ICAR - CENTRAL INLAND FISHERIES RESEARCH INSTITUTE
AN ISO 9000 : 2008 Certified Organization
Barrackpore, Kolkata-700 120, West Bengal
☎ *2592-1190/1191 Fax : 033-2592-0388*
E-mail : storeseccifri@gmail.com, Website : www.cifri.res.in
GST NO.19AAAGC0090D1ZX

F. No. Purchase(SFC ICPMS)-02(1)/2019-Stores Dated:-25.02.2019

NOTICE INVITING TENDER THROUGH E-PROCUREMENT

E-Tender Id.:- "2019_DARE_447511_1"

Online Bids are invited from interested firms under two bid systems for **Procurement of Inductively Coupled Plasma Mass Spectrometry (ICPMS) at ICAR-CIFRI, Barrackpore, Kolkata – 700120, West Bengal**. Tender documents may be downloaded from e-Procurement website of CPPP https://eprocure.gov.in/eprocure/app as per the schedule as given in CRITICAL DATE SHEET as under.

CRITICAL DATE SHEET

Tender No.	No Purchase(SFC ICPMS)-02(1)/2019-Stores
Name of Organization	**ICAR-Central Inland Fisheries Research Institute, Barrackpore, Kolkata - 700120**
Date and Time for Issue/Publishing	**11.00 AM on 25.02.2019**
Document Download/Sale Start Date and Time	**11.30 AM on 25.02.2019**
Pre-bid Conference	11.00 AM on 05.03.2019
Bid Submission start Date and Time	**01.00 PM on 06.03.2019**
Bid Submission End Date and Time	**11.00 AM on 25.03.2019**
Date and Time for Opening of Bids	**11.00 AM on 26.03.2019**
Address for Communication	**Asstt.Adm.Officer(Stores), ICAR-CIFRI, Barrackpore, Kolkata – 700120 E-mail: storeseccifri@gmail.com**

Asstt. Adm. Officer (Stores)

Annexure-I

INSTRUCTIONS FOR BIDDER

1. The tender form/bidder documents may be downloaded from the website: https://eprocure.gov.in/eprocure/app . Online submission of Bids through Central Public Procurement Portal (https://eprocure.gov.in/eprocure/app) is mandatory. Manual/Offline bids shall not be accepted under any circumstances.

2. Tenderers/bidders are requested to visit the website https://eprocure.gov.in/eprocure/app regularly. Any changes/modifications in tender enquiry will be intimated by corrigendum through this website only.

3. In case, any holiday is declared by the Government on the day of opening, the tenders will be opened on the next working day at the same time. The Council reserves the right to accept or reject any or all the tenders.

4. The interested Firms are required to deposit (in original) an Earnest Money Deposit (EMD) of the amount mentioned against item in the form of Account Payee Demand Draft only from any of the Commercial Banks in favour of **ICAR unit CIFRI, payable at SBI Barrackpore** may be addressed to **Asstt. Adm.Officer(Stores), ICAR-CIFRI, Barrackpore, Kolkata - 700120.** The EMD has to be submitted in acceptable form on or before bid **opening date and time as mentioned in the Critical Date Sheet.** No quotation shall be considered without the earnest money deposit. The earnest money will be refunded only after the finalization of the procurement and no interest will be paid on earnest money.

5. The firm should send the original brochures of the product as well as complete tender documents in a sealed envelope addressed to **Asstt. Adm.Officer(Stores), ICAR-CIFRI, Barrackpore, Kolkata - 700120** on or before bid opening date and time as mentioned in the Critical Date Sheet. Original brochures should also be available on the website of the firm.

6. Bidder need not to come at the time of Technical as well as financial bid opening at CIFRI. They can view live bid opening after login on CPPP e-Procurement Portal at their remote end. If bidder wants to join bid opening event at CIFRI then they have to come with bid acknowledge slip that generates after successfully submission of online bid.

The Firms are also required to upload copies of the following documents:-

Technical Bid

(a) Scanned copy of Earnest Money Deposit(EMD)/its exemption, if any
(b) Scanned copy of Firm's registration, Pan Card, GST No., Tender Acceptance Letter (Annexure-V).
(c) Scanned copy of Manufacturers authorization certificate issued by Principal Manufacturer only.
(d) Scanned Copy of Annexure-II and IV duly signed and stamped by the bidder.
(e) Scanned copy of User List/Purchase Orders of its satisfactory installation.
(f) Scanned Copy of Make/Model/Brand/Catalogue of all systems, sub systems and additional items should be mentioned in the technical bid and complete technical details should be provided in the form of Brochures and write-ups.

Financial Bid

Price Bid as BoQ_XXXX.xls (For original Instrument) and PDF copy for other for optional items. Evaluation shall be based on the price quotation for original instrument.

Sd/-
Asstt. Adm. Officer (Stores)

Annexure-II

Terms & Conditions

1. The tenderer shall quote rates, which will include the delivery & other incidental charges. Taxes etc. should be indicated separately.
2. The rates should be quoted as per the BOQ uploaded on the CPP Portal in xls format (reference may be obtained from Annexure-III). It must be noted that the contract shall be awarded to the firm which fulfills all the required terms and conditions.
3. The firm must also possess valid PAN No., GST registration number and a copy of the same must also be enclosed with the tender document.
4. The equipment quoted should be of latest technology. The spare parts of the equipment quoted should be available for next 10 years.
5. Modification in the tender documents after the closing date is not permissible.
6. The successful firm shall have to supply the **Scientific Equipment** within 6 weeks from the date of confirmed supply order or confirmed Letter of Credit and if the materials are not supplied in time than the purchase order may be cancelled and the performance guarantee may be forfeited, if time extension has not been granted by the Institute.
7. **The validity of the Tender will be at least for 120 days from the date of opening of the Tender.**
8. No variation in rates, terms and conditions and specifications shall be entertained.
9. The Director, ICAR-CIFRI shall have the right to reject all or any of the offers without giving any reasons.
10. Merely quoting of lowest rates does not mean that order shall be given to that firm. The decision of the competent authority will be final.
11. In case of foreign currency, conversion rates in INR will be taken on that day when financial bid is opened, to work out the cost of equipment, for comparative evaluation of the rates.
12. In case, the successful bidder shows inability to execute the contract at any stage, after the contract is awarded, for whatsoever reason(s), the earnest money/performance security deposited would be forfeited.
13. The Director, ICAR-CIFRI reserves the right to cancel the contract at any time during the currency period of the contract without giving any reason.
14. The firm, to whom the tender will be awarded, will have to deposit the performance security equal to 10% of the total amount within 15 (fifteen) days after notification of award of contract to the Firm. The formal purchase order will be issued only after receiving the performance security. The Performance security should remain valid for a period of 60 (sixty) days beyond the date of completion of all contractual obligations of the supplier, including warranty obligations. If the services are not found to be satisfactory, the performance security is liable to be forfeited. No interest will be paid on performance security.
15. If any dispute(s) arises between ICAR-CIFRI and the firm with reference to the contract, ICAR-CIFRI will decide it and its decision will be binding on the firms.
16. Neither any official of a procuring entity nor a bidder shall act in contravention of the Integrity codes specified under Rule 175 of General Financial Rules 2017 which includes making offer, solicitation or acceptation of bribe, rewards or gift or any material benefits, either directly or indirectly, in exchange for an unfair advantage in the procurement process or to otherwise influence the procurement process.
17. This Institute is registered with DSIR and is exempted from Excise Duty. In case of imported goods, CDEC/DSIR will be provided to the firm only if it is imported in the name of Institute against the purchase order.
18. **Payment-**

(A) In case of imported good:-

(a) On shipment 90% of the contract price (FOB) and air/sea freight, insurance, custom duty against CDEC, Custom Clearance charges, taxes & transportation charges on FOR upto CIFRI shall be paid through irrevocable **LETTER OF CREDIT** upon submission of documents detailed in L/C.

(b) The balance 10% of the contract price (FOB) and air/sea freight, insurance, custom duty against CDEC, Custom Clearance charges, taxes & transportation charges on FOR upto CIFRI will be released after satisfactory installation/commissioning, training and other contractual obligations.

OR

(c) 100% of contract price through a direct Bank Transfer after receipt of prescribed documents and satisfactory installation/commissioning.

Note:- The bidder may choose only one mode of payment either L.C. or Direct Bank Transfer. The mode of payment once opted in the bid shall not be changed after opening of tender. In case, no option for mode of payment is given in the bid, payment will be made through L.C.

(B) In case of indigenous goods:

(i) 100% of the contract price on receipt of goods by the consignee after satisfactory installation/commissioning, training and other contractual obligations. The GST @ 5% should be separately quoted as per Govt. of India Notification No. 45/2017-Central Tax (Rate), dated 14th November, 2017 and No. 47/2017-Central Tax (Rate), dated 14th November, 2017 for research Institutes. Certificate shall be issued by the Head of the Institute as per Sl. No. 3 of the aforementioned Notifications, no separate DSIR Certificate shall be issued.

19. Installation:-

Within 30 days from the date of receipt of equipment in the Institute failing which Liquidated Damage clause shall be applicable.

20. **Liquidated damage clause:** It would be charged @ 0.5% (half per cent) of the base price (excluding taxes) of the delayed goods for each week of delay in supply and/or installation subject to a maximum of 10%.

21. Prices –

(A) <u>In case of imported goods</u>

i. **The rates should be quoted in foreign currency/INR on FOB basis and all charges from FOB** international port/Airport to FOR CIFRI, Barrackpore (like; air/sea freight, insurance, custom duty against CDEC, Custom Clearance charges, taxes & transportation charges upto ICAR-CIFRI) should be quoted **<u>in INR</u>** only.

ii. The **Indian Agency Commission** should also be indicated separately which will be paid in **<u>equivalent INR</u>** to Indian Agent of Principal Manufacturer after satisfactory installation of the equipment and after completion of all contractual obligations.

(B) <u>In case of Indigenous goods</u>

i. The rates should be quoted in INR.

ii. The GST amount should be mentioned separately.

22. IN CASE OF IMPORTED/INDIGENEOUS GOODS:

THE TENDERING FIRM/AGENT MUST ENCLOSE THE AUTHORITZATION CERTIFICATE FROM ITS PRINCIPAL MANUFACTURER. IN CASE OF NON-COMPLIANCE OF THIS CONDITON, TENDER WILL BE REJECTED.

23. **Warranty:-** Warranty period should be at least one year from the date of installation or as specified in Annexure VIII, whichever is higher**.**

24. Annual Maintenance Charges and Optional items**:- The Tendering firm should quote the AMC charges for a period of Five Years after expiry of warranty period along with in the PDF copy enclosed in the Financial bid.**

‘**Terms & conditions are acceptable’**

Dated : **(Authorized signatory of the firm)**

ANNEXURE – III

(Reference for BOQ in XLS) (To be quoted in format provided on CPP Portal)
Price bid for ICPMS with Complete Accessories at ICAR-CIFRI,
Barrackpore, Kolkata – 700120

1. **Price to be quoted for ICPMS as mentioned in Annexure-VIII (Specifications) from Sl. No. 1 to 18**

Sl. No.	Item	No. of Unit	Unit Rate/FOB Rate on International Port (Seaport/Airport) In Figures To be entered by the Bidder in Foreign currency/INR (For Global/Domestic Vendors both)	Charges from FOB to FOR Destination Rates in INR	Indian Agency Commission in INR	GST in INR on UNIT Rate (where vender quote in INR)
a	b	c	d	e	f	g
1	ICPMS	1	Bidder to quote	Bidder to quote	Bidder to quote	Bidder to quote

2. **Optional Item as per Sl. No. 1 to 5 of Annexure VIII Optional Items to be to be quoted mandatorily in the separate BOQ in PDF format but will be purchased based on the availability of budgetary provision (To be quoted in PDF Format in BOQ2)**

Sl. No.	Item	No. of Unit	Unit Rate/FOB Rate on International Port (Seaport/Airport) In Figures To be entered by the Bidder in Foreign currency/INR (For Global/Domestic Vendors both)	Charges from FOB to FOR Destination Rates in INR	Indian Agency Commission in INR	GST in INR on UNIT Rate (where vender quote in INR)
a	b	c	d	e	f	g
1	Nebulizer	1	Bidder to quote	Bidder to quote	Bidder to quote	Bidder to quote
2	Spray Chamber	1	Bidder to quote	Bidder to quote	Bidder to quote	Bidder to quote
3	Cone	1	Bidder to quote	Bidder to quote	Bidder to quote	Bidder to quote
4	Injector	1	Bidder to quote	Bidder to quote	Bidder to quote	Bidder to quote
5	Uninterrupted power supply UPS	1	Bidder to quote	Bidder to quote	Bidder to quote	Bidder to quote

Sl. No.	Item	No. of Unit	AMC Rates in INR after Warranty Period For Ist yr in Rs. P	AMC Rates in INR after Warranty Period For 2nd yr in Rs. P	AMC Rates in INR after Warranty Period For 3rd yr in Rs. P	AMC Rates in INR after Warranty Period For 4th yr in Rs. P	AMC Rates in INR after Warranty Period For 5th yr in Rs. P
a	b	c	d	e	f	g	h
1	ICPMS (As per Sl. No. 1 to 18 of the Main Equipment at Annexure-VIII of NIT Document)	1	Bidder to quote	Bidder to quote	Bidder to quote	Bidder to quote	Bidder to quote

* Items should be of reputed make and suitable for high end elite users.
* Tax extra as applicable should be indicated separately in the column provided.
* Bid submitted in foreign currency will be converted to INR on the date of opening of Price Bid.

Note: The above mentioned Financial Proposal/Commercial bid format is provided as BoQ_XXXX.pdf along with this tender document at https://eprocure.gov.in/eprocure/app. Bidders are advised to download this BoQ_XXXX.xls (For main Instrument) and BoQ_XXXX.pdf (For Optional items and AMC) as it is and quote their offer/rates in the permitted column and upload the same in the financial bid. **Bidder shall not tamper/modify downloaded price bid xls/pdf in any manner**. In case the same is found to be tempered/modified in any manner, tender will be completely rejected and EMD would be forfeited and tenderer is liable to be banned from doing business with ICAR-CIFRI.

Annexure – IV

ICAR - CENTRAL INLAND FISHERIES RESEARCH INSTITUTE
AN ISO 9000 : 2008 Certified Organization
Barrackpore, Kolkata-700 120, West Bengal
☎ 2592-1190/1191 Fax : 033-2592-0388
E-mail : storeseccifri@gmail.com, Website : www.cifri.res.in
GST NO.19AAAGC0090D1ZX

Name of the Firm_____

Registered / Postal Address _____

_____

1.	Permanent Account Number (PAN) No.	
2.	Service Tax Registration No., if applicable	
3.	Bank Details:-	
	a) Bank Name	
	b) Branch Address	
	c) Account No.	
	d) Type of Account (Current/Savings)	
	e) MICR NO.	
	f) RTGS/NEFT code	

Date:…… **Name of the Authorized Signatory**

Stamp & Signature

Place:……

Annexure-V

TENDER ACCEPTANCE LETTER

(To be given on Company Letter Head)

Date:

To,

The Director,
ICAR-Central Inland Fisheries Research Institute,
Barrackpore, Kolkata - 700120

Sub: Acceptance of Terms & Conditions of Tender.

Tender Reference No: _____

Name of Tender / Work: -

_____

_____

_____

_____

Dear Sir,

1. I/ We have downloaded / obtained the tender document(s) for the above mentioned 'Tender/Work' from the website(s) namely:

_____

_____

_____

_____

as per your advertisement, given in the above mentioned website(s).

2. I / We hereby certify that I / we have read the entire terms and conditions of the tender documents from Page No. _____ to _____ (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.

3. The corrigendum(s) issued from time to time by your department/ organization too have also been taken into consideration, while submitting this acceptance letter.

4. I / We hereby unconditionally accept the tender conditions of above mentioned tender document(s) / corrigendum(s) in its totality / entirety.

5. I / We do hereby declare that our Firm has not been blacklisted/ debarred by any Govt. Department/Public sector undertaking.

6. I / We certify that all information furnished by our Firm is true & correct and in the event that the information is found to be incorrect/untrue or found violated, then your department/ organisation shall without giving any notice or reason therefor 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.

Yours Faithfully,

Signature of the Bidder, with Official Seal)

Annexure-VI

Instructions for Online Bid Submission:

The bidders are required to submit soft copies of their bids electronically on the CPP Portal, using valid Digital Signature Certificates. The instructions given below are meant to assist the bidders in registering on the CPP Portal, prepare their bids in accordance with the requirements and submitting their bids online on the CPP Portal.

More information useful for submitting online bids on the CPP Portal may be obtained at: https://eprocure.gov.in/eprocure/app .

REGISTRATION

Bidders are required to enroll on the e-Procurement module of the Central Public Procurement Portal (URL: https://eprocure.gov.in/eprocure/app) by clicking on the link "**Online bidder Enrollment**" on the CPP Portal which is free of charge.

As part of the enrolment process, the bidders will be required to choose a unique username and assign a password for their accounts.

Bidders are advised to register their valid email address and mobile numbers as part of the registration process. These would be used for any communication from the CPP Portal.

Upon enrolment, the bidders will be required to register their valid Digital Signature Certificate (Class II or Class III Certificates with signing key usage) issued by any Certifying Authority recognized by CCA India (e.g. Sify / nCode / eMudhra etc.), with their profile.

Only one valid DSC should be registered by a bidder. Please note that the bidders are responsible to ensure that they do not lend their DSC's to others which may lead to misuse.

Bidder then logs in to the site through the secured log-in by entering their user ID / password and the password of the DSC / e-Token.

SEARCHING FOR TENDER DOCUMENTS

There are various search options built in the CPP Portal, to facilitate bidders to search active tenders by several parameters. These parameters could include Tender ID, Organization Name, Location, Date, Value, etc. There is also an option of advanced search for tenders, wherein the bidders may combine a number of search parameters such as Organization Name, Form of Contract, Location, Date, Other keywords etc. to search for a tender published on the CPP Portal.

Once the bidders have selected the tenders they are interested in, they may download the required documents / tender schedules. These tenders can be moved to the respective 'My Tenders' folder. This would enable the CPP Portal to intimate the bidders through SMS / e-mail in case there is any corrigendum issued to the tender document.

The bidder should make a note of the unique Tender ID assigned to each tender, in case they want to obtain any clarification / help from the Helpdesk.

PREPARATION OF BIDS

Bidder should take into account any corrigendum published on the tender document before submitting their bids.

Please go through the tender advertisement and the tender document carefully to understand the documents required to be submitted as part of the bid. Please note the number of covers in which the bid documents have to be submitted, the number of documents - including the names and content of each of the document that need to be submitted. Any deviations from these may lead to rejection of the bid.

Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document / schedule and generally, they can be in PDF / XLS / RAR / DWF/JPG formats. Bid documents may be scanned with 100 dpi with black and white option which helps in reducing size of the scanned document.

To avoid the time and effort required in uploading the same set of standard documents which are required to be submitted as a part of every bid, a provision of uploading such standard documents (e.g. PAN card copy, annual reports, auditor certificates etc.) has been provided to the bidders. Bidders can use "My Space" or ''Other Important Documents'' area available to them to upload such documents. These documents may be directly submitted from the "My Space" area while submitting a bid, and need not be uploaded again and again. This will lead to a reduction in the time required for bid submission process.

SUBMISSION OF BIDS

Bidder should log into the site well in advance for bid submission so that they can upload the bid in time i.e.
on or before the bid submission time. Bidder will be responsible for any delay due to other issues.

The bidder has to digitally sign and upload the required bid documents one by one as indicated in the tender document.

Bidder has to select the payment option as "offline" to pay the EMD as applicable and enter details of the instrument.

Bidder should prepare the EMD as per the instructions specified in the tender document. The original should be posted/couriered/given in person to the concerned official, latest by the last date of bid submission or as specified in the tender documents. The details of the DD/any other accepted instrument, physically sent, should tally with the details available in the scanned copy and the data entered during bid submission time. Otherwise the uploaded bid will be rejected.

Bidders are requested to note that they should necessarily submit their financial bids in the format provided and no other format is acceptable. If the price bid has been given as a standard BoQ format with the tender document, then the same is to be downloaded and to be filled by all the bidders. Bidders are required to download the BoQ file, open it and complete the white coloured (unprotected) cells with their respective financial quotes and other details (such as name of the bidder). No other cells should be changed. Once the details have been completed, the bidder should save it and submit it online, without changing the filename. If the BoQ file is found to be modified by the bidder, the bid will be rejected.

The server time (which is displayed on the bidders' dashboard) will be considered as the standard time for referencing the deadlines for submission of the bids by the bidders, opening of bids etc. The bidders should follow this time during bid submission.

All the documents being submitted by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered cannot be viewed by unauthorized persons until the time of bid opening. The confidentiality of the bids is maintained using the secured Socket Layer 128 bit encryption technology. Data storage

encryption of sensitive fields is done.Any bid document that is uploaded to the server is subjected to symmetric encryption using a system generated symmetric key. Further this key is subjected to asymmetric encryption using buyers/bid openers public keys. Overall, the uploaded tender documents become readable only after the tender opening by the authorized bid openers.

The uploaded tender documents become readable only after the tender opening by the authorized bid openers.

Upon the successful and timely submission of bids (ie after Clicking "Freeze Bid Submission" in the portal), the portal will give a successful bid submission message & a bid summary will be displayed with the bid no. and the date & time of submission of the bid with all other relevant details.

The bid summary has to be printed and kept as an acknowledgement of the submission of the bid. This acknowledgement may be used as an entry pass for any bid opening meetings.

ASSISTANCE TO BIDDERS

Any queries relating to the tender document and the terms and conditions contained therein should be addressed to the Tender Inviting Authority for a tender or the relevant contact person indicated in the tender.

Any queries relating to the process of online bid submission or queries relating to CPP Portal in general may be directed to the 24x7 CPP Portal Helpdesk.

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Annexure-VII

Details of Equipment & EMD

Sl. No.	Purchase of Item	Qty	Earnest Money in INR	File no. for reference
1.	**ICPMS**	**1**	**3,90,000/-**	No Purchase(SFC ICPMS)-02(1)/2019-Stores

Annexure-VIII

ICP-MS Specifications

1	Basic Design	Triple or three quadrupole ICP-MS system for analysis of trace and ultra-trace level determination of elements. It should consist of liquid sample introduction system, RF plasma ion source, ion beam focusing system, polyatomic interference removal system, quadrupole mass filter, dual stage discrete dynode detector, all under computer control dynamically as system analyzes element to element. Its mainframe should be compact to save lab space. The ICP-MS should be integrated with suitable HPLC system.
2	Sample introduction system	Capable of easy switching between liquid systems. Sample Introduction system should have very low dead volume with uptake rate as low as possible. Sample introduction components may be mounted outside torch enclosure to eliminate the need for extraneous spray chamber cooling hardware. The sample Introduction system, Torch, Injector & cones should be easily accessible.
	Nebulizers	• Standard supply along with equipments to be mentioned. • Optional type to be quoted separately.
	Spray chamber	• Standard supply (Peltier-cooled spray chambers) along with equipments to be mentioned. • Optional item to be quoted separately.
	Peristaltic pump	• High precision 3-channel or more pump allowing precise computer control of sample pumping. • Peristaltic pumps located adjacent to spray chamber for faster rinse in/out & minimum transfer line volume
	Injector	• Standard supply of injector along with equipments to be mentioned. • Optional item to be quoted separately.
	Torch	• One piece, quartz torch of 2.5mm ID for efficient matrix decomposition and sample ionization. Capable of using a demountable torch. Alternatively, an advanced type.
	Computer control of torch	• Torch position - easy and fully computer controlled
	Autosampler	• Autosampler for ICP-MS with 100 or more sampling positions with protective cover • Compact and integrated type preferably from same company
3	RF generator	• Digitally driven with a quartz crystal controlled generator of 27 or 40 MHz RF with range up to 1600 watts (max) generator for efficient and superior ionization
4	Plasma ion source and plasma gas control	• Desired digital Mass Flow Controllers for control Plasma, auxiliary makeup and carrier gases. System may have additional mass flow controllers which could be used for future up-gradation of the system.
5	Extraction interface : Sample and skimmer cones	• Large orifice sample and skimmer cones for easily mounting and dismounting. • Supply of standard Nickel cone to be mentioned.

6	Ion focusing and extraction system	• Capable of minimizing interface background • Lens configuration should provide a flat mass response with the best low mass transmission, should be dual mode extraction system (conventional and soft extraction) • If alternative advanced technique, it is to be mentioned.
7	Lens system	• System with off –axis system or a shadow stop mechanisms • All ion lenses preferably outside the high vacuum region for easy maintenance and replacement by operator & detector contamination with atmospheric moisture. • Lens cleaning and replacement procedure should be without the need to put off or open the main vacuum system to minimize the down time of instrument • If alternative advanced technique, it is to be mentioned
8	Collision cell and /or Reaction cell technology	• The collision reaction cell of ICP-MS should be able to be operated effectively in collision mode and/or reactive mode. • Published papers or application notes should be supplied that demonstrate the applicability of the instrument proposed • The Instrument shall be able to be used for the multi element analysis of unknown sample containing Cl, SO_4 and Organic content, without the need for any interference correction equations. All interferences shall be removable by the Cell – avoiding the need for correction equations. • The ICP-MS shall be able to be used for semi quantitative analysis in cell mode for all analytes. The instrument shall demonstrate its applicability for the trace determination of V in a chloride matrix, in cell mode.
9	Quadrupole Mass analyzer	• Good resolution power, system containing triple or three quadrupole having capability to separate low intensity peaks next to very high intensity peaks • Quadrupole is driven fully by Digital RF generator frequency of equal or greater than 2.0 MHz. • Mass range : 5-260 amu and above • Signal to noise ratio less than 5 cps
10	Ion detector assembly	• Discrete dynode electron multiplier type detectors that can operate in simultaneous dual-mode. • Minimum of 9 orders of linear dynamic range • Dwell time of minimum 100 ms (in both pulse count and analog modes) • Working concentration range of the detectors should be from the detection limit to 500 ppm or even more (1000 ppm or so) under specific condition. • Detector should have minimum life of 2 years without replacement. Life period to be mentioned in the technical specification.
11	Vacuum system	• Advanced steady and stable vacuum system to maintain good analytical environmnet • Include vacuum chamber isolation valve which automatically close on system faults • System with purging facility with inert gas during operation to prevent damage by reactive/corrosive gas/vapor
12	Performance Specification	• The CeO/Ce ratio should around 1% in no gas option and < 1% in the gas mode. • Sensitivity of elemental mass of Yttrium must be >80Mcps/ ppm. Ce++/Ce+ < 3% Resolution of mass should be 0.7 amu at 10% of peak height and this is maintained across the mass range.

		• Short term stability and long term stability of the instrument should be <3% for 2 hours and <4% for 8 hours. • Autotune facility should optimize plasma condition, lens & cell voltages, mass resolution & mass accuracy for best ionization and sensitivity. Semi Quantitative mode should be able to generate data on qualitative scan of elements in less than a minute. • The ICP-MS system should have capability to integrate any commercially available laser ablation device for routine/research applications • It should have provision of Arsenic & Chromium speciation kits for specialized applications. It should be compatible with intelligent sequencing software. • Lowest Detection limits (DL) of as many elements as possible should be given and the conditions at which the DLs are measured.
13	HPLC	• HPLC should be of same manufacturer with that of ICP-MS to avoid any complications during hyphenation. • It should consist of a quaternary solvent HPLC pump, HPLC auto sampler and peltier column oven • Standard supply of columns to be mentioned for heavy metals speciation **Quaternary Pump:** No. of solvents: 4 Flow range: 0.001 to 10.0 ml/min , in 0.001 ml/ min increments Hydraulic system: Dual pistons in series, Flow Precision: < 0.07 % RSD; Flow accuracy: ± 1% or 10 uL/min Pressure operating range: 0-5880 psi/400bar/40mpi Gradient formation: Low-pressure quaternary mixing. Delay volume should not be more than 1100 µl, Gradient composition precision: < 0.20 % SD, at 0.2 and 1 ml/min pH range: 1.0–12.5 Active seal wash facility should be there 4 Channel online degasser No. of channels : 4, Maximum flow rate : 10 ml/min Must be a stackable, self-contained module with solvent resistant material used in all areas which may have contact with the mobile phase. Safe leak handling must be provided together with leak sensors All maintenance parts must be easily accessible **Variable Wavelength detector:** **Wavelength range:** 190-600 nm; **Detector type:** PDA **Short-term noise:** +/-0.15 x 10^{-5} AU at 230 nm **Drift:** <1 x 10^{-4} AU/h at 254 nm; **Linearity:** > 2.5 AU upper limit **Wavelength accuracy**: ± 1 nm, having self-calibration system **Spectral tools:** Stop-flow wavelength scan should be available Safe leak handling must be provided together with leak sensors The instrument must provide extensive information for diagnostic purposes Must have early maintenance feedback (EMF) with display of for example, lamp on time and user settable limits messages Must have electronic records of maintenance and errors Leak detection and safe leak handling design must be incorporated in the module housing. **Autosampler :** **Sample capacity :** At least 48 vials or more **Injection volume :** 0.1–100 µl injection range, in 0.1 µL increments Up to 1500 µl

		with multiple-draw **Precision:** < 0.25% RSD from 5–100 µl, < 1% RSD from 1–5 µl, variable volume **Column heater / cooler:** The Heater/cooler should preferably work 10 ºC below ambient to 80 ºC. Column capacity should be at least 3 columns of 30 cm length Temperature stability +/-0.15 ºC Temperature accuracy +/- 0.8 ºC • The chromatography module should display real-time status information on all vital analytical parameters for both the ICP-MS and the HPLC system, should enable the ICP-MS and HPLC to automatically rinse with different solutions following an unattended speciation analysis without stopping the plasma and also should provide concurrent automated start up and optimization of both the ICP-MS and the HPLC subsystems. The change over from LC-ICP-MS mode to stand alone ICP-MS mode of operation must be easy and user friendly. • **System Software:** Essentially a single software control of both HPLC & ICP-MS system, with provision to control, LC Pump, Auto sampler, ICP-MS & Automatic switching of valve to transfer sample from column to MS system. • To ensure proper synchronization of the integrated LC-ICP·MS system it is essential that both the ICP·MS component and the HPLC component from the same make (Manufacturer)
14	Computer system and software for system control Data acquisition & analysis and accessories	Branded (HP/DELL/Apple) Intel i7 or improved processor with a minimum of 3.2. GHz. processor speed, 8 GB DDR 4 RAM, 1 GB Catche, 1TB HDD, CD/DVD RW with a separate graphics card that can support multiple displays with separate 1GB onboard memory. Software package should work on recent Operating Systems like Windows 10 Professional. Software package should be comprehensive to handle the following basic options • Acquisitions in full spectrum, peak hoping and time resolved modes Data analysis that is supported using isotope rations, isotope dilution, external and standard calibrations with or without internal standards Should support semi-quantitative analysis with rapid screening of unknowns • Data archival and retrieval functions • Auto tuning of the Instrument from cold start • Data reporting and Macro programming of customized analysis routines System diagnostics software • Provision for auto-alignment of the torch after routine maintenance with reproducibility better than 0.1mm in x-y-z directions or as required • Option of Manual override provision for the above mentioned movements should be available. • Both instrument control and data analysis should be performed on the same computer Monitor 24” LED • Printer Good quality Coloured LaserJet HP DN
15	Training	On operational and application aspects as required

16	Speciation kit	To be quoted for Arsenic, Chromium and Mercury.
17	Gas Supply	• Argon 7 cylinders, Collision / Reaction gases (He / H_2 / NH_3) 1 cylinder each. • Regulator for above gases. • Pipe lines and gas purification systems
18	General	• Pre installation requirements to be mentioned clearly

Optional Items: separate price to be quoted mandatorily for optional items

Sl. No	Items	Description
1.	Nebulizer	• Glass concentric nebulizer • Inert PFA nebulizer • Low flow, inert micro-concentric nebulizer
2.	Spray Chamber	• Spray chamber for HF medium
3.	Cone	• Platinum skimmer cone
4.	Injector	• Injector for all type of samples to be quoted as optional items (Platinum/ Quartz/PFA injectors suitable for HF medium and other sample environments)
5.	Uninterrupted power supply UPS	• Online 20 KVA with 30 min backup. From standard manufacturers like APC/LIBERT
6.	AMC	• Annual maintenance charge of ICP-MS and HPLC for five years (1^{st}, 2^{nd}, 3^{rd}, 4^{th} and 5^{th} year) in comprehensive and non-comprehensive mode. • All the essential items including standards – single/ multi element, internal standards, quality control, etc. should be clearly mentioned.
7.	General	• During pre and post AMC period any purchase of parts, software or other items will be governed by the norms of Govt. of India.

The specification number 1 to 18 is of the main instrument. The purchase of the ICPMS may be based on this technical specification (1-18). For the Optional items (1-7) may also be invited which may be purchased based on fund availability.