3) **Payment in Foreign Currency for supply of goods:**

Payment will be made as below after deducting Indian Agency Commission (if any). IAC is payable in Indian Rupee after satisfactory installation.

- (i) 50% of the LC amount shall be release on presentation of complete and clear shipping documents and 50% of LC amount shall be released after the satisfactory delivery/installation/demonstration of the equipment duly certified by the concerned HOD and Indenter.
- (ii) Payment through Wire transfer after satisfactory delivery and installation of the material duly certified by the concerned Consignee/HOD.

4) Payment in Foreign Currency for AMC/CMC/Services:

Quarterly/Half yearly after satisfactory completion of work/service duly certified by the Consignee/HOD through wire transfer.

E. दंड/ Penalty:

A penalty of 0.5% of the total order value per week shall be levied for the delay subject to a maximum of 5% of the total order value. In case of the non-supply of the item after the acceptance of the work/supply order, EMD will be forfeited by the Institute.

F. अप्रत्याशित घटना/ Force Majeure:

For the purpose of and within the scope of contract by way of indication and not of limitation, the term "Force Mejeure" shall mean acts of nature, strikes, Lockouts, or other industrial disturbances, act of public/enemy, wars, blockades, insurrection, riots, epidemics, landslides, earthquakes, storms lightening, flood, washouts, civil disturbances, explosion and any other similar even not within the control of either party on which by exercise of due care and diligence neither party is able to prevent of overcome.

G. मध्यस्थता/Arbitration:

In the event of any difference or dispute arising out this work, all effort shall be made by both the parties to settle the same amicably. Failing an amicable settlement, the dispute shall be finally settled through arbitration conducted under the Arbitration and Conciliation Act 1996, by arbitrators appointed in accordance with the said Act. The arbitration shall give reasoned and speaking award. All disputes are subject to Dehradun jurisdiction only.

H. बोली अस्वीकृती के लिए मानदंड/ Criteria for bid rejection:

- 1) If technical bid found without the required undertaking (Annexure-II).
- 2) If it found at a later date that any information given in the bids is incorrect/false then the bid is liable to be disqualified/rejected.
- 3) Canvassing in any form will result in disqualification.

I. प्रशिक्षण/Training

The supplier shall be required to undertake to provide the technical training to the personnel involved in the use of the equipment at the Institute premises, immediately after completing the installation of the equipment for a minimum period of one week at the supplier's cost.

Chapter-3: Schedules of requirements

A. टिप्पणी/Note:

- 1) If the Supplier/firm is manufacturer/authorized dealer/sole distributor/of the item, the certificate to this effect should be attached.
- 2) Please note that the firms must submit the compliance Statement in an organized and structured manner in respect of all the specifications as per Annexure-VI with the supporting printed catalogue/leaflet of the firm. Annexure-I, II, III, V & VI have to be submitted with Technical Bid and Annexure-IV with Financial Bid.
- 3) It may also be noted that the tender bids received after the stipulated date & time or found incomplete and tender bids containing false/incorrect information shall be summarily rejected. The Institute shall not entertain any communication in this regard, whatsoever.
- 4) The firm is required to give its Bank Account details with IFSC for the purpose of making e-payment.
- 5) The Forest Research Institute (FRI) Dehradun reserves the right to reject any quotation wholly or partly without assigning any reason.
- 6) The quantity shown against the item is approximate and may vary as per demand of the Institute at the time placing order.
- 7) The decision of the Institute in all matters relating to eligibility, acceptance, rejection of the bid will be final and binding on the applicants.
- 8) Forest Research Institute (FRI) Dehradun discourages High Sea Sale Purchase. All tenders with High Sea Sale will be rejected.
- 9) The firms should clearly mention (in the financial bid) the Harmonized System of Classification (HS code) defined by the Central Custom and Excise Board (Govt. of India) for the item (s) involving import.
- 10) If the due date happens to be a holiday, then the bid will be accepted till 03:00 PM and opened at 04:00 PM of the next working day followed by the holiday.
- 11) If an agent submits bid on behalf of the Principal/OEM, the same agent can not submit a bid on behalf of another Principal/OEM in the same tender for the same item/product.
- 12) Indian Agent should submit the certificate from the Foreign Principal that they are the Authorized & Registered Indian Agent.
- 13) The quantity shown against the item is approximate and may varies as per demand of the institute as the time of placing order. Also, the final requirement of each line item will be decided by the Institute at the time of placing the PO.
- 14) Any corrigendum/addendum/errata in respect of the Tender Notice/ Enquiry letter shall be made available on CPP portal (<https://eprocure.gov.in/eprocure/app>). Hence prospective bidders are advised to visit the CPP portal regularly.
- 15) Bidders shall be responsible for the correctness of the information provided in the enquiry letter/tender document. If it is found at later date that any information given in the bid is incorrect/false then the bid is liable to be disqualified/rejected.
- 16) Institute will not be responsible for non-receipt of bid(s) within the stipulated date due to any postal delay or delay for any other reason in transit.
- 17) Before submission of bids, bidders should read the complete enquiry letter/tender document carefully and ensure that the bidders fulfill the eligibility criteria.
- 18) In case the item /product is under rate contract with DGS&D or GeM, than bidder should certify that the rate quoted is not over and above (higher side) the rates under RC with the DGS&D or GeM.
- 19) In item wise BoQ.xls sheet, in column 'M', leave blank for the item/service not provided/quoted by you. If quoted 0 (zero) then it will be considered that the item/service will be provided free of cost.

- 20) The Institute reserves the right to rectify any discrepancy of this advertisement, if found later on. In case of any inadvertent mistake in the process which may be detected at any stage even after the issue of purchase order, the Institute reserves the right to modify/withdraw/cancel any communication made to the bidder.
- 21) The successful bidder is required to inform about the pre-requirements of the delivery/installation like: (1) Custom Duty Exemption certificate (GATT declaration/Authority letter for custom clearance/Bank Release Order (BRO)/ Road Permit/ Trade tax declaration (against Form-32)/ GST Exemption Certificate (2) Complete Address of Freight Forwarder, Airlines etc. in whose favor BRO has to be issues/ Complete address of the firm or supplier or Cha to whom original clearance documents will be sent. FRI, Dehradun custom House Agent (CHA) address: M/s Cwick (Import Consolidation) Private Limited, L-II/101, New Mahavir Nagar Extension, Outer Ring Road, New Delhi -110018 Email: info@cwickimport.com, followup@cwickimport.com. Tel: +91-9313996082, +91-25996082, +91-11-25992781
- 22) Import Export Code (IEC code of FRI): 0100000011, Bank Name: Union Bank of India, Main Branch Rajpur Road, Dehradun – 248001, Bank AD Code: 02900682870007

Chapter-4: Specification and allied Technical details

Chapter-5: Price Schedule (to be utilized by the bidders for quoting their prices online in BoQ.xls sheet format at CPP portal(<https://eprocure.gov.in/eprocure/app>))

Chapter 6: Contract Form

Chapter-7: Other Standard Forms, if any to be utilized by the purchaser and bidders

Plz. See Annexure-I, II, III, V & VI

Plz. See Annexure-IV Price Bid in BoQ.xls format.

Purchase Order is used as Contract Form

Plz. See Annexure-V



[PURCHASE OFFICER, FRI]

Document Digitally Signed on
<https://eprocure.gov.in/eprocure/app>

तकनीकी बोली/Technical Bid
(To be given on Company Letter Head)

Ref. No X-75/ECC(SOL)/PBK/AICRP/2019-20

Date: 19/02/2020

विस्तृत विवरण अनुपालन रिपोर्ट के साथ प्रस्तुत किया जाना है (अपने आधिकारिक लेटरहेड पर विक्रेता/ फर्म द्वारा प्रस्तुत करने के लिए)
Detailed specification cum compliance report to be submitted with the Technical Bid
(to be submitted by the vender/firm on its official letter head)

(For Detailed Technical Specification Plz refer Annexure-VI)

Sr. No.	Name & Required Specifications of item (s)	Qty.	EMD	Offered specification of item (s) by the firm
1.				
2.				

	Firm's Profile
1)	Manufacturer/Authorized Agent/Distributor/Dealer/Supplier (Valid certificate must be attached)
2)	E-mail ID & Telephone/Mobile No. Detail of Bank A/C
Note:	(i) "Offered specification" should be filled up properly in the format provided as per Annexure-I
	(ii) Volume & Weight of the item should also be mentioned.
	(iii) The HSN / SAC Code of the item must be mentioned.

Signature:

Name:

Designation:

Seal of the Organisation



उपक्रम/UNDERTAKING
TENDER ACCEPTANCE LETTER
(To be given on Company Letter Head)

Date:

To,

Director
Forest Research Institute
Dehradun-248006

Sub: Acceptance of Terms & Conditions of Tender.

Ref. No X-75/ECC(SOL)/PBK/AICRP/2019-20

Date: 19/02/2020

Agreement/Contract Form

Dear Sir,

- (i) I / We hereby certify that I / we have read the entire terms and conditions of the tender documents from (including all documents like annexure(s), schedule(s), etc.), which form part of the contract agreement and I / we shall abide hereby by the terms / conditions / clauses contained therein.
- (ii) The corrigendum(s) issued from time to time by your department/organization too have also been taken into consideration, while submitting this acceptance letter
- (iii) I / We hereby unconditionally accept the tender conditions of above mentioned tender document(s)/ corrigendum(s) in its totality / entirety.
- (iv) I / We do hereby declare that our Firm has not been blacklisted/ debarred / banned by any Govt. Department/Public sector undertaking.
- (v) I / We certify that all information furnished by the our Firm is true & correct and in the event that the information is found to be incorrect/untrue or found violated, then your department/ organization shall without giving any notice or reason therefore or summarily reject the bid or terminate the contract, without prejudice to any other rights or remedy including the forfeiture of the full said earnest money deposit absolutely.
- (vi) It is certified that the rate quoted is not over and above (higher side) the rates under RC with the DGS&D or GeM.

Signature:

Name:

Designation:

Seal of the Firm/Agency

CHECK LIST

Sl No	(A) Qualifying documents	Yes/No	Page No.
1.	Whether TENDER FEE in shape of Demand Draft in favour of Director, Forest Research Institute, Dehradun OR Signed & Scanned copy of Exemption certificate like MSME, KVIC, NSIC etc with mentioning the validity date, is uploaded?		
2.	Whether EMD for applicable item No. (s) of Amount(s) in shape of FDR in favour of Director, Forest Research Institute, Dehradun attached OR Signed & Scanned copy of Exemption certificate like MSME/ NSIC/KVIC etc with mentioning the validity date, is uploaded?		
3.	Whether Signed & Scanned copy of AUTHORIZATION certificate issued by the manufacturer, if applicable, uploaded?		
4.	Whether Signed & Scanned copy of PAN card uploaded?		
5.	Whether Signed and Scanned copy of GST certificate , if applicable, uploaded?		
6.	Whether Signed and Scanned copy of Affidavit of PARTNERSHIP DEED , if applicable, uploaded?		
7.	Whether Signed and Scanned copy of AUDITED BALANCE SHEET of last two years, uploaded?		

Sl No	(B) Technical Documents	Yes/No	Page No.
1.	Whether duly Signed/ Stamped & scanned copy of tender document along with all Annexure (I, II, III and VI) by the authorized signatory uploaded?		
2.	Whether CATALOGUE of the quoted item(s) uploaded?		
3.	Whether USER LIST OF INSTITUTES/ORGANIZATIONS where the quoted model of item(s) supplied by the bidder in India along-with supportive documents from the users for the satisfactory performance and after sales service, is uploaded?		
4.	Whether the firm uploaded the last two supply orders for Reasonability of Rates?		
5.	Whether scanned and signed copy of supportive documents from the Principal regarding all specifications certified and guaranteed for GENUINENESS & BRAND NEW ITEM and that the model of the equipment is NOT GOING TO BE OBSOLETE in near future (5 years) is uploaded?		
6.	Whether supportive documents from the Principal regarding AVAILABILITY OF SPARES/PARTS for next five years are uploaded?		

Note:

1. It is compulsory to fill the above check list with pagination.
2. The document should be submitted/uploaded online in CPP portal in the above order of the check list and place the check list as cover page with pagination of documents.
3. In the absence of any of the qualifying documents, the bid shall be rejected.
4. The Tender Fee/EMD must be **submitted by post/ hand to Purchase Section, Forest Research Institute, Dehradun-248006** on or before the opening date of technical bid and the scanned copy of the same should be uploaded in the CPP Portal before date-time of submission of bid.

Signature:

Name:

Designation:

Seal of the Firm/Agency

Financial Bid
(to be submitted by the vendor/firm on its official letter head)

Ref. No X-75/ECC(SOL)/PBK/AICRP/2019-20

Date: 19/02/2020

Rates:						
Sr. No.	Name of item / Specifications/	Qty.	Unit Rate (Rs.)	Amount (Rs.)	GST @%	TOTAL (Rs.)
1.						
2.						
Total						
Grand Total Rs.						

- 1) Price of the items should be clearly mentioned if supplied Free of Cost.

Term & Conditions:

- | | |
|---|--|
| 1. Prices (if quoted in Rs.): | For FRI, DEHRADUN |
| 2. Prices (if quoted in Foreign Currency) : | CIP/CIF New Delhi OR FOB/FCA/Ex-Work |
| 3. Payment: | Should be clearly mentioned, as per clause –2(D) of enquiry letter. |
| 4. Validity: | |
| 5. Delivery period: | |
| 6. Other Charges: | |
| 7. Warranty: | Onsite 03 Years |
| 8. Rejection: | Equipment if found not as per the required specification would be rejected. |
| 9. Penalty Clause: | As per clause-2(E) of enquiry letter. |
| | In case of the non-supply of the item after the acceptance of the work/supply order, EMD will be forfeited by the Institute. |
| 10. PBG: | 5% of the cost price in the form of Bank Guarantee or FDR pledged in favour of "Director, Forest Research Institute, Dehradun" is required at the time of installation of the equipment which should remain valid at least during the warranty period plus sixty days. |

It is certified that the rate quoted is not over and above (higher side) the rates under RC with DGS&D or GeM.

Signature:

Name:

Designation:

Seal of the firm/Organisation

COMPLIANCE SHEET

TECHNICAL SPECIFICATION

Sl. No.	Technical Specifications	Compliance Y/N	Deviation, if any
	Double beam		
	Czerny-Turner		
	Photo Multiplier Tube (PMT)		
	182 nanometer		
	900 nanometer		
	0.2 nanometer		
	0.1 - 2.0		
	0.1 parts per million		
	0.1 - 2.0		
	300 and above		
	Hollow Cathode Lamp (HCL)		
	Both single and multiple element		
	2		
	Transmittance Absorbance Concentration Wavelength		

I have also enclosed all relevant documents in support of my claims, (as above) in the following pages.

Signature of Bidder

Name: _____

Designation: _____

Organization Name: _____

Contact No. : _____

Item No. 1 Atomic Absorption Spectrophotometer (AAS)

Specification

Type of Atomic Absorption Spectrometer (AAS)	Double beam
Monochromator type	Czerny-turner
Detector Type	Photo Multiplier Tube (PMT)
Source Wavelength - Minimum	185 nanometer
Source Wavelength - Maximum	900 nanometer
Accuracy (+/-)	0.5 nanometer
Slit width range(nm)	0.1 - 2.0
Resolution (nm/mm)	0.1 parts per million
Bandwidth (nm)	0.1 - 2.0
Focal length (mm)	300 and above
Light Source	Hollow Cathode Lamp (HCL)
Type of HCL	Both Single and Multiple Element
Number of Single element HCLs supplied (inclusive in the scope of supply)	5
Measuring modes (K factor and standards)	Transmittance, Absorbance, Concentration (Wavelength, time), Emission
Detectable Elements using single element HCL	Cu, Fe, Zn, Mn, As
Detectable Elements using multi element HCL	Cu-Fe-Zn-Mn
Measurement level	%, ppt level, ppm level, ppb level
Lifespan of Single element lamp (mA-Hr)	5000
Lifespan of multi-element/Alloys lamp (mA-Hr)	5000
Number of sockets on Turret	8
Type of atomizer	Flame Burner
Nebulizer	Pt/Ir nebulizer
Background Correction	D2 Lamp method

Flame and furnace change over switch	N/A
Burner diameter (mm)	100
Coolant	Air type
Sample volume	6 milliliter
Corrosion resistant Chamber	Yes
Adjustable aerosol based nebulizer flow	Yes
Time for analysis (sample)	10 second
Display	through PC
Test result printing	Through external printer
Connectivity	USB,RS 232
Safety sensors	Pressure sensor,Flame Sensor,Flame Ignition Sensor,Burner interlock,Power failure protection,Nebulizer Sensor,Auto ignition
Burner movement (lateral,horizontal & height)	Automatic
Power Supply	230 V A.C \pm 10%,50 Hz
Minimum Operating Temperature	10 degree Celsius
Maximum Operating Temperature	35 degree Celsius
Operating Humidity (RH) (%) at 40 degree c	80 percent
Type of gas cylinders	Acetylene
Type of Regulators supplied	Without Heater
Number of Regulators Supplied (inclusive in the scope of supply)	1
Number of Acetylene Cylinders supplied (inclusive in the scope of supply)	2
Capacity of each Acetylene cylinder (Litres)	40
Number of Nitrous oxide Cylinders supplied (inclusive in the scope of supply)	1
Capacity of each Nitrous oxide cylinder (Litres)	47
Gas cylinders confirming to	IS : 7285 latest
Gas cylinders having PESO	Yes

certificate	
Other accessories (inclusive in the scope of supply)	Gas flow control box,Oil Moisture Filters,SS Exhaust fume hood with blower,Schematic diagram and instruction manual,Hydride generator
Suitable software for connecting PC & Printer (inclusive in the scope of supply)	Yes
warranty (Year)	1 year
Spares and Consumables inclusive in the scope of supply	Yes
List of Items and Quantity of each item included in the offer	Yes
Optional	3 Years AMC

Specification

- 1) The Analyzer should be able to achieve rapid and precise results for Carbon, Hydrogen, Nitrogen (CHN) and Sulphur.
- 2) The Elemental Analyzer shall utilize a combustion technique with independent detectors optimized for each element (thermal conductivity for nitrogen; infrared for carbon, hydrogen and sulphur) for measurement of all elements of interest, speeding up the analysis time and eliminating the need for combustion gas separation techniques.
- 3) The Elemental Analyzer should be available in Helium carrier gas models for the analytical flow path leading to the thermal conductivity cell.
- 4) Have automatic temperature and barometric pressure compensation allowing it to operate at high altitude of at least 2500 meters above sea level.
- 6) Analyzer must utilize an external high temperature furnace for Sulfur determination.
- 7) Should be able to analyze samples for Carbon, Hydrogen and Nitrogen in the internal furnace and samples for Sulfur in the external furnace simultaneously.
- 8) Must provide compatibility to an external balance, printer, and Laboratory Information Management System (LIMS).
- 9) All chemical reagents utilized in the Elemental Analyzer must have a minimum lifetime of 500 analyses before reagent change is required, maximizing the uptime and reducing the operator time requirement related to routine instrument maintenance.
- 10) Must be manufactured by a recognized and reputable instrument manufacturer with an established user base (user list must be attached). All sales, support, and service must be directly available from the manufacturer and not a third party distributor.
- 11) Specify if any similar scientific laboratory equipment has earlier been supplied for soil testing (must attach the relevant documents as an evidence)
- 12) No parts or accessories which are locally fabricated will be accepted other than the genuine parts from the equipment manufacturer.
- 13) The Elemental Analyzer must be able to analyze the maximum specified sample mass of the instrument regardless of the carbon content or matrix of the sample.
 - a. CHN: Up to 250 mg, 100 mg nominal.
 - b. S: Up to 350 mg, 250 mg nominal.

14) Detection Method

- a. Carbon/Hydrogen/Sulfur: Non-Dispersive Infrared (IR) Absorption
- b. Nitrogen: Thermal Conductivity (TC Cell) Detector

15) Instrument Range

- a. Carbon: 0.02 to 175 mg (0.02% to 100% at nominal weight of 100mg)

- b. Hydrogen: 0.1 to 12 mg (0.1% to 12% at nominal weight of 100mg)
- c. Nitrogen: 0.04 to 50 mg (0.04% to 50% at nominal weight of 100mg)
- d. Sulfur: 0.01 to 20 mg (0.004% to 8% at nominal weight of 250mg)

16) Precision

- a) Carbon: 0.01 mg or 0.5% RSD, whichever is greater.
- b) Hydrogen: 0.05 mg or 1.0% RSD, whichever is greater.
- c) Nitrogen: 0.02 mg or 0.5% RSD, whichever is greater.
- d) Sulfur: 0.005 mg or 1% RSD, whichever is greater.

17) Analysis Time

- a) The Elemental Analyzer must be capable of performing an analysis for Carbon, Hydrogen, Nitrogen and Sulfur simultaneously within 4.5 minutes.
- 18) Instrument automation must use a low-maintenance, rotating carousel that has a standard capacity of 30 samples, but can be optionally increased up to 120 samples without changing sample mass capability.
 - 19) The Elemental Analyzer must ensure complete combustion of macro samples by providing an internal two-stage combustion furnace that is capable of independent temperature control up to 1050°C.
 - 20) The external furnace shall utilize a horizontal combustion tube capable of temperature control up to 1450oC for Sulfur determination.
 - 21) The external high temperature Sulfur furnace must be capable of performing analyses on macro samples up to 350 mg in a reusable ceramic sample container.
 - 22) The Elemental Analyzer must use Windows®-based operating software that supports compliance to 21 CFR Part 11 regulations, contain an on-board help manual, and perform wellness checks of the instrument based on user-defined service conditions.
 - 23) The Elemental Analyzer must use a Windows®-based operating software that supports compliance to 21 CFR Part 11 regulations, contain an on-board help manual, and perform wellness checks of the instrument based on user-defined service conditions.
 - 24) The Elemental Analyzer software must contain real-time service diagnostics, including ambient charts of instrument temperatures, pressures, and detector signal; manual control of solenoids and switches; automated leak checks; and network and communications diagnostics.
 - 25) A complete operator's instruction and service manual shall be supplied in both hardcopy as well as a searchable PDF softcopy contained within the software.
 - 26) The quoted price shall include installation, start-up and on-site training for 3 days to the purchaser's staff by a qualified company representative. Prior to installation of the product, the purchaser will be contacted to (1) assure that the pre-installation guidelines have been completed and(2) arrange for the installation of the product.

27) Installation and Training must be provided onsite by the manufacturer and not a third party distributor.

28) Twelve months warranty from date of installation.

29) CHN and Sulphur Elemental Analyzer package must include the following;

Model Combustion Furnace, Combustion Gas Handling and Aliquot Dosing System with Carbon, Hydrogen, Nitrogen and Sulphur Detection with 30 Position Autoloader, Sulfur Module, Windows based operating software, PC Tower, 19" Flat Panel Monitor, Operating Supplies

30) The required items should not be less than quantity specified below. The supplier should also specify and include any other essential items required for initial testing of the equipment at the time of its installation, in case bidding documents has failed to include them.

- ✓ Anhydrous 1bl./btl,
- ✓ Reagent Furnace 100g
- ✓ Lecosorb 500 g/btl. 20-30 Mesh

31) Operating Supplies

- ✓ Kit PmaChn/cn/fp628 With Sulfur
- ✓ Cup Sample Tin Large 400/pk
- ✓ Pack Consumable 628 Sml Tin Foil Cup 5k
- ✓ Boat Crucible Zir 250/pk

32) Other Accessories

- ✓ Nicotinic Acid Standard
- ✓ Edta Standard 50g/btl
- ✓ Std Rm Phenylalanine 99% 50g
- ✓ Std Rm Coal Prox Plus Med 50g
- ✓ Std Rm Met Coke Prox Plus 50g
- ✓ Std Rm Pet Coke Prox Plus, % Sulfur 5.5, 50g/btl
- ✓ Hot Plate Crucible Tray (requires 606-563 Hot plate Tray liner)
- ✓ Hot Plate Tray Liner
- ✓ Kit Regular Oxygen - Two Stage
- ✓ Inert Gas Regulator Kit - Two Stage
- ✓ Kit Regulator Pressure 2-stage Air Cga 3
- ✓ Kit Printer Officejet Pro Hp6230
- ✓ Sartorius Secura model balance and interface kit, 0.1mg readability, 120g capacity, cables for USB or serial interface

*Optional: 3 Years AMC