

TENDER DOCUMENT FOR

- 1. Field Emission Scanning Electron Microscope (FE-SEM)**
- 2. Liquid Chromatograph-Mass Spectrometer (LC-MS)**
- 3. FT-IR Spectrometer with ATR**
- 4. Raman Spectrometer**
- 5. Real Time – PCR**
- 6. Optical Microscope with fluorescence imaging**
- 7. Floor Model High Speed Centrifuge**
- 8. Bio-safety Cabinet**



**DST PURSE
Phase II
UNIVERSITY OF MADRAS
CHENNAI – 600 005**



UNIVERSITY OF MADRAS
TENDER NOTIFICATION

www.unom.ac.in/tenders

Sealed tenders are invited by the Registrar, University of Madras under “Two Cover system” from the reputed firms for the supply of following equipments:

Sl.No.	Name of the Equipment	EMD
1.	Field Emission Scanning Microscope (FE-SEM)	Rs.2,00,000/-
2.	Liquid Chromatograph-Mass Spectrometer (LC-MS)	Rs.70,000/-
3.	FT-IR Spectrometer with ATR	Rs.65,000/-
4.	Raman Spectrometer	Rs.70,000/-
5.	Real Time-PCR	Rs.25,000/-
6.	Optical Microscope with fluorescence imaging	Rs.35,000/-
7.	Floor Model High Speed Centrifuge	Rs,15,000/-
8.	Bio-safety Cabinet	Rs.5,000/-

The Tender form and schedule containing the detailed particulars are available from the University Website : www.unom.ac.in/tenders till 18.11.2018 at 3.00 P.M. The duly filled in Tender forms containing the Technical bid along with the Earnest Money Deposit and Commercial Bid should reach the Registrar, University of Madras, Chennai – 600 005, on or before **19.11.2018 at 12.00 noon.**

Note: The Tenderer should submit the filled tender form along with the EMD separately for each equipment as per the above table.

REGISTRAR

C.5/PURSE/PhaseII/Equip./2018/533

Date: 24.10.2018

UNIVERSITY OF MADRAS
TENDER DOCUMENT

Terms and condition for the Supply & Installation of **1. Field Emission Scanning Electron Microscope (FE-SEM), 2. Liquid Chromatograph-Mass Spectrometer (LC-MS), 3. FT-IR Spectrometer with ATR, 4. Raman Spectrometer, 5. Real Time – PCR, 6. Optical Microscope with fluorescence imaging, 7. Floor Model High Speed Centrifuge, and 8. Bio-safety Cabinet, for the use of Science Departments in University of Madras, Guindy, Chennai – 600 025,** as per Guidelines of Government of Tamil Nadu Tender Transparency Act for the purchase of equipments by Government Departments, Undertakings and Autonomous Bodies (April 1998)

1. DUE DATE AND TIME

Sealed Tenders, are invited by the Registrar, University of Madras under two cover system from the reputed manufacturing concerns or Original Equipment Manufacturer/ their regional Agents / Authorized dealers and suppliers for the supply and installation of **1. Field Emission Scanning Electron Microscope (FE-SEM), 2. Liquid Chromatograph-Mass Spectrometer (LC-MS), 3. FT-IR Spectrometer with ATR, 4. Raman Spectrometer, 5. Real Time – PCR, 6. Optical Microscope with fluorescence imaging, 7. Floor Model High Speed Centrifuge, and 8. Bio-safety Cabinet, for the use of Science Departments in University of Madras, Guindy, Chennai – 600 025,** as per specification indicated in the Commercial bid.

The duly filled Tender forms containing the Technical Bid and Commercial Bid should reach **on or before 12 noon on 19.11.2018.** Tenders received after due date and time will be summarily rejected

The EMD amount should be enclosed in the Technical bid only.

2. MODE OF DESPATCH

Tenders should be addressed to the Registrar, University of Madras, Chepauk, Chennai – 600 005, by designation and should be only in sealed covers by Registered or Speed Post with Acknowledgement due or in person. Tenders received in ordinary covers without seal will not be considered.

3. SUPERSSCRIPTION

The Tender should be sealed and super scribed as “Tender for Supply & Installation of **1. Field Emission Scanning Electron Microscope (FE-SEM), 2. Liquid Chromatograph-Mass Spectrometer (LC-MS), 3. FT-IR Spectrometer with ATR, 4. Raman Spectrometer, 5. Real Time – PCR, 6. Optical Microscope with fluorescence imaging, 7. Floor Model High Speed Centrifuge, and 8. Bio-safety Cabinet, for the use of Science Departments in University of Madras, Guindy, Chennai – 600 025,** due **on or before 12 noon on 19.11.2018.**

The Tender document relating to the Technical Bid duly filled in and signed must be put in a sealed cover super scribed as **“Technical Bid”**. The Tender document relating to the Commercial Bid must be duly filled in and signed and must be put in a sealed cover separately, super scribed as **“Commercial Bid”**. The sealed Tender cover containing the Technical Bid **(with EMD)** and Commercial Bid should be sent to the Registrar, University of Madras, Chennai – 5. Covers received without such superscription will be summarily rejected.

4. EARNEST MONEY DEPOSIT

Each Tender should be accompanied by Earnest Money Deposit of E.M.D. by Demand Draft drawn in favour of the Registrar, University of Madras. The Earnest Money Deposit of any unsuccessful tenderers will be returned after the acceptance of the successful tender, at the expenses of the Tenderers within a reasonable time consistent with the rules and regulation on this behalf. The above **EARNEST MONEY DEPOSIT** amount held by the University till it is returned to the Tenderers would not earn any interest there for. Earnest Money Deposit of the successful Tenderer will not be adjusted towards security deposit and will be returned only after the submission 10% Bank Guarantee.

5. ELIGIBILITY CRITERIA

The bidders must fulfill the following Eligibility conditions and also submit documentary evidence in support of fulfilling these conditions while submitting the Technical Bid. The University will consider the Commercial Bid of the vendors who qualify in the Technical bid. For those vendors who are not qualified in the Technical Bid, the Commercial bid will not be considered. The bidder should have a record of at least few installations at reputed institutions / organizations and sufficient service back-up in Tamil Nadu / South India for all types of related works and bidder should enclose list of users. The bidder should have at least three years experience and focus on related business, **as on 31-03-2016 and a minimum average annual turnover Rs.3.5 Crores, in the last three years.**

6. DETAILS TO BE FURNISHED AND MODE OF PRESENTATION

- a. The Tender should contain particulars like name and addresses of the Tenderers, net rate including excise duty, custom duty, clearing and forwarding charges, surcharge, sales tax, freight, octroi, insurance for delivery, delivering up to the point, installation and commissioning of the equipment and such other levies that may be applicable.
- b. The rates should be kept firm for **one hundred and twenty days** from the date of the opening of the Tenders for acceptance.
- c. The rate should be quoted for each item with specification and model if applicable and should be indicated clearly both in words and figures. Any **scoring or overwriting** should be attested by the Tenderer with full signature. The rate quoted should be firm and **should not be subject** to any variation clauses.
- d. The **University shall not pay any increase in duties, taxes and** surcharges on account of any revision by the Government at the time of supply and installation.
- e. Supply of the equipment and other accessories shall be as per the specifications mentioned in the Annexure I and according to the delivery and installation schedule.

7. OPENING OF TENDERS:

The tenders received up to **12.00 noon on 19th November 2018** will be opened by the Registrar, or any other officer authorized by him on his behalf **at 3.00 p.m. on 19th November 2018** in the presence of those Tenderers or their representatives who may be present at the time of opening. The representatives of the Tendering firm who are attending the opening of the Tenders should bring a letter of authority from the Tendering firms which they represent to identify their bonafide.

8. AGREEMENT:

- a. The successful tenderer should execute an agreement for the fulfillment of the contract in the stamp paper in the model form enclosed in Appendix- III within fifteen days from the date of acceptance of the tender.
- b. The expenses incidental to the executing of agreement shall be borne by the successful Tenderer.
- c. The conditions stipulated in the agreement form should be strictly adhered to and violation of any of the conditions will entail termination of the contract without prejudice to the rights of the University and recovery of any consequential loss from the successful Tenderer.

9. SECURITY DEPOSIT:

- a. The successful Tenderer will be required to remit the **Security Deposit** equivalent to **Five percent** of the value of the Purchase order within **fifteen days** from the date of receipt of communication/intimating them of the acceptance of the Tenders. If the accepted Tenderer fails to remit the Security Deposit within the above said period, the Earnest Money Deposit remitted by him will be forfeited to the University of Madras and his Tender will be held void. Purchase order will be released after execution of the above contract by the successful Tenderer and after remitting the Security Deposit by way of Demand Draft drawn in favour of the Registrar, University of Madras, Chennai 600 005.
- b. The Security Deposit furnished by the Tenderer in respect of his Tender will be returned to him after submission of 10% Bank Guarantee subject to the satisfaction of the University.
- c. In case of successful Tenderer, The Earnest Money Deposit, if paid, will not be adjusted towards Security Deposit the Tenderer remitted.
If the Tenderer fails to act according to the Tender or backs out when his Tender is accepted, his Security Deposit mentioned above will be forfeited to the University.

10. SUPPLY AND INSTALLATION OF EQUIPMENTS

- a. The supply and installation of equipments and other accessories should be made strictly in accordance with the specifications given in the Commercial Bid and should successfully fulfill the tests carried out by the University. The supply and installation should be as per the delivery schedule to be sent by the University along with the placement of firm orders. The successful Tenderer should give **warranty** for a period of **at least three-years** for the equipment and other accessories installed, against breakage or breakdowns due to manufacturing defects. The **warranty** period takes effect from the date of satisfactory trial run. The Tenderer shall be liable to make good the loss by replacing the equipment or other accessories found defective during the **warranty** period. The equipment hardware should be installed in the premises of the University at the cost and risk of the Tenderer.
- b. The material or goods are to be **warranty** for a period of at least three-years after installation and commissioning against manufacturing defect and bad workmanship. The warranty period specified, will commence from the date of handing over the equipment after running and carrying out successfully the tests prescribed by the University to its satisfaction.
- c. Documents such as operation manuals, user manuals and circuit diagrams and other relevant materials shall be provided by the Tenderer along with equipment, free of cost.

- d. If the supply, installation and commissioning of the systems are not effected before the specified period from the date of purchase order, the University shall have the authority to cancel the order and to take any such action which will be deemed fit in the circumstances
- e. If any manufacturing or other technical defects are found within the specified months from the date of installation, commissioning and handing over the system to the University Authorities, the same will have to be rectified or replaced free of cost by the supplier.
- f. During the warranty period, if due to manufacturing and other technical defects of the equipment supplied, the system is down and if it is not restored in working condition within 24 hours, the supplier shall be liable for a penalty of one percent per week during breakdown period on the total contract price.
- g. The warranty will cover all the materials and goods supplied by the supplier under this contract irrespective of the fact whether these have been manufactured by the supplier or not.
- h. In case of failure by the Tenderer to deliver goods or materials demanded from them within the period specified for delivery or in case of goods or materials being delivered without a correct invoice in duplicate, the Registrar or anyone duly authorized by him shall have power to reject any such goods or materials so rejected or not delivered unless the supplier shall themselves forthwith supply others that shall be sufficient and satisfactory and any excess of cost so incurred by the Tenderer over the contract price together with all charges and expenses attending the purchase shall be recoverable by the University from the supplier.
- i. The successful Tenderer shall supply licensed versions of the equipment systems. The University will not be held responsible for any consequences arising of patent right problems.
- j. The equipment should be demonstrated to the representatives of the Specifications Committee before shipment is effected. Necessary travel and other costs for two experts to visit the supplier's facility and inspect the equipment marked for the university before its shipment **will be met by the supplier.**

11. PAYMENT OF COSTS:

The terms of payments for purchase of equipments:

100% Letter of Credit payment by the University and the tenderer should give for 10% irrevocable Bank guarantee on submission of the Bank guarantee, EMD and Security Deposit will be released by the University to the Tenderer.

12. FORFEITURE OF EARNEST MONEY DEPOSIT:

If the accepted Tenderer fails to act according to the tender conditions or backs out after his tender has been accepted, his Earnest Money Deposit will be forfeited to the University.

The successful Tenderer shall not assign or make over the contract, the benefit of burden thereof to any other person or persons or body corporate. He shall not underlet or sublet to any person/s or body corporate for the executing of the contract or any part thereof.

13. PENALTY FOR NON-FULFILMENT OF TENDER:

Penalty will be levied at the rate of 1% per week on the total contract price if the installation and commissioning has not been completed in full within the stipulated period subject to force majeure conditions. Besides, such performance may entail black listing of the supplier.

14. ACCEPTANCE AND WITHDRAWALS:

The final acceptance of the tender is entirely vested with **University which reserves the right to accept or reject** any or all the tender without assigning any reason whatsoever. There is no obligation on the part of the University to communicate with rejected Tenderers. After acceptance of the tender by the University. The Tenderer shall have no right to withdraw his Tender or claim higher price. Tenders with incomplete information will be summarily rejected.

15. POST WARRANTY:

The life cycle for normal performance of Equipment is 3 years. Warranty document should be submitted from the Principals. The post warranty annual maintenance charges (AMC) is applicable for the remaining period of the life cycle after the satisfactory completion of the warranty period offered by the vendor. The annual maintenance charges agreed to is Rs _____ at the rate _____% per annum of the basic price of the purchased items.

The AMC payable from the date of completion of warranty in advance against invoices/bill to be preferred by the vendor. The vendor agrees to provide comprehensive maintenance of the Equipment, which shall include preventive maintenance and corrective maintenance at the location specified by the University. The maintenance shall also include replacement of all parts of equipments. The equipment which is down should be restored in good working condition within 48 hours. Otherwise the supplier shall be liable for a penalty of 1% per week of the breakdown period on the total price of the system. The Department reserves the right to terminate the maintenance contract in the event of unsatisfactory maintenance and claim damages for non-fulfillment of contract.

16. PENALTY FOR NON-FULFILMENT OF CONDITIONS:

The supplier agrees that in the event of non fulfillment or non-observance of any of the conditions stipulated in the conditions, the Supplier shall pay as penalty an amount equivalent to 10%(ten) percent of total value of equipment or an amount equal to the actual loss incurred by the purchaser whichever is greater. This provision applies up to the end of the life cycle of the equipments (i.e.) even during the post warranty period.

17. EXEMPTION OF CUSTOMS DUTY AND EXISE DUTY

The Madras University being a Research oriented higher education institution is exempted from paying Excise duty and Customs duty / Concessional Customs Duty. The supplier shall therefore obtain Exemption Certificate from the University, issued by the Government of India, before clearing the consignment.

18. CUSTOM CLEARANCE:

After arrival of the goods at Chennai Airport, Indian agent or Indian subsidiary of the principal firm is solely responsible for getting the material clearance from customs. Institute will provide all custom documents for custom clearance on the demand of agent/Firm. Transportation from Chennai Airport to University of Madras, Guindy Campus is also the responsibility of authorized agent. **All charges/ expenses incurred in this process should be borne by the firm excluding customs duty.** Please note that the freight forwarder or clearing agent should be approved from IATA. NO DEMURRAGE / WHARFAGE CHARGES WILL BE PAYABLE BY THE INSTITUTE UNDER ANY CIRCUMSTANCES. NO ADVANCE PAYMENT WILL BE PAYABLE FOR CUSTOM CLEARANCE/ FREIGHT / INSURANCE ETC. The certificate to this effect will also be provided that the rates charged are as per IATA, FIATA and does not contain any item other than ordered by the Institute.

19. GENERAL

The tenderers while sending their tender should enclose a copy of the conditions stipulated duly certified and attested by them in token of accepting the tender conditions that they understood and accepted them in full. Tenders received without the certified copy of the conditions shall be rejected summarily.

I/We _____ have gone through the terms and conditions and will abide by them as laid down above.

**SIGNATURE OF THE TENDERER
WITH OFFICE SEAL**

Time-schedule is mandatory. Supply should be made within 45 days for any purchase. If not supplied or part only is supplied, then concurrence for purchase from L2 to be got from L1. If no concurrence is given by L1, then notice to be issued and after 15 days L2 is called and negotiated for the supply at L1 rate, or at a lesser price than the originally quoted rate by L2. University is vested with the power of modifying the quantity, time and alteration in the specification without hindering the requirements. Those who are agreeable for the above terms should only apply for the tender.

ANNEXURE I

UNIVERSITY OF MADRAS
CHENNAI 600 005.

TECHNICAL BID

Tender Schedule for the Supply & Installation of **1. Field Emission Scanning Electron Microscope (FE-SEM), 2. Liquid Chromatograph-Mass Spectrometer (LC-MS), 3. FT-IR Spectrometer with ATR, 4. Raman Spectrometer, 5. Real Time – PCR, 6. Optical Microscope with fluorescence imaging, 7. Floor Model High Speed Centrifuge, and 8. Bio-safety Cabinet, in University of Madras, Guindy, Chennai.**

Profile of the Company:

The Company should provide the following details

1. Name of the Organization	
2. Nature of the Organization (Govt. / Public / Private / Partnership / Proprietorship)	
3. (a) Address of the Registered Office of the firm with Phone Number, Cell No, Fax and E-mail. (b) Year of Establishment: (related to Printers business) (c) GST, TNGST & CST Reg No. (d) If approved small scale	
4. Annual turnover for the previous three years as on 31-03-2016 along with proof of the IT Returns I General : II. Equipments listed in tender document	
5. Location of the factory with address	
6. Maintenance and service centre facilities in Chennai city / other areas and total number of Service Engineers available:	
7. Names of the Government Agencies / Educational Institutions to whom similar Machines have been supplied in the preceding One year	
8. Total experience in the related areas	
9. Is your Company an original manufacturer of the equipments and related items? If yes, state the specific items you Manufacture	
10. What type of maintenance support does your company provide for the spares	

11. What are your conditions for up gradation of Equipments system after the warranty period?			
12. In case of breakdown of the equipment, what will be the mean Downtime? And state whether standby systems will be provided			
13. State the minimum amount of time required to supply the items if your company/ Organization gets the order			
14. State whether you will agree to supply the manuals Drivers for items supplied.			
15. EMD PAYMENT PARTICULARS [The DD should be enclosed in the Technical Bid only] (1) Number of Demand Drafts enclosed : (2) Demand draft particulars			
Sl. No	Name of the bank and Branch	DD no. and date	Amount (in Rs.)
TOTAL			

Signature:

Name of the Firm
Along with Phone/Cell No.

ANNEXURE II
UNIVERSITY OF MADRAS
CHENNAI 600 005.

COMMERCIAL BID

Tender Schedule for the Supply & Installation **1. Field Emission Scanning Electron Microscope (FE-SEM), 2. Liquid Chromatograph-Mass Spectrometer (LC-MS), 3. FT-IR Spectrometer with ATR, 4. Raman Spectrometer, 5. Real Time – PCR, 6. Optical Microscope with fluorescence imaging, 7. Floor Model High Speed Centrifuge, and 8. Bio-safety Cabinet, for the use of Science Departments in University of Madras, Guindy, Chennai.**

S.No	Description	Qty	Rate Rs.	Total inclusive of all Taxes	
				Rs.	P.
1.					

Warranty Period should be clearly mentioned months

A]

1. Please indicate the Annual. Maintenance Charges per annum on the basic price of Equipments, excise duty, sales tax, etc., year wise for the remaining period of 5 years life cycle after warranty period.
2. Indicate the location of service centre, address with phone / fax numbers.
3. Indicate No. of Service Engineers available.
4. Minimum Time required for contact and Service

B]

- a. Please indicate the maximum number of persons you can offer training in the operations of the systems proposed to be purchased
- b. Can you undertake the above training in the premises of the University? If not, where would it be held within Chennai?
- c. Can you supply documents in triplicate such as operation manuals, user manuals and circuit diagram and other relevant material along with the equipment free of cost?
- d. Any other details in support of the above systems you want to furnish.

1. Field Emission Scanning Electron Microscope – One Number

Item wise price should be quoted and should not be quoted as a package price.

Technical Specifications:

S. No.	Feature	Description
1	Electron gun	Field Emission Electron Source Schottky FEG.
2	Resolution	0.7 nm or better at 15 kV and 1.2 nm or better at 1kV Resolution claimed must be supported by printed literature and should be validated after installation
3	Magnification	X20 (or lower) to X1,000,000 (or higher)
4	Acceleration Voltage	≤ 0.2 kV to 30 kV continuously adjustable
5	Chamber	Large chamber with at least 9 accessory ports or above
6	Probe current	100 nA or above
7	Specimen stage size	Specimen stage should have facility to load single and multiple samples. Stage should allow Eucentric rotation/tilting throughout working distances to enable stereo imaging of samples. Stage size : 5 axis motorized stage (X, Y, Z, Tilt and Rotation) with X range = 110 mm or more; Y range = 110 mm or more, Z range = 1.5 to 50 mm or more, Tilt = + 70° down to -5° and Rotation R = 360°
8	Detectors	Two SE detectors (one in chamber and other in column/lens) of high resolution detector for high resolution imaging in High Vacuum at low kV High resolution state of art back scattered electron (BSE) detector for z-contrast.
9	Camera	IR-CCD or suitable device to view the samples and stage inside
10	User Interface	Keyboard, Mouse, Control Panel with multifunction for the control and adjustment of frequently used SEM parameters, Manual Joystick control for stage axis.
11	Magnetic samples	Should be capable of handling magnetic samples at higher magnifications. The details of magnification and resolution should be quoted clearly.
12	Electron Optics	Beam deceleration technology or equivalent for high

		resolution imaging at low kV. Ease of operation is desired. Water cooled objective for higher stability.
13	Vacuum system	<p>Fully automated microprocessor controlled vacuum system comprising of Ion-Pump (for Field-emission SEM), Turbo-Molecular Pump (TMP) (along with water chillers if water-cooled TMP) backed by oil-free rotary pump, pneumatic valves (clarify if any in-built proper safety measures against failure of power supply, vacuum, water-flow, etc. are provided).</p> <p>This system should be compatible for gun in order to protect Gun against air-exposure of specimen chamber during specimen loading/unloading.</p> <p>Pump down time should be less than 5 min.</p>
14	Sample preparation and accessories	<ol style="list-style-type: none"> 1. Suitable for loading many specimens (≥ 5); 2. Multiple sample holder to handle tilt, cross sectional and etc.,. 3. Carbon and gold deposition sputtering unit, which should be in high quality attached to the turbo molecular pump. 4. Along with the coater, 2 Nos. of additional Gold-Palladium targets and 2 meter of carbon fiber tape should be provided. 5. The power requirements (230 V & 50 Hz operation) and gas requirements of sputter coater must be mentioned in the bid/offer. 6. Single specimen Stubs- 20 numbers 7. Tweezers/ gripper for holding different kind of sample holder. 8. Suitable and essential tool kit is to be supplied with the equipment for the required maintenance. 9. Recommended Spare kit and consumables at least for warranty period should be supplied with the system. A list of spares and consumable required.
15	Display	Two Numbers of 21" LED Monitors for FESEM

16	Computers	Two numbers of Latest desktop systems with Pentium I7 core processor, speed 3 G Hz or better, 2 Tb HDD, 8 Gb RAM or better should be provided for both FESEM and EDS. DVD writer, sufficient USB ports and 21 inch LED monitor Keyboard and Mouse, Genuine Licensed Windows OS, Laser Jet Colour Printer, Graphic Card: Geforce GT610 or compatible
17	Software	<p>Particle size analysis and image processing software, windows based software, and multiple offline licenses for analysis. The latest version of software for the quoted model should be included.</p> <p>For off-line analysis suitable interfacing, if required, should be provided for another computer for further analysis.</p> <p>Data formats (ACSII, TIFF, JPEG, BMP, etc.) Backup software must be provided on optical media.</p> <p>Any further version of the software and updates must be provided free of cost.</p>
18	Essential Accessories	<ul style="list-style-type: none"> ➤ Chiller: Well Known Brand ➤ Compressor: Well Known Brand ➤ Interface among FESEM and EDS. It should also comply for STEM, CL and EBSD (if upgraded in future) ➤ The Gun should be supplied and installed without any additional cost as and when they are required up to warranty period of 3 years. It is the responsibility of the supplier to store the gun, which is to be provided within a short period time (within a week). ➤ Cost of the two additional gun (coupons/vouchers valid for 5 years) to be quoted for using after the warranty period. ➤ Tools necessary for emitter exchange to be supplied.

19	Energy dispersive X-ray detector	<p>The EDS system should include latest hardware and software that comply as per latest ISO norms.</p> <p>1. LN₂ Free SDD detector with 60mm² crystal area or above. At the installation site, the detector should show resolution $\leq 127\text{eV}$ at Mn-α, $\leq 65\text{eV}$ at F-α and $\leq 56\text{eV}$ at C-α as per established ISO norms.</p> <p>The EDS detector and related hardware should be extremely stable such that shift in peak position and Resolution is $<1\text{eV}$ over 1000 to 100,000cps. The elements detection range should be from Beryllium (Be) to Uranium (U).</p> <p>3. The EDS system should be able to acquire the FESEM images with high resolution up to 8000 pixel wide. The X-ray mapping resolution should be at least 4000 pixel wide.</p> <p>The EDS system software should have following features:</p> <ul style="list-style-type: none"> ➤ Navigator based design for ease of use. ➤ Auto Identification without any forbidden element list. User interactive qualitative and standard less/standards based quantification with K, L, M, N line database. ➤ Auto Background removing technique, Pulse pile up processing ➤ Qualitative and Quantitative techniques with latest absorption corrections algorithm. ➤ Live phase mapping and offline remote analysis system ➤ Line Scanning, elemental mapping and selected area analysis. ➤ Multi-element mapping with spectral imaging. Should be able to fetch EDS spectra stored with the mapped image. ➤ Image co-related elemental analysis.
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		<ul style="list-style-type: none"> ➤ Beam Measurements. ➤ Should have quantification algorithm for uneven surfaces and under tilted conditions. ➤ Data acquisition facility in the form of ASCII values for the EDS spectra. One/Two offline licenses must be provided for offline data analysis ➤ All these capabilities should be applicable for polished flat specimens, fractured samples and nanostructured particulate systems. <p>The EDS system should offer the real time chemical navigation facility by providing the real-time chemical maps that should instantaneously follow the sample position changes. The changes in the sample positions should be collectively displayed on the SEM image so as to revisit them later.</p>
20	Calibration	Standard samples to check system calibration i.e., magnification etc. should be supplied along with the system.
21	Diagnostic support	Remote diagnostics with internet connectivity with the manufacturer to solve hardware and software issues at site (Guindy campus, University of Madras).
22	Chamber Visualization system	There should be provision to see live positions of detectors and Sample
23	Spares and undertaking spares	An undertaking that the vendor will supply all the spares and services for the equipment for at least 10 years from the date of commissioning
24	Required documents	<i>The supplier should provide calibration/traceability certificate of the equipment as per National institute of Standards & Technology (NIST)/National Physical Laboratory (NPL) UK / United Kingdom Accreditation System (UKAS) preferably</i>
25	Onsite training	The system has to be installed, commissioned at site and all working modes to be demonstrated. Total duration– at least 4 days.

26	Warranty	Three years including all items supplied including accessories as per the purchase order (after successful commissioning and installation of the equipment)
27	Additional warranty	Two years comprehensive on-site warranty should be offered for entire offered configuration of FESEM.
28	Annual maintenance contract	Quote the cost of onsite comprehensive annual maintenance contract beyond Warranty period
29	Pre-installation, Room and Environmental requirements	Pre-installation requirements such as room size, tolerable limits of EM field, vibration (mechanical), required power rating; utility requirements are to be stated clearly, and to be verified/ surveyed by the supplier at the installation site. The supplier must take the responsibility by their own cost for the entire room preparation including civil, electrical and other necessary requirements to install the equipment and operate the instrument
30	UPS	Suitable branded UPS with 1 h back up
31	Performance Record	A minimum of 5 installations in India of same or similar models with the details of the equipment installed with proven performance and details
32	Trained Operator	Trained Operator cost for the entire three years warranty period.
Optional		
STEM and other specific sample accessories may be quoted as an optional		
33	STEM detector	<ol style="list-style-type: none"> 1. 0.8 or better at 30 kV for STEM detector 2. The scanning transmission electron microscope (STEM) detector should be capable of detecting bright-field (BF) and dark-field (DF) signals generated by a thin specimen. 3) The detector must be automatically inserted into the chamber by a pneumatically driven mechanism. 4) The device should consist of a multi hole sample holder and separate diodes for the BF and DF detection. 5) Switching between BF and DF detection mode must be possible at any position of the sample.

		6) The generated signals should be mixed using the GUI Sample preparation and accessory: STEM grid, Carbon tapes-50 meters; Holey carbon coated copper grids -200 Nos. to be provided.
34	Accessory for biology samples	Critical Point Dryer should be coated for biological sample preparation.
35	Additional Optional Detector	CL Detector
36	Sample accessories and requirements for EDs analysis	Thin film analysis (multi layer up to 5 layers 10-500 nm) software with nanometer scale resolution in both space and depth capabilities should be quoted.

2. LC-MS FOR IDENTIFICATION AND QUANTIFICATION-One Number

Item wise price should be quoted and should not be quoted as a package price.

Technical Specifications:

1	Mass Range	50-1500 m/z or better
2	Interface	Simple interface construction should enable high ion recovery from samples. Low maintenance design without complex apertures to maintains cleanliness of ion optics in spite of complexity of samples and long duty times/prolonged operation. Should provide ambient temperature operation to maintain structural integrity of thermally labile and fragile molecules.
3	Integrated Divert Valve	The divert valve must be under fully automated data system control. The divert valve must enable the user to switch the solvent front, gradient end point and any other portion of the UHPLC run to waste
4	Integrated Syringe Pump	It should have an integrated syringe to allow for automated infusion under data system control.
5	Max Scan Rate:	20000 Da or better for Linear trap
6	Mass accuracy	Less than 1 Dalton
7	Resolution	Unit mass >0.15 Da
8	MS Information	MS ³ information for structure elucidation (or) more.
9	Sensitivity:	Femtogram level of sensitivity- 1 microlitre of 400 femtogram reserpine with the S/N of 100:1 or better
10	Vacuum System	A fully protected air cooled vacuum system using turbo molecular pumps and rotary pumps. Vacuum read backs and automated vent system.
11	Linear Dynamic range	At least 5 orders of linear dynamic range for quantitative acquisition.
12	Operating mode	<ul style="list-style-type: none">• Full-scan mass spectra for sensitive analyses and rapid screening of unknown compounds• Scan function that can be useful for identification and quantification• Selected Ion Monitoring (SIM) for selected ions for target compound analysis• Reaction Monitoring (RM)for a traditional LC-MS quantitative analytical experiment• MS/MS and more• Precursor ion scanning

13	Low mass cut off	The instrument should have operating modes to avoid low mass cut off for lower mass ID .
14	Ion Source Electro spray Ionization (ESI) specification Field-Free Atmospheric Pressure Chemical Ionization (APCI) :	Choice of two ionization sources to cover all areas of applications. <ul style="list-style-type: none"> • It should include ESI and APCI source. • The system should be capable of handling <ul style="list-style-type: none"> ESI: Flow rate of 5 µl- 1 ml/min or better APCI: Flow rate of 50µL/min to 2mL/min or better Fast polarity switching between positive and negative modes should be available and should be under software control.
15	Computer Platform	A standard make PC with all necessary hardware and operating software required to operate all the specified equipment's. All hardware and software including drivers, heavy duty duplex laser printer, 24 inch TFT color , The computer must control the mass spectrometer; LC system & auto sampler in an integrated manner. Licensed copies of all software for the complete system including the computer should be provided.
16	Operating Software:	The software should have capabilities identification and quantification to perform the following functions. System parameter checking and alerts <ul style="list-style-type: none"> • Method editor with comprehensive application-specific template library and drag-and-drop user interface to facilitate method development • Automated quantitative data processing and reporting capabilities. • Automated optimization of all instrument parameters, including gas pressures and collision energy, within an experiment • Direct control of LC systems and autos ampler configurations through software
17	Application Software:	<ul style="list-style-type: none"> • Software for Metabolite identifications and small molecules elucidation, component detection, spectral library search. • Fragmentation pattern& spectral tree matching for small molecules (compound and peptides),.
18	Gas generator:	A suitable Nitrogen gas generator with built in noise-free compressor at the required gas purity, pressure and flow rate for the Mass Spectrometer must be quoted. All the required accessories such as other essential gas cylinders with regulator for operation of the instrument should be supplied along with the instrument.
19	UPS	Branded 10 KVA UPS with one ½ battery backup and with isolation transformer
20	Single Vendor solution	For both LC and MS system

23	Additional Warranty	Two years
24	AMC	Two years after Warranty
25	Stabiliser	Suitable Stabiliser with isolation transformer
26	Optional:	<ul style="list-style-type: none"> a) Spares and consumable list for trouble free operation for three years need to be quoted separately, also indicate the price for each items separately. b) Trained Operator cost for three years of warranty period should be quoted c)Software for Protein work flow, identification of peptides, PTM (post translational modification) and data base search.

3. FT IR Spectrometer with ATR – One Number

Item wise price should be quoted and should not be quoted as a package price.

Technical Specifications:

S.No	Item	Specification
1	Spectral range	Far-IR, Mid-IR and Near-IR 50 cm ⁻¹ to 25,000 cm ⁻¹
2	Spectral resolution	0.10 cm ⁻¹ or better
3	Optics	Multi-range optics for far-IR, mid-IR and near-IR operations, Visible
4	Light source with computer controlled selection	1) Far-IR and mid-IR source, air cooled 2) Tungsten- halogen source for near –IR/ VIS, air cooled
5	Beam splitter with automatic beam splitter change	Suitable beam splitters for entire spectral range (50 cm ⁻¹ to 25000 cm ⁻¹)
6	Detectors with computer controlled selection	1. Room temperature DLATGS/DTGS detector 2. PE-DLATGS/PE-DTGS for far IR region 3. Silicon detector for N-IR and Vis region
7	Signal to noise ratio @1 min scan	More than 50,000:1 peak to peak for minimum 100cm ⁻¹ range
7	Interferometer	Highly stable interferometer with 10 years warranty
8	ATR	Monolithic Diamond, Single bounce Spectral range -100 -8000 cm ⁻¹ Ge-Crystal must be included
9	Input and output ports	Minimum two IR input and output ports to couple accessories like microscope and FT-Raman
10	Software and computer	1. Suitable and user friendly software for data acquisition and analysis including base line correction, peak picking, PCA analysis, mixture search analysis and other arithmetic operations – windows 10 environment 2. Licensed version of Spectral library with a 30000 spectra. 3. Latest desktop Computer
11	Accessories	1. Purging kit with dry Nitrogen cylinder and regulator and automatic purge shutter 2. Accessories for liquid and solid sampling such as hydraulic press, Die set, KBr powder, PE powder, liquid cells, variable path length spacers, Agate mortar and pestle 3. Suitable NIST traceable standards for spectrometer
12	System Performance	A minimum of 5 installation in India of the quoted model or similar one with proven performance and details
13	Warranty	Three Years
14	Additional Warranty	Two Years
15	AMC	Two years beyond Warranty Period
16	UPS	Suitable UPS with ½ hour back up and with isolation transformer
17	Stabiliser	Suitable Stabiliser with isolation transformer

18. Options	
1	Rapid scan: <i>Suitable electronics along with detector and software for rapid scan with 60 spectra per second</i>
2	<i>Built in diamond ATR</i>
3	<p>FTIR microscopy and imaging</p> <p><i>Suitable ATR for microscopy and imaging application, Suitable source, Single element and array detector, software and other components with detailed specification must be quoted as option to upgrade the FTIR spectrometer to carryout FTIR microscopy and imaging. Suitable NIST traceable standards for microscopy imaging should be included</i></p> <p><i>Suitable accessories like, BaF2 disc or window materials and reflective slides, liquid nitrogen transfer Dewar should also be quoted.</i></p>
4	<i>Diamond micro ATR for microscopy application</i>
5	FT-Raman module with 1064 nm

4. RAMAN SPECTROMETER – One Number

Item wise price should be quoted and should not be quoted as a package price.

Technical Specifications:

S.No	Specification	Description
A	Raman Spectrometer	
1	Focal Length	Minimum 20 cm or better
2	Spectral Range	Ultraviolet to near IR (400 nm to 1050 nm) or better
3	Spectral resolution	2 cm ⁻¹ (or better) with suitable optics and filters
4	Gratings	600 gr/mm, 1200 gr/mm, 1800 gr/mm and 2400 gr/mm mounted on a motorized turret driven and controlled by software. The gratings should be fully automated, quickly and easily interchangeable without realignment.
5	Rayleigh scattering filters should be included.	
6	The low wave number cut-off for all LASERS should be 80 cm ⁻¹ or lower	
7	Spectral calibration should be automated. Vendor should provide the specific details in the technical documents if the calibration reference is built-in with the system.	
8	Provision to integrate three lasers.	
B	LASERS	
1	i) 532 nm air cooled laser with minimum 100 mW power or more ii) 635/638 nm air cooled laser with minimum 30 mW power or more	
2	Laser Power Control	The spectrometer should be fitted with a neutral density filters controlled by software to control the LASER power on the sample
3	Digital laser power meter	The power meter should be capable to measure LASER power on the sample
4	Safety equipment and protective eye-glasses for LASERS (3 numbers)	
C	Confocal Microscope	
1	Upright Research grade microscope with USB-PC controlled high resolution camera for viewing. The vendor should specify the model and make of the microscope.	
2	Objectives: suitable for Raman Measurements	5x (NA = 0.1, WD~19 mm), 10x (NA=0.25, WD~10.6 mm), 100x (NA=0.9 WD~0.21mm) and 50xLWD (NA=0.5 WD = 10 mm or more)
	NOTE: The vendor should specify details of the other available objectives such as magnification and working distance, if not listed above.	
3	Microscope must have provision to measure liquid samples, Macro cuvette cell holder should be provided with 10mm x 10mm cell with cap for liquid samples.	
D	Confocal Raman Imaging	
1	XYZ motorized stage with 100nm resolution (or better) step size in XYZ direction and it should be controlled by software.	
2	X = 75 mm (minimum) x Y = 50 mm (minimum)	
3	Repeatability ≤ 1μm	

4	Accuracy $\pm 1\mu\text{m}$	
5	It should include positioning joystick, external controller, software package and fast confocal imaging. The vendor should mention the step sizes of the stage and spatial resolutions (for required lasers with 50 X objectives) in technical document.	
E		
Detector		
1	High efficiency Peltier cooled CCD	A fully automated multichannel with active pixels 1024 X 256 pixels and pixel size of 26 μm X 26 μm or better
2	The spectral range	200 nm (or less) to 1050 nm (or more)
3	Very low noise levels and dark noise less than 0.002 e/pixel/sec or better	
4	Quantum efficiency must be 30 % or more (in the required spectral range)	
5	Computer interface and software controlled.	
F		
Computer and software		
1	The state-of-the-art computer control system compatible-with and optimized for the application software to perform the various measurement options automatically.	
2	The data acquisition and analysis software should be compatible with Windows 7/8/10 or latest version of computer environment. Five software licenses should be supplied for control of the instrument, data acquisition and data analysis for Raman and Raman mapping with storage options.	
3	The software should have automatic spectral intensity corrections. The data file should be compatible for plotting in different data plotting and analysing software.	
4	A latest library of Raman spectra for inorganic and organic materials should be provided.	
G		
Other Requirements		
1	Vendor should provide the standard samples for testing and calibrating the instruments at any time for the demonstration of the performance of equipment.	
2	Manuals (both electronic and hard copy) – technical aspects with required service details.	
3	System Performance Record: A minimum of 5 installations under working conditions – Details should be provided	
4	Warranty : Three years	
5.	UPS: Required KVA with isolation Transformer	
6.	Additional Warranty two Years	
7.	AMC for two years beyond two years	
8.	Suitable stabiliser with isolation transformer	
F		
Optional items		
1	Fibre optics port for all lasers for remote sampling probe	
2	Polarizer and analyser for the visible region	
3	Cooling and Heating stage for the temperature range 77 K or lower to 800 K or more	
4	Raman Autofocus capability for confocal imaging	
5	785 air cooled laser with minimum 100 mW power or more	

5. Real time PCR system – One Number

Item wise price should be quoted and should not be quoted as a package price.

Technical Specifications:

1. Tabletop model with a desktop PC system including basic module, essential accessories the state of art data workstation, acquisition and analysis software, startup kit inclusive of calibration standards etc.
2. Open system to accommodate Taqman, SYBR green and all other fluorescent dye based chemistries.
3. Peltier based 96 and 384 well interchangeable blocks.
4. Standard 96 well and 384 well optical plates.
5. Minimum sample volume requirement – 5µl.
6. CCD camera with halogen/LED as light source and at least five excitation and five emission filters.
7. Multiplexing ability up-to five dyes in a single run.
8. Calibrated dyes at installation: FAM/SYBR Green, VIC/JOE, NED/TAMRA/Cy3, ROX/Texas Red and Cy5, Should offer flexibility in dye selection.
9. Facility to calibrate new dye within the wavelength range without addition of new filters.
10. Passive reference dye ROX or any other calibrated dye and should be optional
11. Temperature range 4°C to 100°C
12. Sensitivity: Detection of 1 copy of template
13. Licensed Software applications to perform: Comparative Ct, Standard Curve, Gene expression, miRNA profiling, SNP Genotyping, Plus/Minus assay, Dissociation/ Melt curve, Protein thermal shift, Probe/Primer designing, and real-time data analysis.
14. 220V/50Hz.
15. CE mark or equivalent.
16. Plastics, consumables and starter kits for three years and to be as supplied three lots one per every year.
3x100No-MicroAmp™ Optical 96-Well Reaction Plate with Barcode & Optical Adhesive Films, 3x10 mL-TaqMan™ Gene Expression Master Mix, 3x10 mL TaqMan™ Genotyping Master Mix.
17. **Warranty:** 3 years from the date of Installation, warranty should include service visits, replacement components and calibrations.
18. **Computer configuration:** Desktop computer with CORE i7 processor, 16 GB RAM, 1TB Hard disc, Licensed Windows 10 Operating system, Microsoft Office 2016 software and 23 inch LED monitor or higher configuration loaded with latest version of analysis software should be provided along with the instrument.
19. **UPS:** 5 KVA on-line UPS with necessary batteries to provide minimum of 1 hour backup for uninterrupted functioning of the instrument with Isolation Transformer
20. System Performance Record: A minimum of 5 installations under working conditions – Details should be provided
21. Optional: Upgrade to automated high throughput analysis with robotic plate loader/barcode scanner.
22. Optional: Suitable Voltage Stabiliser with isolation transformer
23. Optional : Additional Two Years Warranty
24. Optional: AMC beyond Warranty Period

6. Optical microscope with fluorescence imaging - One Number

Item wise price should be quoted and should not be quoted as a package price.

Technical Specifications:

Sl. No.	ITEM	SPECIFICATION
1	Microscope stand	Motorized Inverted Microscope stand with fully Apochromatically corrected Fluorescence beam path, Integrated Light Intensity manager for Bright field Applications and dedicated TFT/LCD display for convenient operation of all motorized components
2	Motorized focus drive	Inbuilt Motorized Z focus drive with a minimum step resolution of 10 nm or better, preferably with better reproducibility
3	Motorized Objective Nose piece	6 Position Motorized Objective DIC Nose piece or better / Preferably with Faster Movement
4	Motorized Condenser	Universal Achromatic -Aplanatic condenser with a N.A of 0.55 for Ph, DIC, BF with 6 or better positions
5	Motorized Stage	XY Scanning Stage 130x100 with universal holder for slides and Petri dish, multiwell plate holder
6	Eye Piece	Focusable 10X eyepieces with FOV 22 mm or better
7	Transmitted Illumination	100W Halogen light source with fully Motorized Control of transmitted Illumination
8	Objectives	Semi -Plan Apochromat 10X- Phase objective N.A. 0.3 or better Long working distance Plan Achromat 20X- Phase objective N.A. 0.35 or better 20X - Plan Apochromat DIC objective N.A. 0.75 or better 40X- Semi -Plan Apochromat/ Plan Neofluar DIC objective N.A. 0.75 or better 60x/63X- Plan Apochromat DIC objective N.A. 1.3 Oil or better
9	DIC	Complete DIC Attachment for 20x,40x and 63x should be quoted
10	Fluorescence Attachments	Fully Motorized Fluorescence illumination and operation
11	Reflected light Illumination	120W Metal Halide Illumination with motorized Intensity regulator for Fluorescence Applications
12	Reflector Turret for Fluorescence Filters	Motorized 6 position reflector turret or better. Band pass filter sets for DAPI, FITC/GFP, RFP/TRITC, Cy5
13	Camera	High Performance microscopy Peltier cooled Monochrome camera incl. driver software, USB 3.0 PCIe x1 interface, dual USB 3.0/USB 2.0 cable 3 m and BK7 protection glass (coated) Camera for colour imaging

		<p>3 Mega Pixels or better</p> <p>Pixel size: 4.54 μm x 4.54 μm or better</p> <p>Spectral range: with protection glass app. 400 nm to 1000 nm</p> <p>Max. Full Well Capacity: Approx. 15,000 e</p> <p>Frame rates : 35 fps or better at full frame and up to 90 fps or better in binning mode</p>
14	Software	Automatic and interactive Microscope control
15	Image Acquisition	Should be able to (but not limited to) image capture, movie acquisition, fast acquisition Automatic Multi channel Image acquisition, ROI imaging, Z stack acquisition, time lapse and should have future . Provision for wide-field acquisition, optical sectioning and deconvolution with optical sectioning. Retaining of acquisition parameters for re-use should be possible
16	Image Processing	Basic adjustment of brightness, contrast and gamma; adjustment of color in BF images; correction of bleaching effect in Z stack images; pixel shift correction; Image smoothening, Image Sharpening
17	Image Analysis & Documentation	Interactive and basic measurement such as Length, Angle, diameter, Area, Perimeter Gray value measurement along a line / Intensity measurement. Statistical analysis and evaluation of Data. Creation of User defined reports. Module for visualizing 3D image stacks should be quoted, helpful for display of multi dimensional image stacks as 3D volume models and processing of up to 8 channels and Time series (4D) rendering. Orthogonal View of Z stack Images; simultaneous image observation for comparison of up to 8 images
18	COMPUTER	A suitable High End Computer System should be provided along with the system:
19	Warranty	3 years
20	Performance Record	A minimum of 5 installations with good performance Record
21	UPS	Suitable branded UPS with isolation transformer
22	Optional- Module for Optical Sectioning	Hardware based-Structured Illumination through grids with Automatic Grid Change Technology for optical sectioning preferably with higher light transmission efficiency. A special grid illumination device to be incorporated in the FL illumination optics of the microscope with easy switchover facility between normal FL illumination and grid illumination (for optical sectioning).

		<p>Motorized and automatic grid focusing and super imposition of the same into the image plane for different fluorescence channels through accurate and calibrated scanning mechanism should be possible. Automatic multidimensional acquisition of optical sections. Seamlessly integrated hardware and software from the same manufacturer for better compatibility.</p> <p>Objective specific selection of different Grid frequencies to match the numerical aperture of the objective and wavelength of fluorescence for multichannel imaging should be automatic.</p>
23	Optional – Additional Warranty	Two Years
24	Optional: AMC	Two Years after Warranty
25	Optional: Stabiliser	Required KVA with isolation transformer

7. Floor Model High Speed Centrifuge – One Number

Item wise price should be quoted and should not be quoted as a package price.

Specifications:

1. Max speed: 100,000 g or higher
2. Display: LCD
3. Controller: Microprocessor based
4. Flow: Continuous
5. Running Time: 20 h with HOLD and Real Time Control function
6. Accel/Decel Profiles: 9/ 9 or above
7. Speed Control Accuracy: 10-25 rpm
8. Temperature Accuracy: $\pm 2^{\circ}\text{C}$
9. Refrigeration: CFC free
10. Pre-Cooling Function: Yes
11. Rotor Identification: Automatic
12. Rotor Locking System: Auto-Lock
13. Safety function: Interlock door, Over speed detection, Imbalance detection,
14. Abnormal temperature detection
15. Programed operation: 30 operation in memory
16. Temperature set range: -5°C to ambient
17. Continuous Flow Rotor with suitable accessories: 35,000 g or higher
18. Fixed angle rotors:
 - 8×50 mL tube rotor (100,000 g or higher)
 - 24×15 mL tube rotor (60,000 g or higher)
 - 1.5/2 mL volume tubes rotor (40,000 g or higher)
19. Rotors material: Titanium or Aluminum
20. Operating voltage: 200-240 V, Single phase
21. Suitable Voltage stabilizer
22. 50 mL centrifuge tube to withstand 100,000 g or above: 500 numbers
15 mL centrifuge tube to withstand 60,000 g or above: 500 numbers
23. Three years comprehensive warranty for instrument and rotors
24. System Performance Record: A minimum of 5 installations under working conditions –
Details should be provided
25. Additional Two Years Warranty
26. AMC for two years beyond warranty period

Optional

27. High capacity rotor: 6 ×500 mL bottle rotors (15,000 g or higher)
28. Swinging bucket rotor for 50 mL tube: 7000 g or higher
29. Swinging bucket rotor for microplates with 2 or more slots
30. Adaptors for 15 mL volume tubes swing bucket rotor: 20 numbers
31. Adaptors for 15 mL volume tubes fixed angle rotor: 50 numbers

8. CLASS II A2 BIOSAFETY CABINET – One Number

Item wise price should be quoted and should not be quoted as a package price.

TECHNICAL SPECIFICATIONS:

1. NSF Certified Class II A2 Bio safety cabinet
2. Size: W 6X H 2.5 X D 2 Feet
3. H14 High grade HEPA filters to capture 99.95% of all particles of 0.3Micron or higher
4. SS304 Work table
5. Energy efficiency DC motor blower
6. Digital Airflow verification to deduct pressure change across exhaust and down flow
7. Alarm signal when 20% change in inflow/Exhaust or Down flow occurs
8. Airflow velocity display
9. Arm rest to be provided
10. Programmable UV Lamp
11. Visual & audio alarm for front door position.
12. Access port & power sockets to be provided
13. Individually tested NSF Certification
14. Certifications : NSF/ANSI 49, UL, CE
15. System Performance: Tenderer should provide a minimum of 5 users details
16. Warranty: Three years
17. 220-230 Volt operation
18. Suitable Stabiliser with isolation transformer.
19. Optional: Additional Two years warranty
20. Optional: AMC for two years after warranty

Appendix III

FORM OF CONTRACT AGREEMENT

(To be executed by the Firms for the supply of machinery/equipment with Purchaser)

We, M/s. _____ (Hereinafter referred to as "Supplier" hereby contract and agree on the acceptance of our Tender by University of Madras hereinafter referred to as "Purchaser" in accordance with the terms and conditions of contract stated below.

CONDITIONS OF CONTRACT.

1. This agreement and tender documents having been signed by both the parties shall constitute a binding contract between the parties and shall remain in force during the warranty period including the warranty period covering the annual maintenance. But in the event of any breach of terms and conditions agreement at any time on the part of the supplier, the contract shall be determinable by the Purchaser without any compensation or damages to the Supplier. The contract may also be put to an end at any time by the Purchaser upon giving seven days notice to the supplier.
2. The Supplier agrees to supply the equipment install and commission the equipment detailed at Commercial Bid after carrying out successfully all the tests prescribed by the purchaser at all inclusive price of Rs. _____ to the _____ before the specified date. The price offered is firm and is not subject to enhancement on any ground.
3. The price of the equipment as detailed at Annexure includes excise duty, customs duty, clearing and forwarding charges surcharges, sales tax, freight, octroi, delivery up to the point insurance, installation and commissioning and such other levies that may be applicable.
4. The Equipment to be supplied and install under this contract are to be of the quality and of the sort mentioned in the purchase order at the Commercial Bid.
5. The Equipment are to be delivered at the purchaser without any extra cost in such quantities or numbers contained in the purchase order enclosed as Commercial Bid to this contract. Any amendments to the orders in terms of quantities or delivery period etc. may be incorporated on a mutually agreed basis.
6. Documents such as operation manuals and circuit diagram and other relevant materials shall be provided by the Supplier along with equipment free of cost.
7. The Equipment sold under the agreement shall not be taken back. However, any replacement necessitated shall be carried out by the Supplier and faulty parts/materials that arise out of such replacements shall be taken back by the Supplier within a reasonable time.
8. If the supply of Equipment installation and commissioning of the equipment are not effected within Two weeks from the date of the purchase order, the purchases shall have the authority to cancel the order, to make any such action that will be deemed fit in the circumstances.

9. In case of failure by the supplier to deliver Equipment demanded from them within the period specified for delivery or in case of equipment delivered by them not being of the stipulated quality and specifications or in the case of Equipment being delivered without a correct invoice in duplicate, the Registrar or any one duly authorized by him shall have power to reject any such Equipment so rejected or not delivered unless the Supplier shall themselves forthwith supply others that shall be sufficient and satisfactory and any excess of cost so incurred by the University over the contract price together with all charges and expenses attending the purchase shall be recoverable by the University from the supplier.
10. Penalty will be levied at the rate of one percent per week on the total contract price if the delivery has not been completed in full within stipulated period, subject to force majeure conditions. Besides, such performance may entail black listing of the supplier.
11. The supplier shall supply only original versions of the equipment.
12.
 - a. The Equipment(s) are to be **warranty** for a period of _____ months after installation and commissioning against any manufacturing defect and bad workmanship. The warranty period of _____ months will commence from the date of handing over the equipment after running on all system and after carrying out successfully the tests prescribed by the _____ (Purchaser) and installation in good working condition.
 - b. If any manufacturing or other technical defect is found within _____ months from the date of installation, commissioning and handing over the system to the Department/Section the same will have to be rectified or replaced free of cost by the Supplier.
 - c. During the warranty period, the supplier agrees to arrange for a back up system at their cost, if due to manufacturing and other technical defects of the equipment supplied, the systems are down and if it is not restored in working condition within 48 hours. Otherwise the Supplier shall be liable for a penalty of 1% of the breakdown period of the total contract price.
 - d. The warranty will cover all the Equipment(s) supplied by the supplier under this contract irrespective of the fact whether these have been manufactured by Suppliers or not.
13.
 1. The life cycle for normal performance of the Equipment is 5 years. The post warranty annual maintenance charges (AMC) is applicable for the remaining period of the life cycle after the satisfactory completion of the warranty period offered by the vendor. The Annual Maintenance Charges agreed to is Rs. _____ at the rate of _____ % per annum on the basic price of hardware excluding software, excise duty, sales tax, etc.
 2. The AMC is payable once in a year after the date of completion of the warranty period in advance against invoices/bills to be preferred by the vendor. The vendor agrees to provide comprehensive maintenance of the equipment, which shall include preventive maintenance and corrective maintenance at the location specified by the University. The maintenance shall also include replacement of all parts. The equipment which is down should be restored in good working condition within 48 hours. Otherwise the supplier shall be liable for penalty of 1% per week of the breakdown period on the total price of the system. The University reserves the right to terminate the maintenance contract in the event of unsatisfactory maintenance and claim damages for non-fulfillment of contract.

14. 100% Letter of Credit payment by the University and the tenderer should give for 10% irrevocable Bank guarantee on submission of the Bank guarantee, EMD and Security Deposit will be released by the University to the Tenderer.
15. The Supplier hereby agrees to get the refund of incentive, excise duty and proportionate Sales Tax from concerned authorities and pass it on to the Purchaser, if the Government or any other agency reduces the Excise Duty or Sales Tax or given incentive of any type retrospectively after supplying the equipment, failing which action will be taken to recover the balance amount from the Supplier under the revenue recovery act or any other relevant act.
16. The supplier shall undertake to train adequate number of persons from the University free of cost on the operation and use of equipment as per the training schedule to be worked out by mutual agreement.
17. The contract or any part share of interest in it, is not to be transferred or assigned by the Supplier directly or indirectly to any person whomsoever without the written consent of the Purchaser.
18. Neither the Buyer nor the Seller shall be liable to the other for any delay or failure in the performance of their respective obligations due to causes, contingencies beyond their reasonable control such as:
 - a. Natural Phenomena including but not limited to earthquakes, floods and epidemics.
 - b. Acts of any Government authority domestic or foreign including by but not limited to war declared, or undeclared, priorities and: quarantine restrictions.
 - c. Accidents or disruptions including, but not limited to fire, explosions, breakdown of essential machinery or equipment, power and water shortages.
19. The tender notice dated_____ is enclosed along with the enclosures. The detailed final offer of the Supplier and the purchase order at Annexure respectively will form part of this contract. Wherever the offer conditions furnished by the supplier are at variance with conditions of the contract or conditions stipulated in the purchase order, the latter shall prevail over the offer conditions furnished by the supplier.
20. Unless otherwise provided in the agreement, any notice, request, consent or other communication given or required to be given hereunder shall be given by mailing the same by registered mail, postage prepaid, return receipt requested in the case of the Supplier to the Purchaser at their respective addresses and self forth above or with other addresses and to the attention of such other person or persons as may hereafter be designated by like notice hereunder and any such notice sent by post shall be deemed to have been served on the date when in the ordinary course of post, it would have been delivered at the address to which it was sent.
21. Any notice to the Supplier shall be deemed to be sufficiently served, if given or left in writing at their usual or last known place of abode or business.
22. In case of any dispute the matter will be referred to an Arbitrator under "Arbitration and Conciliation Act 1996" The arbitration shall be held in Chennai only and the court at Chennai only shall have jurisdiction in relation thereto.

23. The Supplier agrees that in the event of non-fulfillment or non-observance of any of the conditions stipulated in the contract, the supplier shall pay as penalty an amount equivalent to 10% (ten) percent of total value of contract or an amount equal to the actual loss incurred by the University whichever is greater.

For and on behalf of	
PURCHASER	SUPPLIER
Witnesses:	
1.	
2.	