जीवाजी विश्वविध्यालय,ग्वालियर

क्रमांक/स्टोर/2024/921 दिनांक 28/11/24

ई-निविदा सूचना

जीवाजी विश्वविध्यालय ग्वालियर द्वारा C.O.E. मद के अंतर्गत विभिन्न प्रकार के उपकरण प्रदाय हेतु अधिकृत विक्रेता अथवा निर्माता से ई निविदा-**https://mptenders.gov.in** पर आमंत्रित की जाती है। निविदाओं का विस्तृत विवरण जीवाजी विश्वविध्यालय, ग्वालियर की वेबसाइट www.jiwaji.edu पर भी उपलब्ध है।

कुल सचिव

जीवाजी विश्वविध्यालय,ग्वालियर

S. No. / Store /2024/921 Date: 28/11/2024/

|| प्रथम ऑनलाइन ई - निविदा आमंत्रण ||

जीवाजी विश्वविध्यालय, ग्वालियर के लिए अधिकृत विक्रेता अथवा निर्माता से www.mptenders.gov.in पर ऑनलाइन निविदा आमंत्रित की जाती है, जो कि www.mptenders.gov.in से डाउनलोड की जा सकती है, इसके अतरिक्त विश्वविध्यालय की वैबसाइट www.jiwaji.edu पर भी देखी जा सकती है, विवरण निम्नानुसार है।

निविदा प्रपत्र समस्त टर्म्स एंड कंडीशन्स एवं विवरण सहित www.mptenders.gov.in वेबसाइट पर नीचे दी गयी राशि ऑनलाइन टेण्डर फीस जमा करने पर डाउनलोड की जा सकती है।

S. NO.	Tender ID/MP/JUG Tender No.	Description of work	Qty	Tentative Cost	EMD	Cost of Tender(Non refundable)
1.	2024_JIWAJ_384987_1	ATOMIC ABSORPTIONSPECTROPHOTOMETER	01	50 Lakh	1,50,000.00	2500.00
2.	2024_JIWAJ_384988_1	CHN-ANALYZER	01	40 Lakh	1,20,000.00	2500.00
3.	2024_JIWAJ_384989_1	BIO SAFETY CABINET, AIR CURTAIN	01	08 Lakh	24,000.00	1,000.00
4.	2024_JIWAJ_384990_1	GEL DOCUMENTATION SYSTEM	01	04 Lakh	12,000.00	1,000.00
5.	2024_JIWAJ_384991_1	AEROSOL MASS MONITOR	01	12 Lakh	36,000.00	1,000.00
6.	2024_JIWAJ_384992_1	RT-PCR	01	20 Lakh	60,000.00	1,000.00
7.	2024_JIWAJ_384993_1	GAS CHROMATOGRAPHY MASS SPECTROMETER (GCMS)	01	65 Lakh	1,95000.00	5,000.00
8.	2024_JIWAJ_384994_1	SEM, EDS, AFM AND MFM SYSTEM	01	1.25 Crore	3,75,000.00	5000.00
9.	2024_JIWAJ_384995_1	ADVANCE AND UPDATED VERSION OF BET	01	1.2 Crore	3,60,000.00	5,000.00
10.	2024_JIWAJ_384998_1	ADVANCE AND UPDATED CYCLIC VOLTAMMETRY	01	40 Lakh	1,20,000.00	2,500.00
11.	2024_JIWAJ_385000_1	PULSED FOURIER TRANSFORM NMR SPECTOMETRE	01	1.4 Crore	4,20,000.00	5,000.00

1. ऑनलाइन निविदा प्रपत्र क्रय करने की प्रारम्भिक दिनांक 02-12-2024 सुबह 10:00 बजे तक है।
2.ऑनलाइन निविदा प्रपत्र क्रय करने की अंतिम दिनांक 24-12-2024 शाम 5:00 बजे तक है।
3.ऑनलाइन निविदा जमा करने की अंतिम दिनांक 24-12-2024 शाम 5:00 बजे तक है।
.4निविदा प्रपत्र ऑनलाइन वैबसाइट https://mptenders.gov.in/nicgep/app पर जमा किए जाएंगे।
5.निविदा शुल्क ऑनलाइन जमा करना अनिवार्य है।

6.निविदाकर्तागण से अनुरोध है कि निविदा से संबंधित संशोधन, शुद्धि पत्र आदि वेबसाइट पर ही अपलोड किए जाएंगे, अतः वेबसाइट पर अध्यतन रहें।

7.निविदा मे दर्शाये दिनांक समय पर निविदा खोली जावेगी/, निविदा खोलने के उपरांत तकनीकी निविदा मे योग्य पाये गए निविदाकर्ताओं एवं वित्तीय निविदा की जानकारी वेबसाइट के माध्यम से बाद मे सूचित की जावेगी।

8. क्रय तकनीकी समिति की बैठक की सूचना पृथक से निर्धारित की जावेगी।

9. कुलसचिव, जीवाजी विश्वविद्यालय को बिना कोई कारण बताये निविदा स्वीकृत/रद्दीकरण/अस्वीकृत करने का अधिकार होगा।

कुल सचिव

NOTICE INVITING TENDER DETAILS

<table>
<tr><th>S.No.</th><th>Description</th><th></th></tr>
<tr><td>1.</td><td>Department name</td><td>Jiwaji University
Gwalior -474011 (M.P.)</td></tr>
<tr><td>2.</td><td>Tender Number</td><td>JU/COE /Tender/2024</td></tr>
<tr><td>3.</td><td>Tender Subject</td><td>Supply, Installation & commissioning of Scientific Equipments.</td></tr>
<tr><td>4.</td><td>Period of Contract</td><td>One Year</td></tr>
<tr><td>5.</td><td>Form of contract</td><td>Schedule Wise</td></tr>
<tr><td>6.</td><td>Tender type</td><td>Open</td></tr>
<tr><td>7.</td><td>Tender category</td><td>Products (both hardware and software)</td></tr>
<tr><td>8.</td><td>EMD/Bid Security (INR)</td><td>
<table>
<tr><th>S. No.</th><th>Description of work</th><th>EMD</th></tr>
<tr><td>1.</td><td>ATOMIC ABSORPTIONSPECTROPHOTOMETER</td><td>1,50,000.00</td></tr>
<tr><td>2.</td><td>CHN-ANALYZER</td><td>1,20,000.00</td></tr>
<tr><td>3.</td><td>BIO SAFETY CABINET, AIR CURTAIN</td><td>24,000.00</td></tr>
<tr><td>4.</td><td>GEL DOCUMENTATION SYSTEM</td><td>12,000.00</td></tr>
<tr><td>5.</td><td>AEROSOL MASS MONITOR</td><td>36,000.00</td></tr>
<tr><td>6.</td><td>RT-PCR</td><td>60,000.00</td></tr>
<tr><td>7.</td><td>GAS CHROMATOGRAPHY MASS SPECTROMETER (GCMS)</td><td>1,95,000.00</td></tr>
<tr><td>8.</td><td>SEM, EDS, AFM and MFM System</td><td>3,75,000.00</td></tr>
<tr><td>9.</td><td>ADVANCE AND UPDATED VERSION OF BET</td><td>3,60,000.00</td></tr>
<tr><td>10.</td><td>ADVANCE AND UPDATED CYCLIC VOLTAMMETRY</td><td>1,20,000.00</td></tr>
<tr><td>11.</td><td>PULSED FOURIER TRANSFORM NMR SPECTOMETRE</td><td>4,20,000.00</td></tr>
</table>
</td></tr>
<tr><td>9.</td><td>EMD/Bid security Payable to</td><td>Registrar ,Jiwaji University,Gwalior -474011 (M.P.)
EMD has to be paid online through www.mptenders.gov.in</td></tr>
<tr><td>10.</td><td>Tender fee (non refundable)</td><td>The tender fee to be submitted online through www.mptenders.gov.in paid in the favor of Registrar, Jiwaji University, Gwalior.</td></tr>
</table>

11.	Downloading of Tender Documents	www.mptenders.gov.in /www.jiwaji.edu
12.	Tender Publish date	02-12-2024 at 05.00 PM
13.	Bid Documents download start Date	02-12-2024 at 07.00 PM
14.	Bid Submission Start date	04-12-2024 at 10.00 AM
15.	Bid Submission End date	24-12-2024 at 05.00 PM
16.	Submission of E-Bid	www.mptenders.gov.in For delay, University cannot be held responsible.
17.	Technical Specification Bid Opening Date	27-12-2024 (11:00 AM)
18.	Price Bid Opening	www.mptenders.gov.in
19.	Place of Technical Bid Opening	In the Administration Block of Jiwaji University. Gwalior
20.	Officer Inviting Bids/Contact Person	Registrar, Jiwaji University Gwalior - 474 011, (M.P.)
21.	Eligibility Criterion	As per the tender document (Annexure -02)
22.	Procedure For Bid Submission	e-BID has to be submitted through **www.mptenders.gov.in.** Documents in support of Technical Specifications along with make and models of all the items as per the list mentioned in Annexure -05 duly mentioning the make. Supporting documents of standard certifications. Annexure-02 of tender document duly signed with office seal as a token of acceptance of our standard terms and conditions List of customers, to whom the bidder had supplied

		identical materials in the past along with P.O. details and performance report. Annexure -08 of bidding document has to be submitted to The Registrar, Jiwaji University Gwalior. Registrar will not hold any risk and Responsibility for non-visibility of the scanned document or the loss in transit.
23.	General Terms and Conditions	As per tender document

TENDER FEES (To be submitted online)

S.No.	Description of work	Cost of Tender (Non refundable)
1.	ATOMIC ABSORPTIONSPECTROPHOTOMETER	2500.00
2.	CHN-ANALYZER	2500.00
3.	BIO SAFETY CABINET, AIR CURTAIN	1,000.00
4.	GEL DOCUMENTATION SYSTEM	1,000.00
5.	AEROSOL MASS MONITOR	1,000.00
6.	RT-PCR	1,000.00
7.	GAS CHROMATOGRAPHY MASS SPECTROMETER (GCMS)	5,000.00
8.	SEM, EDS, AFM AND MFM SYSTEM	5000.00
9.	ADVANCE AND UPDATED VERSION OF BET	5,000.00
10.	ADVANCE AND UPDATED CYCLIC VOLTAMMETRY	2,500.00
11.	PULSED FOURIER TRANSFORM NMR SPECTOMETRE	5,000.00

Contents of the Tender Document

Annexure – 01

Schedule of Quantity

Supply, Installation and Commissioning of Scientific Equipments at Respective Laboratories/Central Instrumentation Facility

S.No.	Teder ID/MP/JUG Tender No.	Description of work	Quantity
1.		ATOMIC ABSORPTIONSPECTROPHOTOMETER	01
2.		CHN-ANALYZER	01
3.		BIO SAFETY CABINET, AIR CURTAIN	01
4.		GEL DOCUMENTATION SYSTEM	01
5.		AEROSOL MASS MONITOR	01
6.		RT-PCR	01
7.		GAS CHROMATOGRAPHY MASS SPECTROMETER (GCMS)	01
8.		SEM, EDS, AFM AND MFM SYSTEM	01
9.		ADVANCE AND UPDATED VERSION OF BET	01
10.		ADVANCE AND UPDATED CYCLIC VOLTAMMETRY	01
11.		PULSED FOURIER TRANSFORM NMR SPECTOMETRE	01

Annexure -02

ELIGIBILITY CRITERIA AND SPECIAL TERMS AND CONDITIONS

A. ELIGIBILITY CRITERIA FOR TENDERERS:

- The Company/ the tenderer should be in existence for the last 5 years
- The Company or tenderer should have at least one Service Centre in India.
- The tenderer should be a Manufacturer or the authorized distributor of the equipment manufacturer or other respective products/ items.

B. SPECIAL TERMS AND CONDITIONS :

1. **Delivery Period:** The delivery should be made within 30 days from the date of receipt of purchase order by the tenderer.
2. **Warranty: All items supplied by the tenderer shall be under on site Comprehensive warranty for Three (3) years from the date of installation by the OEM or its representative.** Comprehensive warranty should explicitly include all spare parts and system consumable parts. Any repair work or replacement of spares needs to be done on site, the manufacturer must confirm this in their quotation.
3. **Installation:** The installation should be done at the respective Laboratories/Central Instrumentation Facility (CIF) as mentioned in the Annexure – 04 enclosed, at no extra cost.
4. **Response Time:** The response time of the tenderer to attend to any complaint upon receipt of the complaint/information from the user should not be more than 48 hours.
5. Advance payment either direct or through bank will not be accepted in any case. As per rule, full payment will be made after receipt of material, inspection there of and after satisfactory installation and working of the entire equipment. LC will be opened in case of imported equipments if quoted in foreign exchange in the currency of country of origin.
6. Tax will be applicable as per State/Central government guidelines.
7. The bidder shall be responsible for getting the consignment cleared and deliver the goods. The expenses on it and concessional duties, if any should be

included in the cost of the equipment.

8. The tenderer should avoid the use of vague terms such as **"extra as applicable".** Such tenders will be rejected.

9. Printed conditions on the back of the offer submitted will not be binding unless separately mentioned.

10. Quotations for the accessories to be considered together as one unit and thus total price shall be treated as your bid for the tender. Optional items may be quoted separately. where the equipment offered is controlled by a preloaded personal computer and it is possible to use an indigenous PC, the same should be quoted istead of an imported PC. The same would apply to a printer or any compiled other accessory or subsystem.

11. Each page of the tender should be signed and stamped by the bidder.

TENDERER SEAL

Annexure-3

List of Documents to be enclosed

The following documents should be submitted along with the bidding form otherwise the tenders are liable to be disqualified.

1. All the Supporting documents in respect of Eligibility criteria i.e.

   Registration /Incorporation Certificate in support of the existence of the company for required number of years as per the tender schedule eligibility criteria.

   List mentioning the addresses and contact persons with phone numbers of the service centers present in India.

   Supporting Documents indicating that the tenderer is the Manufacture or the OEM/ Authorized representative of the corresponding items/products.

   IT returns for the last three Assessment years
2. Annexure-02 duly signed & office Seal affixed as a token of acceptance of Special Terms and Conditions.
3. Documents in supports of Technical Specifications for the scientific equipments as mentioned in Annexure-05 clearly mentioning the make and model.
4. The list of customers (minimum of 05 in India) to whom the bidder has supplied same or identical instrument /material in the past.
5. Annexure-08.

Note:

1. The Registrar Jiwaji University, Gwalior will not hold any risk and responsibility for non-visibility of scanned document or **non receipt of hardcopies** or loss in transit.
2. The Documents that are received in time will only be considered for Technical Bid Evaluation.

3. The tenderer will be disqualified at any stage of the tender process, if found to have mislead or furnished false information in the forms/Statement/Certificate submitted in proof of 1 to 5 above.

4. The Registrar, Jiwaji University, Gwalior does not bind himself to accept the lowest or any tender and he reserve the right to reject any offer without assigning any reason.

TENDERER SEAL

Annexure - 04

Address where the equipment to be installed

Respective Laboratories/Central Instrumentation Facility

Jiwaji University

Gwalior -474011 (M.P.)

Annexure – 05

1. Technical Specification for Atomic Absorption Spectrophotometer

Sr. No.	Specification	Description
1.	Optics	Double Beam- With Flame and Furnace (Integrated System)
2.	Wavelength Range	185-900nm
3.	Detector	Photomultiplier tube (It Should be Wide PMT To Cover Complete Range 185-900nm)
4.	Back ground Correction	It should be Two background Correction D2 with SR Or Zeeman Background Correction
5.	Spectral Bandwidth	Variable from 0.1 to 2 nm in 6 Steps
6.	No Of HC Lamps	Minimum 8 Lamps Turret or more with 2 lamps simultaneously lit .
7.	Base Line Correction	Automatic Correction Of Baseline drift by offset correction in peak height and peak are mode.
8.	Focal Length	300 nm or better.
9.	Monochromator and Grating Lines	Czerny Turner Monochromator with at least 1800 lines/mm or better
10.	Flame Type	Air Cooled pre mix type or better.
11.	Burner Unit	Titanium 10cm slot and 5 cm titanium slot for N_2O-C_2H_2
12.	Nebulizer	Pt-Ir capillary with teflon orifice and ceramic impact bead
13.	Sensitivity	Detection limit for Cu ‹0.006 ppm. ≥0.90 Absorbance with % RSD of ≤0.5% from ten replication (5 sec integration time) of 5 ppm in standard.
14.	Chamber	Polypropylene type
15.	Gas control unit	Fuel: automatic search for optimum flow rate, Automatic search of optimum gas flow rate
16.	Safety features	Automatic gas leak check · Automatic switching between Air-C_2H_2 and N_2O-C_2H_2 · Flame monitor · Prevention of wrong burner head use · Gas pressure monitor · Drain tank level monitor · Automatic flame extinction upon power outage or sudden power interruption
17.	Software	Software based AA, Should have QA/QC Function or similar functions

18.	HVG (Hydried Vapor Generator for As,Se,Sb,Te,Bi.)	Should be attached
19.	Analysis System	Continuous flow system
20.	Sample consumption	Variable
21.	Reagent consumption	Variable
22.	Atomizer	Heated absorption cell, standard system should uses air-C_2H_2 flame
23.	Operation through	Auto Sampler.
24.	Auto Sampler	Auto Sampler should be quoted with min 60 or more vial capacity or more and auto sampler should be capable to use for both flame and furnace.
25.	Graphite Furnace	Graphite furnace should be included with temp range up to 2800 degree or more with position lateral/ vertical manual adjustment
26.	Accessories	C_2H_2Cylinder with regulator, Nitrous Oxide Cylinder with regulator & Pre-heater. Argon Cylinder with Regulator, Air Compressor , Fume Hood, Chiller for Furnace, Suitable branded Windows 10 PC with laser jet coloured printer. The MS office will be original package to be included, Lamps and individual standards solution (1000 ppm) for Zn, Mn, Ni, Fe, Cu, Pb, Al, Mo, Cd, B, Cr, Co, As, Hg, Se. (Total 15 lamps and standards)
27.	UPS	5.0 KVA or more Online UPS branded with at least 30 minutes back up to be quoted separately with offer
28.	Pre-installation requirement:	Necessary pre-installation advice should be sent immediately after the placement of the order.
29.	Installation Commissioning and Application training:	Free of cost at site for a group of technical staff/ students for operating the instrument.

30.	Warranty:	The instrument Atomic Absorption Spectrophotometer including UPS quoted for it should be under on site Comprehensive warranty for three (3) years from the date of installation by the OEM or its representative. Comprehensive warranty should explicitly include all spare parts and system consumable part. Any repair work or replacement of spares needs to be done on site, the manufacturer must confirm this in their quotation.
31.	Comprehensive Maintenance Contract (CMC):	After the completion of 3 years OEM warranty, two years extended CMC must be quoted without which the tender will be rejected.
32.	Installation in India:	Detailed lists of users in India with contact details for the quoted equipment should be provided. Preferably, there should be at least same quoted equipment installed/ordered in India in last 5 years otherwise the tender will not be considered.
33.	Performance:	Satisfactory performance of instrument and after sales service from existing users will be considered by the committee in evaluating the technical bid.
34.	Validity of Quotation:	Minimum 3 months.
35.	Submission of Bids:	Tender should be submitted in two parts- Technical and Financial.

2. Technical Specification for CHN Analyzer

Sr. No.	Specification and Description
1.	Should be Compact analyzer for the determination of C / H / N in both solid and liquid samples.
2.	Analysis time: should not be more than 10 minutes. for CHN Analysis
3.	It should be fully automated having facility of automated transfer of the sample.
4.	It should be auto sampler (Range 50 position/150 position).
5.	Determination of CHN should be in a single run with accuracy and precision.
6.	Automated evaluation of C/N and C/H ratio
7.	Analyze from few ppm to 100%.
8.	Sample weight: up to 500 mg or more of the sample
9.	Instrument should be capable to analyze below measurement range of CHN mode
10.	Measuring range: carbon from 0.001to 20 mg or better
11.	Measuring range: Hydrogen from 0.001 to 1mg. or better
12.	Measuring range: Nitrogen: 0.001 to 15 mg. or better
13.	Temperature range 100-1100 Degree Celsius
14.	Pre-installation requirement: Necessary pre-installation advice should be sent immediately after the placement of the order.
15.	System should be supplied with: Semi Microbalance System should be supplied with: Gases- Helium and Oxygen System should be supplied with: Regulator for both gas cylinders
16.	A compatible branded PC Minimum i5,4GB Ram, 500 GB HDD,19inches falt color monitor, Windows 10 professional should be provided for running the system.
17.	Installation Commissioning and Application training: Free of cost at site for a group of technical staff/ students for operating the instrument.

18.	Warranty: The instrument CHN Analyzer including UPS should be under on site Comprehensive warranty for three (3) years from the date of installation by the OEM or its representative. Comprehensive warranty should explicitly include all spare parts and system consumable part. Any repair work or replacement of spares needs to be done on site, the manufacturer must confirm this in their quotation.
19.	Comprehensive Maintenance Contract (CMC): After the completion of 3 years OEM warranty, two years extended CMC must be quoted without which the tender will be rejected.
20.	Installation in India: Detailed lists of users in India with contact details for the quoted equipment should be provided. Preferably, there should be atleast one same quoted equipment installed/ordered in India in last 5 years otherwise the tender will not be considered.
21.	Performance: Satisfactory performance of instrument and after sales service from existing users will be considered by the committee in evaluating the technical bid.
22.	dity of Quotation: Minimum 3 months.
23.	Submission of Bids: Tender should be submitted in two parts- Technical and Financial.

3. Technical Specification for Bio-Safety Cabinet

Sr. No.	Specification	Description
1.	Air Balancing	100% exhaust
2.	Inside Pressure	Negative Pressure
3.	Particle retention	0.3 Micron & Above
4.	Inflow Velocity	100 FPM±20
5.	Exhaust Velocity	80FPM±20
6.	Noise level	65 decibel on "A" scale±5
7.	Ultraviolet lamp	Branded–1No.
8.	Illumination	LED Fitting
9.	Pre filters	Attached
10.	HEPA filters	0.3 Micron and efficiency 99.97 % or more
11.	Exhaust Air Blower	Attached
12.	1No. Pressure Differential	Digital Gauge
13.	Front Panel	Polycarbonate Front door with Pneumatic Lift & Glove Port Arrangement and full air tight construction
14.	Glove Port	Gloves: 6" dia, Gloves & Glove ports
15.	Working Size	W1200xD600xH600mm
16.	Material construction	The Cabinet and working table made from Stainless Steel with Matt finish. Working zone is lined with stainless steel material**.**
17.	Pre-installation requirement:	Necessary pre-installation advice should be sent immediately after the placement of the order.
18.	Installation Commissioning and Application training:	Free of cost at site for a group of technical staff/ students for operating the instrument.

19.	Warranty:	The instrument Bio Safety Cabinet should be under on site Comprehensive warranty for three (3) years from the date of installation by the OEM or its representative. Comprehensive warranty should explicitly include all spare parts and system consumable part. Any repair work or replacement of spares needs to be done on site, the manufacturer must confirm this in their quotation.
20.	Comprehensive Maintenance Contract (CMC):	After the completion of 3 years OEM warranty, two years extended CMC must be quoted without which the tender will be rejected.
21.	Installation in India:	Detailed lists of users in India with contact details for the quoted equipment should be provided. Preferably, there should be atleast one same quoted equipment installed/ordered in India in last 5 years otherwise the tender will not be considered.
22.	Performance:	Satisfactory performance of instrument and after sales service from existing users will be considered by the committee in evaluating the technical bid.
23.	Validity of Quotation:	Minimum 3 months.
24.	Submission of Bids:	Tender should be submitted in two parts- Technical and Financial.

Following specifications can be considered:

1. Biosafety cabinet Class II Type A2 with 30% exhaust and 70% recirculated air.
2. Cabinet should be 4 feet width.
3. Front window must be at least a 10” sash opening.
4. The Biosafety Cabinet must have DC motor for blower.
5. The motor must automatically adjust the airflow speed without the use of a damper to ensure continuous safe working conditions, even without maintenance adjustments.
6. Cabinet must use a pressure sensor (rather than anemometer) to detect pressure drop across the supply filter, rather than just one point across the down flow.
7. The cabinet should display the inflow and down flow air velocities and must incorporate an Indicator, visual, and audible alarm to indicate excessive HEPA filters loading, blower failure, airflow speed failure, incorrect sash position.

8. Cabinet should be provided with Arm Rest Bar.
9. Drainage Port beneath work surface should be provided to facilitate easy cleaning of the interior in case of liquid spillage inside the work area.
10. The front of the cabinet must be angled at least 10º to help minimize glare.
11. The quoted cabinet noise level must be less than 65 dB(A).
12. The cabinet must automatically reduce fan/blower motor speed when the front window sash is in closed position to ensure reduced energy consumption when the cabinet is not is use.
13. UV light must be programmable to allow for specific exposure times from 0 to 24 hours.
14. The Cabinet should have provision to fit taps for Vacuum, Water, and Noncombustible gas.
15.Quoted Biosafety cabinet should incorporate HEPA filter of the class H 14 EN 1822 or better with having minimum efficiency of 99.995% at 0.3 μm particle size. The efficiency of HEPA filter must be mentioned for both exhaust as well as down flow air
16.Ventilation System Exhaust and Inflow air volume approximately 300-350 CFM.
17. The cabinet should be provided with fixed or adjustable Height Stand, factory-installed UV Light, fluorescent or LED white light, and one set of detachable arms rests, and one or two electrical outlet that work at 230V as per Indian electrical condition.
18. The cabinet interior must be all stainless steel with at least grade 304.
19. The Drain Pan of the cabinet should be made of type 304 stainless steel. The drain pan should not be painted or power coated.
20. Port provision for clean and safe routing for vacuum tubing and cables through the side of the bio safety cabinet for improved organization and work efficiency.
21. Warranty 3 years on-site from the date of installation and acceptance only, and not from the date of invoice or shipment. All electronic parts including motor must be covered. Clearly specify which parts are not covered. Scope of work that will be undertaken during the warranty period should be mentioned.
22. AMC charges may be quoted for post-warranty period.
23.Servo stabilizer of at least 4 kVA capacity should be provided for the cabinet functioning.

4. Technical Specification for Gel Doc System

Sr. No.	Specification and Description
1.	System should have Image resolution of at least 5 mega pixels or more for resolving closely spaced bands on a gel.
2.	System should have dynamic range of >3.0 orders of magnitude
3.	Imaging system should have Automatic capabilities with Application driven, user selected or recalled by a protocol.
4.	Should have 100 % repeatability via recallable protocols.
5.	System should have pre-calibrated focus for any zoom settings & sample height and with autofocus features.
6.	Should have appropriate flat fielding correction automatically & consistently applied to image data for every application.
7.	Versatile system to support wide range of applications like- Fluorescent dye like Sybr green, Sybr safe, 2-D, 1-D, Dot Blotting, Nucleic acid detection , Quantization etc.
8.	System Should have Excitation source - Epi-white light and trans-UV are standard (wavelength = 302 nm
9.	System should have three illumination control modes, trans-UV, trans-white, epi-white
10.	Should have true 12 bit CCD camera.
11.	System Sample size 28 X 36 cm and imaging Area 19.4 X26 cm.
12.	System should come with white light conversion screen.
13.	Should have motorized zoom lens- f/1.2, 12-75mm with numerical feedback value to reduce the experimental variation -Capable of Optimizing, saving, and quickly recalling the imaging acquisition settings
14.	Safe DNA Imaging without UV exposure- using the Blue Conversion screen to prevent damage from UV.
15.	Reproducibly position or center the sample on the image platen by using gel alignment templates.

16.	Should come with 1 D analysis software with following features Single mouse click from image capture to results and reports, very fast and efficient. Should have comprehensive automated quantitative analysis of proteins & DNA samples in seconds. Intuitive and well organized (efficient) selection of workflows based on applications ● 3D viewer, Absolute and Relative quantitation Should calculate precisely continuous focus curves that are consistently and automatically applied for every zoom position and sample height. No user intervention for focusing. All calculations are done at setup, once and for all image captures Software should be multi user for multiple PC for use of multiple users and license free with lifetime free upgrades. ● Auto exposure – 2 user defined modes (intense or faint bands) ● Software should be single for imaging and analysis.
17.	Optional: A compatible branded PC Minimum Ram, ,19inches tcolor monitor, Windows 10 professional ➢ 1.0 kva Online UPS with at least 15 minutes back-up to be provided with the machine
18.	Pre-installation requirement: Necessary pre-installation advice should be sent immediately after the placement of the order.
19.	Installation Commissioning and Application training: Free of cost at site for a group of technical staff/ students for operating the instrument.
20.	Warranty: The instrument Gel Doc System including UPS quoted for it should be under on site Comprehensive warranty for three (3) years from the date of installation by the OEM or its representative. Comprehensive warranty should explicitly include all spare parts and system consumable part. Any repair work or replacement of spares needs to be done on site, the manufacturer must confirm this in their quotation.
21.	Comprehensive Maintenance Contract (CMC): After the completion of 3 years OEM warranty, two years extended CMC must be quoted without which the tender will be rejected.
22.	Installation in India: Detailed lists of users in India with contact details for the quoted equipment should be provided. Preferably, there should be atleast three same quoted equipment installed/ordered in India in last 5 years otherwise the tender will not be considered.
23.	Performance: Satisfactory performance of instrument and after sales service from existing users will be considered by the committee in evaluating the technical bid.
24.	Validity of Quotation: Minimum 3 months.
25.	Submission of Bids: Tender should be submitted in two parts- Technical and Financial.

5. Technical Specification for Aerosol Mass Monitor

Sr. No.	Specification and Description
1.	High precision pump-suction sensor.
2.	Laser Mie-scattering Principle.
3.	Working temperature ranges between 0-50^{0}C
4.	Storage Temperature Range; -20^{0}C to 60^{0}C
5.	High stability air pump imported
6.	User-defined five-channel particle size options
7.	Built-in temperature and humidity sensor
8.	LCD large display with intuitive data
9.	Measuring Range 0-1000µg/m^3
10.	Resolution: 0.1µg/m^3
11.	Accuracy: ±10%
12.	Sampling Rate: 10s or less
13.	Laser emitter: 40mW, 780nm
14.	Point source location monitoring, fugitive emission monitoring.
15.	Hand held operation
16.	Five Mass Ranges (PM1.PM2.5, PM4, PM10 &TSP
17.	Rechargeable: Battery Charger/Adapter operated
18.	Data Storage: 2500 records or more
19.	Pre-installation requirement: Necessary pre-installation advice should be sent immediately after the placement of the order.
20.	Installation Commissioning and Application training: Free of cost at site for a group of technical staff/ students for operating the instrument.

21.	Warranty: The instrument Aerosol Mass Monitor including 3.5 KVA UPS should be under on site Comprehensive warranty for three (3) years from the date of installation by the OEM or its representative. Comprehensive warranty should explicitly include all spare parts and system consumable part. Any repair work or replacement of spares needs to be done on site, the manufacturer must confirm this in their quotation.
22.	Comprehensive Maintenance Contract (CMC): After the completion of 3 years OEM warranty, two years extended CMC must be quoted without which the tender will be rejected.
23.	Installation in India: Detailed lists of users in India with contact details for the quoted equipment should be provided. Preferably, there should be atleast one same quoted equipment installed/ordered in India in last 5 years otherwise the tender will not be considered.
24.	Performance: Satisfactory performance of instrument and after sales service from existing users will be considered by the committee in evaluating the technical bid.
25.	Validity of Quotation: Minimum 3 months.
26.	Submission of Bids: Tender should be submitted in two parts- Technical and Financial.

6. Technical Specifications For Real Time PCR

Sr. No.	Specification and Description
1.	The system should have block of 96 x 0.2 ml tubes or plate to run typical 0.2ml tubes, strips, and plates
2.	The base thermal cycler should be able to do standard PCR
3.	The System should have a gradient block offering temperature differential range of 1-24º C.
4.	The Gradient Block should offer Dynamic Ramping.
5.	Excitation Source: LEDs ,Detection Source: Photodiodes
6.	The system should be able to detect at least2 fluorophores in the same tube.
7.	The system should be capable of Detecting commercially available universal dyes like FAM,SYBR Green I, VIC, HEX, TET, Cal Fluor gold 540, ROX, Texas sRed, etc.
8.	The system should have ramping speed of at least / sec.
9.	Peltier Cooling & Heating for uniform temp control
10.	Channel dedicated for FRET experiments is preferred
11.	Excitation –Emission range: 450- 580nm or better
12.	Dynamic range of 9 orders or above
13.	Open system capable of running various chemistries, reagents and plastic ware so that different chemistries using TaqMan, SYBR green etc all can be performed.
14.	Temperature range 40– 100 ^{O}C with accuracy of ±0.2 ^{O}C and uniformity of a. ±0.4 ^{O}C within 10 sec of arrival at 90 ^{O}C
15.	System must be capable of working with minimum sample volume from 1- 50µl with 10-25 µl recommended.
16.	Should have multiple scan modes with a FAST scan option for reading all wells in 3 seconds
17.	A special software to publish data should be supplied free of cost.

18.	Real time PCR should be licensed for both IVD and Research applications and license copy must be provided.
19.	E-mail Notification facility with data file after the run is complete is needed.
20.	A compatible branded PC Minimum i7, 8GB Ram, 1000GB SSD,21 inches flat color monitor, Windows 10 professional should be provided for running the system.
21.	2.0 kva Online UPS with at least 15 minutes back-up to be provided with the machine and rates to be quoted separately with offer.
22.	Pre-installation requirement: Necessary pre-installation advice should be sent immediately after the placement of the order.
23.	Installation Commissioning and Application training: Free of cost at site for a group of technical staff/ students for operating the instrument.
24.	Warranty: The instrument Real Time PCR including UPS quoted for it should be under on site Comprehensive warranty for three (3) years from the date of installation by the OEM or its representative. Comprehensive warranty should explicitly include all spare parts and system consumable part. Any repair work or replacement of spares needs to be done on site, the manufacturer must confirm this in their quotation.
25.	Comprehensive Maintenance Contract (CMC): After the completion of 3 years OEM warranty, two years extended CMC must be quoted without which the tender will be rejected.
26.	Installation in India: Detailed lists of users in India with contact details for the quoted equipment should be provided. Preferably, there should be atleast three same quoted equipment installed/ordered in India in last 5 years otherwise the tender will not be considered.
27.	Performance: Satisfactory performance of instrument and after sales service from existing users will be considered by the committee in evaluating the technical bid.
28.	Validity of Quotation: Minimum 3 months.
29.	Submission of Bids: Tender should be submitted in two parts- Technical and Financial.

7. Technical Specification for Gas Chromatograph Mass Spectrometer (GCMS)

Sr. No.	Specification	Description
1.	Column Oven :	Large column oven (>13.5 litre) up to 450 °C from room temp to ± 3 °C with a temperature programming up to 30 steps or higher and rate setting range up to -125 °C /min with a total time for all steps up to 9999.99 minutes max and oven cool down time from 450C to 50C in 4.0 minutes or less.
2.	Injection Port:	Two Capillary Injection port up to 400 °C or more with Electronic Control and AFC pressure range should upto 970 kPa or 145 psi. The Same injection port should be able to connect upto 0.53 Capillary column directly. The Electronic Flow control should be able to program for Pressure /flow minimum 7 step with a split ratio setting up to 9999.9:1. System should be upgradable to 2 injector ports simultaneously.
		FID Detector sensitivity should be 1.2 pg/C , G C should be upgradable to 4 detectors simultaneously (4th detectors must be MSD).
		Liquid Auto Injector of Minimum 100 Vials or more should be included.
3.	Mass Spectrometer :	Mass Analyzer with Range up to 1.2 to 1000 amu with scanning speed of 20,000 amu/sec , maximum scan cycle should be 100. Number of temperature Zone should be 8 GCMS should have a TMP pump must be more than 300 L and Rotary pump. Filament should be dual and automatic switchover and possible Dynamic Range should be >109 or more.
		Retention time should be highly precise for correction over the entire chromatogram, and analytical conditions are not changed, so the SOP does not need to be changed.
		Starting/stopping the system fully automatically from the computer.

		Software should allow flagging with two criteria on both the upper and lower ends, and displays a list of quantitative results and chromatograms for all components and all samples. Detailed verification and correction for each component also should be possible. Reports can be output as summary reports.
		SIM channel should take up to 64 x 128 Channel Ion source can be independently heat up to 200 deg and energy can be varied up to 200 eV.
		GCMS Should be quoted with Simultaneous SCAN & SIM mode GCMS should be with EI Scan sensitivity 1 Pg for OFN at S/N >= 1500 RMS and with a Licensed version only.
4.	Data Processor – Software and utilities	Latest 32 bit software of the Creation of automatic SIM Table, Automatic adjustment of Retention time, Similarity Search, with retention index . GCMS instrument tuning should be automatic. Latest licensed NIST 2020 library should be offered along with the instrument.
		PC based latest version GC with Large LCD Display with touch screen to view Real time Chromatogram on the LCD and built in GC System check and self-diagnostic function with following specification GCMS should be upgradable for online connection with reactor with a automated valve connection .
		GCMS Should be supplied with all installation accessories required like branded PC, Printer , He, H_2,N_2, Air cylinder with regulator- 1 no Each, gas purification panel with necessary accessories , one capillary column, Liquid Syringe.
		Following consumables to be offered with the quotation: Graphite and Vespel Ferrules (10 each), Silica wool, Septum (50 pcs), Filament (02 pcs) Split and Splitless liner (05 each) Nuts (10 pcs), O-Ring (10 pcs), 1.5 ml vials with caps and septa (200 no's), Gas Filter Kit, Split Filter. Tool Kit.
5.	UPS	Online 7.50 KVA or more UPS branded with at least 30 minutes back up to be quoted separately with offer

6.	Pre-installation requirement:	Necessary pre-installation advice should be sent immediately after the placement of the order.
7.	Installation Commissioning and Application training:	Free of cost at site for a group of technical staff/ students for operating the instrument. On-site Training should be provided twice in a year up to warranty period of 3 years.
8.	Warranty:	The instrument GCMS including UPS quoted for it should be under on site Comprehensive warranty for three (3) years from the date of installation by the OEM or its representative. Comprehensive warranty should explicitly include all spare parts and system consumable part. Any repair work or replacement of spares needs to be done on site, the manufacturer must confirm this in their quotation.
9.	Comprehensive Maintenance Contract (CMC):	After the completion of 3 years OEM warranty, two years extended CMC must be quoted without which the tender will be rejected.
10.	Installation in India:	Detailed lists of users in India with contact details for the quoted equipment should be provided. Preferably, there should be atleast one same quoted equipment installed/ordered in India in last 5 years otherwise the tender will not be considered.
11.	Performance:	Satisfactory performance of instrument and after sales service from existing users will be considered by the committee in evaluating the technical bid.
12.	Validity of Quotation:	Minimum 3 months.
13.	Submission of Bids:	Tender should be submitted in two parts- Technical and Financial.

8.Requirement for Combined SEM, EDS, AFM and MFM System -1 Set

We require the combination of different analytical methods within one instrument for the simultaneous acquisition of complementary data. We need SEM, EDS, AFM, SEM and other measurement options in one seamlessinstrumentto allow completely new insights into the micro- and nanoworld using true correlative microscopy techniques.

I.	**Basic Features:**
a)	System must offer fully functional and integrated Scanning electron microscope (SEM), Energy dispersive X-ray spectroscopy (EDS) and atomic force microscope within one Instrument.
b)	It should offer a shared coordinatesystem to automatically align AFM, SEM, andEDS operations for measurements and samplepositioning, within a single software interface to easily identify the area of interest. Once an area of interest is found using SEM, then the system should automatically find that same area with the AFM for true Correlated Coordinate System.
c)	It should facilitate the measurement of the sample and combiningthe imaging data in real time for different measurements listed.
d)	System must offer a live profile view from the electron Microscope to observe the movement of the AFM cantilever on the sample surface live.
e)	With Profile View it should be possible to position the AFM tip very precisely on the sample surface allowing hard-to-reach areas of a sample approached precisely with the AFM and complex samples can be measured.
f)	For optimum Profile View, at least 75 degree tilt of the combined sample stage and AFM scan head is desired so the user can position the AFM tip quickly and precisely, even on complex and challenging sample surfaces.
g)	The offered system should have very low Thermal drift and vibrations for high performance. We prefer to have thermal drift of ≤ 0.3 nm/min in X and ≤ 0.1 nm/min in Y directions.
h)	The system should offer very fast sample exchange (<10 minutes) for better efficiency of measurement.
i)	Vendors must provide the correlated SEM, EDS and AFM measurements data with the offer for proven capability.

j) Typical chamber vacuum of 1μTorr to 10 μTorr range and quick pumping time of less than 5 minutes preferred. All required pumping system and accessories should be included and must be software controlled.
II. Measurement Options:
1. Scanning electron microscopy:
a) Using its focused electron beam, System should achieve high-resolution topographic imaging from the surface of the sample. There should be a surface-sensitive mode to collect topographic information from within a few nanometers of the surface.
b) There should be provision for tilting to reveals additional "side" features of samples and allows for cross-sectional images
c) Probe current measuring by integrated Faraday Cup interface
d) Multiple beam-defining options should allow the user to select different beam currents on-demand.
e) Acceleration voltage: 3.5 kV to ≥ 15 kV
f) Probe current range of 10 pA to 2.5 nA
g) Magnification of 25X to 200,000X or more.
h) Detectors: In-Chamber SE Everhart-Thornley
i) Energy Dispersive X-ray Spectroscopy (EDS) must be included for qualitative and quantitative elemental analysis.
j) The EDS in system must be completely integrated with SEM and AFM functions, including the use of the same shared coordinate system and analysis within one user interface.
2. Atomic Force Microscopy:
a) System must be able to perform state-of-the-art atomic force microscopy to easily characterize Nanostructures such as nanowires, 2D-materials, and nanoparticles.
b) System should provide full control to locate the nanostructures and perform the different AFM measurements utilizing the visibility of the cantilever tip in

	combination with the high-resolution SEM. Users should be able to navigate the cantilever precisely to the specific nanostructures of interest.
c)	Following measurement modes should be available in the AFM-
	• Contact Mode- where the tip is in continuous contact with the surface of the sample and follows the topography closely in the repulsive regime.
	• Dynamic mode-where the cantilever is oscillated near its resonance frequency.
	• Finite Impulse Response Excitation (FIRE) mode which is an off-resonance intermittent contact scanning force microscopy technique.
	• Conductive AFM (C-AFM)-where tip works in static or contact mode by simultaneously measuring the sample topography and the conductive properties of the sample using a sharp conductive tip.
	• Electrostatic Force Microscopy (EFM) mode-where a phase imaging mode used to study imaging variations in the electric field of the sample substrate and therefore study the surface potential and charge distribution.
	• Magnetic Force Microscopy (MFM)- where a phase imaging mode used to study the properties of magnetic materials using a magnetic AFM tip
d)	AFM Scan range is XY: ≥ 20 x 20 µm (Closed Loop)
e)	AFM Scan range in Z : ≥ 10 µm
f)	Imaging Noise: <50 pm @ 1 kHz
g)	Cantiliver probes: Self-Sensing Piezoresistive
III.	**Sample Parameters:**System should accommodate up to 20 mm diameter and 20 mm height samples with maximum weight of 500g
IV.	**Data acquisition and analysis:**
a)	Licensed operating software and computer control system compatible with the measurement options. Software should able to acquire, operate and analyze all the relevant information.
b)	Software should provide a wizard-like experience through its tasks and workflows that guides users through the multi-step processes of operating and

configuring the instrument. Any added animations withdemonstrations of the steps will be preferred.
c) All data – for both AFM and SEM – acquired for a given sample and AFM tip used should be automatically stored in a single "experiment." to makes sure that all related data is kept together in a single project file. The experiment file must store original data as acquired, as well as any additional results from post processing.
V. Points to note:
1) Vendor must provide the detail specifications in the compliance statement with respect to each technical specification in the tender document duly supported by the manufacturer's literature and published papers.
Mere saying Yes to compliance sheet without supporting data, measurement will not be accepted.
2) Warranty: Minimum 1 year from the date of installation.
3) Technical evaluation may include demonstration to verify functionalities and capabilities of the system quoted.
4) Vendor must have sales and service support available in India. It is preferred to have a service Engineer locally in Madhya Pradesh.

9.Technical Specifications of ADVANCE AND UPDATED VERSION OF BET

Sr. No.	Parameter	Technical Specifications
1	**Analyzer**	Three stations automatic chemisorption and physisorptionanalyzer for determining metal area/dispersion/crystallitesize of catalysts plus surface area, mesopore size andmicropore distributions. Static chemisorption capability,on the first station, including flow-through in-situpreparation, and 1100 °C furnace or better with fast-cooling technology. High vacuum system for low pressuremicropore analysis with the first station using a dedicatedset of one transducer: 1300 torr (minimum), 10 torr and 1torr and a 1300 torr, 10 torr and 1 torr transducer on otherstation and third station have transducer: 1300 torr(minimum) for surface area and mesopore size – eachstation having its own dedicated dosing/measuringmanifold. The system must have Continuous $P_o$measurement (physisorption) using dedicated cell andtransducer without interruption to the analysis. Vacuumsystem oil free turbo pump. The system must include a long-life dewar.
2	**Measurement Principle**	Volumetric gas adsorption technique.
3	**Analyzer Capability**	a) Surface area: BET, Langmuir, t-plot, BJH/DH, DR, DFT b) Mesopore size: QSDFT, NLDFT, BJH/DH c) Micropore Size: QSDFT, NLDFT, SF, HK, DA d) Pore Volume: α-s, BJH/DH, DFT, DR e) Adsorption energy: Clausius-Clapeyron, DR
4	**Adsorptive Gases**	Should be compatible with He, N_2, Ar, Kr, CO_2, H_2, CH_4, and other non-corrosive gases.
5	**Port for Saturation Vapor Pressure.**	System should have a dedicated port with its own pressuresensor to measure saturation vapor pressure, the materialshould be of the suitable material as that of sample celltoexperience the same thermal conditions as that of thesample cell.
6	**Gas inlet ports**	7 or more gas inlet connections with automatic port

		selection through software.
7	**Analysis port**	The Pressure Specifications of the Analyzer should comply to below range of port: a) Accuracy, 1300 torr range: <± 0.15% of full-scale or better b) Accuracy, 10 torr range: <± 0.15% of reading or better c) Accuracy, 1 torr range: <± 0.15% of reading or better
8	**Measurement range**	• Surface area: 0.01 m2/g and above with (N_2) and 0.0005 m2/g and above with (Kr). • Pore Diameter Range: 0.35- 500 nm or better. • Low pressure isotherm starting from P/P0 = <3 x 10-**8** to 0.997 better with (N_2 @77K).
9	**Degassing system**	The System should be supplied with a Turbo Moleculardrag pump and a dry diaphragm pump for the degasserwith cold trap to avoid incoming moisture towards pumpand to enhance degassing efficiency.
10	**Void volume correction**	The Instrument should use small void volume to enhancesensitivity such that all of cell stem is not cooled. Systemmust have coolant level sensor with dewar upliftingmechanism or any other advanced technology to ensureminimum void volume.
11	**Intelligent Dosing Regimes**	Software should have provision to reduce the totalmeasurement time with software-based optimization ofexcess gas dosing, software should be able to optimize thegas dosing amounts based on isotherm data measured inthe past and estimate the optimal excess gas dosingamount is automatically.
12	**Sample Pretreatment**	The Instrument must have six degassing stations withcapability to run two different heating regimessimultaneously. Degassing temperature control should be up to 450 °C or better.

		Temperature setting: 0.1°C increments or better Temperature accuracy: ± 1% of set point at control thermocouple or better Temperature stability: < 5 °C or better Thermocouples per mantle: 2 (one control, one safety over temperature) Degas Monitor: by sensor Degas cold trap: 1L Backfill transducer: 1300 torr Backfill pressure: programmable Backfill gas: dedicated input The software must ensure completion of degassing. The degassing should be able to program multiple heating ramps and hold times The system should have programmable evacuation with multiple valves to prevent carryover of the sample.
13	**Dewar**	Dewar vessel of capacity: 3L or more, with LN2 holding time: 90 hours or more
14		The control software should control and monitor all the operating parameters during degassing as well as analysis. • System check program for analyzer status anddiagnostics should be available. Instrument schematicwith valve controls should be displayed and should beeasily accessible • The software should display the gas Adsorption,desorption isotherm for the sample measurements • The software should be able to provide strong, weak and combined chemisorption isotherms. • Facility to monitor the progress of measurement in real time should be available
15	**Software for Analysis /**	Software should be capable of calculating specific surface

	measurement	area by Langmuir and BET equations. • Software should have the provision to measure the pore volume, pore area for mesoporous samples based on BJH, DH, method. • Software should have the provision to calculate the Pore specific surface area based on Adsorption/Desorption • t plot, αs plot, MP method should be available for the evaluation of Microporous samples. • User should be able to create reference isotherms for t-curve and αs curve • Different standard t curve data (at least five standard curves) should be available for data evaluation. □ Software should be able to measure vacuum volumetric chemisorption with combined, weak and strong isotherms □ The software should have provision to calculate monolayer uptake using Langmuir, Freundlich and Tempkin models □ The software should have provision to calculate differential and integral heat of adsorption in physisorption as well as chemisorption isotherms □ The software should be able to provide monolayer uptake, Active metal surface area, Crystallite size, and metal dispersion. • Software should be capable of parallel plotting the values during measurement. • Features like, isotherm overlay, BET plot overlay, differential isotherm should be available. • Software should have the provision to export data to spreadsheet and plotting programs using CSV file format. • Option to print isotherm, various plot should be available. • Facility to speed up the measurement with optimum

		amount of gas dosing based on adsorption isotherm data from previous sample measurement should be available The analysis software for measured data should be provided. The software should have the data handling features like user defined report generation, data/ figures export to spread sheets and offline data processing etc. • Data analysis for various models including BET specific surface area I type (ISO 9277), BET automatic analysis, Langmuir specific surface area, BJH, DH, method, t-plot, • Software must have standard capability for Adsorption rate measurement, differential adsorption isotherm, NLDFT/QSDFT/GCMC models.
16	**Necessary requirements and** **added items**	a) Recirculating Dewar Kit- Recirculating Dewar and items required to interface a temperature controller with the equipment. Includes jacketed Dewar with support for CO2 analysis. The system should constantly monitor measurement of manifold temperature and pressure b) Refrigerated Circulator: Temp. Range: -10 to 100°C or better Bath capacity: 5 litres or better, Flow Rate (Max.): 10 lit / min or better temperature Accuracy: +/-0.1°C c) The furnace temperature should go ≥ 1100 °C. Accuracy should be of 0.1% of span & stability of ± 1° C. Ramp rate should be 1°C to 50°C per minute. The furnace cool down should be fast and should take place without any additional utility but using fan assisted. Or better (in case of compressed air the noise level should be below 60 decibel to avoid any inconvenience.

		d) Surface area reference materials – one for micropore, one for low surface area. e) Active area reference material – one for H_2 and CO analysis f) List of Gases to be supplied with 2 stage regulator – N2, He, CO2, H2, Kr (10L), CO (10L), Zero Air g) All nuts, ferrules and SS tubing 100m (2 qty) to be supplied for full operation of instrument h) Desktop Computer i7, 16GB, 1TB SSD, 21inch Display Brand with Mouse and keyboard Win 10 i) Wide Mouth Dewar Assembly with Level sensor (1 qty), cell (5 qty) and rod (2 qty) for thin Film Samples j) Cryocan 10 L k) 9 mm Cyl Bulb Sample Cell – 25 nos. l) Long cell 6 mm CYL BULB – 5 qty m) Long Cell 12 mm CYL BULB – 5 qty n) O- Rings- 6mm, 12 mm 20 nos. each & 9mm 30 nos.
17	**Literature**	a) The model should have a catalogue in original from the original manufacturer and should be included in the bid. b) All technical specifications should be printed explicitly in the catalogue. c) Product brochure/booklet should be included along with the bid.
18	**Installation and Commissioning**	a) The vendor should have at least 8 or more satisfactory installations within India along with at least a few performance certificates. Five of these installations should be in government organizations/labs/autonomous bodies such as CFTIs/ IITs/IISERs/NITs/Central Universities b) Vendor should preferably have a full-fledged local

		service center. c) List of institutes in India, where the quoted model is provided. d) Installation, complete interfacing of the system with its subsystems, and commissioning are to be carried out by the vendor's factory-trained engineers, followed by a demonstration of the system's performance to the user's complete satisfaction. e) An estimated time schedule for installation, commissioning, and training must be provided.
19	**Training**	a) The manufacturer/supplier of BET Surface Analyzer should provide onsite training initially during the installation. b) The supplier or manufacturer should also provide additional training subsequent to the above training installation. c) Regular follow up training every six months during warranty period on mutually convenient dates for hardware, software, and application to the laboratory personnel in the installation, operation and maintenance of the instruments.
20	**Warranty**	The system should be covered for a comprehensive warranty for 3 years and additional 2 years AMC after the 3 years warranty from the date of a successful installation. Manufacturer All parts including spares should be covered under the warranty and this fact should be clearly and explicitly specified in the tender document.
21	**Power Supply**	Should meet Indian Power standards preferably without the use of external converters. Additional 5 KV UPS
22	**Support and**	a) The manufacturer and/or their Indian

	Service	representative must have at least two qualified and factory-trained service engineer in India to be able to attend to service at JiwajiUniversitywithin 48 hours on submitting a complaint b) For the warranty period only factory-trained and certified engineers are acceptable to attend the service. c) The response time with an engineer on site must beless than 5 working days from the notification of the failure. The company must provide evidencethat it can fulfil this requirement.
23	**Delivery Location**	JiwajiUniversity, Gwalior
24	**Delivery Period**	14-16 weeks from the date of release of purchase order.
25	**Upgradability**	The same instrument in future should be upgradable to dynamic chemisorptions

10.Technical Specifications of ADVANCE AND UPDATED CYCLIC VOLTAMMETRY

S.N.	Parameter	Details
1	**Potentiostat**	• Zero resistance ammeter • 2- or 3- or 4-electrode configuration • Floating (isolated from earth) or earth ground • Maximum potential: ±10 V • Maximum current: ±250 mA continuous, ±350 mA peak • Compliance Voltage: ±13 V • Potentiostat rise time: < 1 µs, 0.8 µs typical • Potentiostat bandwidth (-3 dB): 1 MHz • Applied potential ranges: ±10 mV, ±50 mV, ±100 mV, ±650 mV, ±3.276 V, ±6.553 V, ±10 V • Applied potential resolution: 0.0015% of potential range • Applied potential accuracy: ±1 mV, ±0.01% of scale • Applied potential noise: < 10 µV rms • Measured current range: ±10 pA to ±0.25 A in 12 ranges • Measured current resolution: 0.0015% of current range, minimum 0.3 fA • Current measurement accuracy: 0.2% if current range >=1e-6 A/V, 1% otherwise

		• Input bias current: < 20 pA
2	**Galvanostat:**	• Galvanostat applied current range: 3 nA – 250 mA • Applied current accuracy: 20 pA ±0.2% if > 3e-7A, ±1% otherwise • Applied current resolution: 0.03% of applied current range • Measured potential range: ±0.025 V, ±0.1 V, ±0.25 V, ±1 V, ±2.5 V, ±10 V • Measured potential resolution: 0.0015% of measured range
3	**Electrometer:**	• Reference electrode input impedance: 1e12 ohm or better • Reference electrode input bandwidth: 10 MHz or better • Reference electrode input bias current: <= 10 pA @ 25°C
4	**Waveform Generation and Data Acquisition:**	• Fast waveform update: 10 MHz @ 16-bit • Fast data acquisition: dual channel 16-bit ADC, 1,000,000 samples/sec simultaneously • External signal recording channel at maximum 1 MHz sampling rate
5	**Experimental Parameters:**	• CV and LSV scan rate: 0.000001 to 10,000 V/s or better • Potential increment during scan: 0.1 mV @ 1,000 V/s • CA and CC pulse width: 0.0001 to 1000 sec

		• CA and CC minimum sample interval: 1 µs • True integrator for CC • DPV and NPV pulse width: 0.001 to 10 sec • SWV frequency: 1 to 100 kHz • i-t sample interval: minimum 1 µs • ACV frequency: 0.1 to 10 kHz or better • SHACV frequency: 0.1 to 5 kHz or better • FTACV frequency: 0.1 to 50 Hz, simultaneously acquire 1st, 2nd, 3 rd, 4th, 5th, and 6th harmonics ACV data • IMP frequency: 0.00001 to 1 MHz • IMP amplitude: 0.00001 V to 0.7 V rms
6	**Other Features:**	• Automatic and manual iR compensation • Current measurement bias: full range with 16-bit resolution, 0.003% accuracy • Potential measurement bias: ±10V with 16-bit resolution, 0.003% accuracy • External potential input • Potential and current analog output • Programmable potential filter cutoff: 1.5 MHz, 150 KHz, 15 KHz, 1.5 KHz, 150 Hz, 15 Hz, 1.5 Hz, 0.15 Hz • Programmable signal filter cutoff: 1.5 MHz, 150 KHz, 15 KHz, 1.5 KHz, 150 Hz, 15 Hz, 1.5 Hz, 0.15 Hz • RDE control output (Model 630E and up): 0-10V (corresponding to 0-10000

		rpm), 16-bit, 0.003% accuracy • Digital input/output lines programmable through macro command • Flash memory for quick software update • Serial port or USB port selectable for data communication • Cell control: purge, stir, knock • CV simulation and fitting program, user-defined mechanisms • Impedance simulation and fitting program • Maximum data length: 256K-16384K selectable • Dimensions: 14.25”(W) × 9.25”(D) × 4.75”(H) • Weight: 12 lb.
7	**Software Techniques**	• Cyclic Voltammetry (CV) • Linear Sweep Voltammetry (LSV) • Staircase Voltammetry (SCV) • Tafel Plot (TAFEL) • Chronoamperometry (CA) • Chronocoulometry (CC) • Differential Pulse Voltammetry (DPV) • Normal Pulse Voltammetry (NPV) • Differential Normal Pulse Voltammetry (DNPV) • Square Wave Voltammetry (SWV) • AC Voltammetry (ACV) • 2nd Harmonic AC Voltammetry (SHACV) • Fourier Transform AC Voltammetry

		(FTACV) • Amperometrici-t Curve (i-t) • Galvanostatic Intermittent Titration Technique GITT • Potentiostatic Intermittent Titration Technique PITT • Differential Pulse Amperometry (DPA) • Double Differential Pulse Amperometry (DDPA) • Triple Pulse Amperometry (TPA) • Integrated Pulse Amperometric Detection (IPAD) • Bulk Electrolysis with Coulometry (BE) • Hydrodynamic Modulation Voltammetry (HMV) • Sweep-Step Functions (SSF) • Multi-Potential Steps (STEP) • AC Impedance (IMP) • Impedance - Time (IMPT) • Impedance - Potential (IMPE) • Chronopotentiometry (CP) • Chronopotentiometry with Current Ramp (CPCR) • Multi-Current Steps (ISTEP) • Potentiometric Stripping Analysis (PSA) • Potentiostatic intermittent titration technique (PITT) • Electrochemical Noise Measurement (ECN)

		• Open Circuit Potential - Time (OCPT) • Galvanostat • Galvanostatic intermittent titration technique (GITT) • RDE control (0-10V output) • Full version of CV simulation and fitting program • Limited version of CV simulation and fitting program • Impedance simulation and fitting program • iR Compensation
8	**External Potential Input**	AC Impedance Plots with Simulation Bode: log Z vs log (freq) Bode: P{hase , vs log (freq) Bode: log Z" & Z' vs log (freq) Bode: log Y vs log (freq) Nyquist; Z" vs Z' Admittance; Y" vs Y' Warburg: Z" & Z' vs w1/2 w-angular frequency Z' vs w Z" Z' vs Z"/w Cot (phase) vs w ½
9	**Cell & Electrodes**	Electrochemical Cell stand System includes 4 glass cells with one Cell top, • Pt flag Working 1cm x 1cm Electrode 5 nos. • GC Working Electrode 5 nos. • Pt Wire Counter Electrode 5 nos.

		• Ag/AgCI Reference (aq) with vycor frit 5 nos. • Carbon cloth • ITO plate • Graphite rod of diameter 4mm
10	**Photoelectrochemical cell**	• Glass Cell with provision for accommodating reference, Pt mesh counter and working electrodes • Specialized cell for doing Photoelectrochemical cell reactions • Small and big glass tube for purging and sensing • 25mm quartz window for light input, and provision for ITO WE
11	**Short Arc Xenon Lamp:**	Density Range: 0.1 - 5 Sun Max Power: 500W Current Range: 15 - 25A - Spectrum: 300 - 2500nm Power Supply Stability. 0.01% Light Source Stability: 0.5% Beam Diameter: 50 - 60 mm AREF + AM1.5 NREL-Based Calibrated Reference Cell, 1x1cm
12	**Band pass filter:**	VIS-NIR High pass filter round, 630nm
13	**RDE/RRDE**	Linear sweep for concentration ratio of metal ion diff oxd^{n} states, Hydrodynamic Modulation Voltammetry (HMV) change in voltage w.r.t. ramp of the motor, RDE control (0-10V output,

		instrument should be upgradable to bipot for RRDE measurements
14	**Computer**	32/64/86bit Windows-based software, i-7 with 16 gb ram, 27inch monitor/better configuration and auto double-sided laser printer
15	**Power Supply**	Should meet Indian Power standards preferably without the use of external converters, 230VAC, 16 Amp.
16	**General software features**	Multi user license Software for Electrochemistry • 32/64/86 bit Windows-based software • Multi-document interface • Open, save, delete, list, conversion, and print files • Run, macro, iR compensation, filtering, RDE control, preconditioning, step functions, and cell control • Data plot, overlay and parallel plots, x-y plot, ip~v plot, ip~v1/2 plot, Ep~log v plot, semilog plot • Graphics options, color and font selections • Smoothing, derivatives, integration, semi-derivative and semi-integral, interpolation, baseline fitting & subtraction, linear baseline correction, data point removing, data point modification, background subtraction, signal averaging, mathematical operation, Fourier Spectrum

		• Calibration curve, standard addition, data file report, concentration - time dependence report and plot • Digital simulation, user defined mechanisms • Data information, data listing, equations, clock, toolbar, status bar • Context sensitive help • Purge, knock, stir controls for mercury electrode • Maximum data length: 128K-4096K selectable Impedance simulation software including Cole plots
17	**Training**	a) The manufacturer/supplier should provide onsite training initially during the installation. b) The supplier or manufacturer should also provide additional training subsequent to the above training installation. c) Regular follow up training every six months during warranty period on mutually convenient dates for hardware, software, and application to the laboratory personnel in the installation, operation and maintenance of the instruments.
18	**Support and Service**	a) The manufacturer and/or their Indian representative must have at least two qualified and factory-trained service

		engineers in India to be able to attend to service within 48 hours on submitting a complaint b) For the warranty period only factory-trained and certified engineers are acceptable to attend the service. c) The response time with an engineer on site must be less than 5 working days from the notification of the failure. The company must provide evidence that it can fulfil this requirement.
19	**Delivery Period**	6-12 weeks from the date of release of purchase order.
20	**Warranty**	The system should be covered for a comprehensive warranty for 3 years and additional 2 years AMC after the 3 years warranty from the date of a successful installation. Manufacturer All parts including spares should be covered under the warranty and this fact should be clearly and explicitly specified in the tender document.

11.TECHNICAL SPECIFICATIONS PULSED FOURIER TRANSFORM NMR SPECTOMETRE

S. No.	Parameter	REQUIRED SPECIFICATIONS
1	Instrument Type:	Pulsed Fourier Transform NMR Spectrometer
2	Operating Frequency:	100 MHz (2.35 T) (1H) or better.
3	Nuclei selection:	^{1}H, ^{13}C in single probe and should be upgradable to more nuclei.
4	Sensitivity	$^{1}H/^{13}C$ system with ^{1}H sensitivity of ≥ 240:1 or ≥ 220:1 when PFG incl. (1% ethyl benzene, 1scan)
5	Gradient strength:	≥ 0.25 T/m (25 G/cm)
6	Magnet Type:	Permanent, Cryogen-Free
7	Magnet Temperature Control:	Active Heating and Cooling
8	Automation:	PAL RSI sample changer; up to 120 samples + 12 reference samples
9	^{1}H Resolution (@ 50/0.55/ 0.11% signal height):	Standard: ≤ 0.4/ 15/ 30 Hz (<0.005 ppm) HD-Option: ≤ 0.3/ 10/ 15 Hz LW(50%) <0.5 Hz <0.005 ppm
10	Shimming:	Shimming is fully automated. Shimming for each sample is not required.
11	Digital Lock:	• External, no deuterated solvents needed. It should have gradient upgradability. • Solvent Suppression should be available in the same software and

		should have capability to upgrade to HPLC Hyphenation.
12	Sample Tubes:	Standard 5mm diameter, 7-long NMR tubes: compatible with Young tubes
13	Stray Field:	<2 G all around system.
14	Adjustable temperature	25°C – 60°C or better
15	Lab temperature	18-28°C; Measurements at sample temperature > 40°C: 18-25°C
16	Lab Infrastructure needed:	No liquid nitrogen or helium required, no water cooling required, power consumption typically <300 W, Power: 100 – 240 VAC, 50 – 60 Hz, No additional venting required
17	Probe Tune and Match:	Preset, no user intervention required, at time 2 probe ^{1}H and ^{13}C should work
18	NMR Experiments:	^{1}D, COSY, JRES, HSQC, HSQC-ME, DEPT, APT, HETCOR, TOCSY, NOESY, ROESY, Nutation
19	Control Computer.	Suitable computer should be provided, no standalone operations. Desktop computer with intel i7 processor or higher, 4 TB hard disk or higher, 24inch LED monitor or higher, 32 GB RAM or higher, 6GB graphical card or higher, keyboard, mouse, mouse pad and other accessories *etc.*
20	Software & Hardware:	Mnova, TopSpin, ACD/Labs, MATLAB *etc.* for Data Acquisition, Instrument control and Data analysis. Additional software

		license should be provided. Data should be compatible with JCAMP-DX and CSV
21	Connectivity:	Ethernet/WiFi, USB, Serial, HDMI
22	Installation and training information:	Should be in scope of supplier. Also, intimate service station availability in MP & India. Every year there should be a training for the students.
23	Quantity of NMR Tubes (in Numbers):	5 mm 500 NMR tube should be provided
24	Warranty	The system should be covered for a comprehensive warranty for 3 years and additional 2 years AMC after the 3 years warranty from the date of a successful installation. Manufacturer All parts including spares should be covered under the warranty and this fact should be clearly and explicitly specified in the tender document.

ANNEXURE – I

1. Technical Specification for Atomic Absorption Spectrophotometer

Sr. No.	Specification	Description	Compliance Yes/No
1.	Optics	Double Beam- With Flame and Furnace (Integrated System)	
2.	Wavelength Range	185-900nm	
3.	Detector	Photomultiplier tube (It Should be Wide PMT To Cover Complete Range 185-900nm)	
4.	Back ground Correction	It should be Two background Correction D2 with SR Or Zeeman Background Correction	
5.	Spectral Bandwidth	Variable from 0.1 to 2 nm in 6 Steps	
6.	No Of HC Lamps	Minimum 8 Lamps Turret or more with 2 lamps simultaneously lit .	
7.	Base Line Correction	Automatic Correction Of Baseline drift by offset correction in peak height and peak are mode.	
8.	Focal Length	300 nm or better.	
9.	Monochromator and Grating Lines	Czerny Turner Monochromator with at least 1800 lines/mm or better	
10.	Flame Type	Air Cooled pre mix type or better.	
11.	Burner Unit	Titanium 10cm slot and 5 cm titanium slot for N_2O-C_2H_2	
12.	Nebulizer	Pt-Ir capillary with teflon orifice and ceramic impact bead	
13.	Sensitivity	Detection limit for Cu ‹0.006 ppm. ≥0.90 Absorbance with % RSD of ≤0.5% from ten replication (5 sec integration time) of 5 ppm in standard.	
14.	Chamber	Polypropylene type	
15.	Gas control unit	Fuel: automatic search for optimum flow rate, Automatic search of optimum gas flow rate	

16.	Safety features	Automatic gas leak check · Automatic switching between Air-C_2H_2 and N_2O-C_2H_2 · Flame monitor · Prevention of wrong burner head use · Gas pressure monitor · Drain tank level monitor · Automatic flame extinction upon power outage or sudden power interruption	
17.	Software	Software based AA, Should have QA/QC Function or similar functions	
18.	HVG (Hydried Vapor Generator for As,Se,Sb,Te,Bi.)	Should be attached	
19.	Analysis System	Continuous flow system	
20.	Sample consumption	Variable	
21.	Reagent consumption	Variable	
22.	Atomizer	Heated absorption cell, standard system should uses air-C_2H_2 flame	
23.	Operation through	Auto Sampler.	
24.	Auto Sampler	Auto Sampler should be quoted with min 60 or more vial capacity or more and auto sampler should be capable to use for both flame and furnace.	
25.	Graphite Furnace	Graphite furnace should be included with temp range up to 2800 degree or more with position lateral/ vertical manual adjustment	

26.	Accessories	C_2H_2Cylinder with regulator, Nitrous Oxide Cylinder with regulator & Pre-heater. Argon Cylinder with Regulator, Air Compressor , Fume Hood, Chiller for Furnace, Suitable branded Windows 10 PC with laser jet coloured printer. The MS office will be original package to be included, Lamps and individual standards solution (1000 ppm) for Zn, Mn, Ni, Fe, Cu, Pb, Al, Mo, Cd, B, Cr, Co, As, Hg, Se. (Total 15 lamps and standards)	
27.	UPS	5.0 KVA or more Online UPS branded with at least 30 minutes back up to be quoted separately with offer	
28.	Pre-installation requirement:	Necessary pre-installation advice should be sent immediately after the placement of the order.	
29.	Installation Commissioning and Application training:	Free of cost at site for a group of technical staff/ students for operating the instrument.	
30.	Warranty:	The instrument Atomic Absorption Spectrophotometer including UPS quoted for it should be under on site Comprehensive warranty for three (3) years from the date of installation by the OEM or its representative. Comprehensive warranty should explicitly include all spare parts and system consumable part. Any repair work or replacement of spares needs to be done on site, the manufacturer must confirm this in their quotation.	
31.	Comprehensive Maintenance Contract (CMC):	After the completion of 3 years OEM warranty, two years extended CMC must be quoted without which the tender will be rejected.	

32.	Installation in India:	Detailed lists of users in India with contact details for the quoted equipment should be provided. Preferably, there should be at least same quoted equipment installed/ordered in India in last 5 years otherwise the tender will not be considered.	
33.	Performance:	Satisfactory performance of instrument and after sales service from existing users will be considered by the committee in evaluating the technical bid.	
34.	Validity of Quotation:	Minimum 3 months.	
35.	Submission of Bids:	Tender should be submitted in two parts- Technical and Financial.	

2. Technical Specification for CHN Analyzer

Sr. No.	Specification and Description	Compliance Yes/No
1.	Should be Compact analyzer for the determination of C / H / N in both solid and liquid samples.	
2.	Analysis time: should not be more than 10 minutes. for CHN Analysis	
3.	It should be fully automated having facility of automated transfer of the sample.	
4.	It should be auto sampler (Range 50 position/150 position).	
5.	Determination of CHN should be in a single run with accuracy and precision.	
6.	Automated evaluation of C/N and C/H ratio	
7.	Analyze from few ppm to 100%.	
8.	Sample weight: up to 500 mg or more of the sample	
9.	Instrument should be capable to analyze below measurement range of CHN mode	
10.	Measuring range: carbon from 0.001to 20 mg or better	
11.	Measuring range: Hydrogen from 0.001 to 1mg. or better	
12.	Measuring range: Nitrogen: 0.001 to 15 mg. or better	
13.	Temperature range 100-1100 Degree Celsius	
14.	Pre-installation requirement: Necessary pre-installation advice should be sent immediately after the placement of the order.	
15.	System should be supplied with: Semi Microbalance System should be supplied with: Gases- Helium and Oxygen System should be supplied with: Regulator for both gas cylinders	
16.	A compatible branded PC Minimum i5,4GB Ram, 500 GB HDD,19inches falt color monitor, Windows 10 professional should be provided for running the system.	

17.	Installation Commissioning and Application training: Free of cost at site for a group of technical staff/ students for operating the instrument.	
18.	Warranty: The instrument CHN Analyzer including UPS should be under on site Comprehensive warranty for three (3) years from the date of installation by the OEM or its representative. Comprehensive warranty should explicitly include all spare parts and system consumable part. Any repair work or replacement of spares needs to be done on site, the manufacturer must confirm this in their quotation.	
19.	Comprehensive Maintenance Contract (CMC): After the completion of 3 years OEM warranty, two years extended CMC must be quoted without which the tender will be rejected.	
20.	Installation in India: Detailed lists of users in India with contact details for the quoted equipment should be provided. Preferably, there should be atleast one same quoted equipment installed/ordered in India in last 5 years otherwise the tender will not be considered.	
21.	Performance: Satisfactory performance of instrument and after sales service from existing users will be considered by the committee in evaluating the technical bid.	
22.	lity of Quotation: Minimum 3 months.	
23.	Submission of Bids: Tender should be submitted in two parts- Technical and Financial.	

3. Technical Specification for Bio-Safety Cabinet

Sr. No.	Specification	Description	Compliance Yes/No
1.	Air Balancing	100% exhaust	
2.	Inside Pressure	Negative Pressure	
3.	Particle retention	0.3 Micron & Above	
4.	Inflow Velocity	100 FPM±20	
5.	Exhaust Velocity	80FPM±20	
6.	Noise level	65 decibel on "A" scale±5	
7.	Ultraviolet lamp	Branded–1No.	
8.	Illumination	LED Fitting	
9.	Pre filters	Attached	
10.	HEPA filters	0.3 Micron and efficiency 99.97 % or more	
11.	Exhaust Air Blower	Attached	
12.	1No. Pressure Differential	Digital Gauge	
13.	Front Panel	Polycarbonate Front door with Pneumatic Lift & Glove Port Arrangement and full air tight construction	
14.	Glove Port	Gloves: 6" dia, Gloves & Glove ports	
15.	Working Size	W1200xD600xH600mm	
16.	Material construction	The Cabinet and working table made from Stainless Steel with Matt finish. Working zone is lined with stainless steel material.	

17.	Pre-installation requirement:	Necessary pre-installation advice should be sent immediately after the placement of the order.	
18.	Installation Commissioning and Application training:	Free of cost at site for a group of technical staff/ students for operating the instrument.	
19.	Warranty:	The instrument Bio Safety Cabinet should be under on site Comprehensive warranty for three (3) years from the date of installation by the OEM or its representative. Comprehensive warranty should explicitly include all spare parts and system consumable part. Any repair work or replacement of spares needs to be done on site, the manufacturer must confirm this in their quotation.	
20.	Comprehensive Maintenance Contract (CMC):	After the completion of 3 years OEM warranty, two years extended CMC must be quoted without which the tender will be rejected.	
21.	Installation in India:	Detailed lists of users in India with contact details for the quoted equipment should be provided. Preferably, there should be atleast one same quoted equipment installed/ordered in India in last 5 years otherwise the tender will not be considered.	
22.	Performance:	Satisfactory performance of instrument and after sales service from existing users will be considered by the committee in evaluating the technical bid.	
23.	Validity of Quotation:	Minimum 3 months.	
24.	Submission of Bids:	Tender should be submitted in two parts- Technical and Financial.	

Following specifications can be considered:

1. Biosafety cabinet Class II Type A2 with 30% exhaust and 70% recirculated air.
2. Cabinet should be 4 feet width.
3. Front window must be at least a 10" sash opening.
4. The Biosafety Cabinet must have DC motor for blower.
5. The motor must automatically adjust the airflow speed without the use of a damper to ensure continuous safe working conditions, even without maintenance adjustments.
6. Cabinet must use a pressure sensor (rather than anemometer) to detect pressure drop across the supply filter, rather than just one point across the down flow.
7. The cabinet should display the inflow and down flow air velocities and must incorporate an Indicator, visual, and audible alarm to indicate excessive HEPA filters loading, blower failure, airflow speed failure, incorrect sash position.
8. Cabinet should be provided with Arm Rest Bar.
9. Drainage Port beneath work surface should be provided to facilitate easy cleaning of the interior in case of liquid spillage inside the work area.
10. The front of the cabinet must be angled at least 10° to help minimize glare.
11. The quoted cabinet noise level must be less than 65 dB(A).
12. The cabinet must automatically reduce fan/blower motor speed when the front window sash is in closed position to ensure reduced energy consumption when the cabinet is not is use.
13. UV light must be programmable to allow for specific exposure times from 0 to 24 hours.
14. The Cabinet should have provision to fit taps for Vacuum, Water, and Noncombustible gas.
15.Quoted Biosafety cabinet should incorporate HEPA filter of the class H 14 EN 1822 or better with having minimum efficiency of 99.995% at 0.3 μm particle size. The efficiency of HEPA filter must be mentioned for both exhaust as well as down flow air
16.Ventilation System Exhaust and Inflow air volume approximately 300-350 CFM.
17. The cabinet should be provided with fixed or adjustable Height Stand, factory-installed UV Light, fluorescent or LED white light, and one set of detachable arms rests, and one or two electrical outlet that work at 230V as per Indian electrical condition.
18. The cabinet interior must be all stainless steel with at least grade 304.
19. The Drain Pan of the cabinet should be made of type 304 stainless steel. The drain pan should not be painted or power coated.
20. Port provision for clean and safe routing for vacuum tubing and cables through the side of the bio safety cabinet for improved organization and work efficiency.
21. Warranty 3 years on-site from the date of installation and acceptance only, and not from the date of invoice or shipment. All electronic parts including motor must be covered. Clearly specify which parts are not covered. Scope of work that will be undertaken during the warranty period should be mentioned.
22. AMC charges may be quoted for post-warranty period.
23.Servo stabilizer of at least 4 kVA capacity should be provided for the cabinet functioning.

4. Technical Specification for Gel Doc System

Sr. No.	Specification and Description	Compliance Yes/No
1.	System should have Image resolution of at least 5 mega pixels or more for resolving closely spaced bands on a gel.	
2.	System should have dynamic range of >3.0 orders of magnitude	
3.	Imaging system should have Automatic capabilities with Application driven, user selected or recalled by a protocol.	
4.	Should have 100 % repeatability via recallable protocols.	
5.	System should have pre-calibrated focus for any zoom settings & sample height and with autofocus features.	
6.	Should have appropriate flat fielding correction automatically & consistently applied to image data for every application.	
7.	Versatile system to support wide range of applications like- Fluorescent dye like Sybr green, Sybr safe, 2-D, 1-D, Dot Blotting, Nucleic acid detection , Quantization etc.	
8.	System Should have Excitation source - Epi-white light and trans-UV are standard (wavelength = 302 nm	
9.	System should have three illumination control modes, trans-UV, trans-white, epi-white	
10.	Should have true 12 bit CCD camera.	
11.	System Sample size 28 X 36 cm and imaging Area 19.4 X26 cm.	
12.	System should come with white light conversion screen.	
13.	Should have motorized zoom lens- f/1.2, 12-75mm with numerical feedback value to reduce the experimental variation -Capable of Optimizing, saving, and quickly recalling the imaging acquisition settings	
14.	Safe DNA Imaging without UV exposure- using the Blue Conversion screen to prevent damage from UV.	
15.	Reproducibly position or center the sample on the image platen by using gel alignment templates.	

16.	Should come with 1 D analysis software with following features Single mouse click from image capture to results and reports, very fast and efficient. Should have comprehensive automated quantitative analysis of proteins & DNA samples in seconds. Intuitive and well organized (efficient) selection of workflows based on applications ● 3D viewer, Absolute and Relative quantitation Should calculate precisely continuous focus curves that are consistently and automatically applied for every zoom position and sample height. No user intervention for focusing. All calculations are done at setup, once and for all image captures Software should be multi user for multiple PC for use of multiple users and license free with lifetime free upgrades. ● Auto exposure – 2 user defined modes (intense or faint bands) ● Software should be single for imaging and analysis.	
17.	Optional: A compatible branded PC Minimum Ram, ,19inches tcolor monitor, Windows 10 professional ➢ 1.0 kva Online UPS with at least 15 minutes back-up to be provided with the machine	
18.	Pre-installation requirement: Necessary pre-installation advice should be sent immediately after the placement of the order.	
19.	Installation Commissioning and Application training: Free of cost at site for a group of technical staff/ students for operating the instrument.	
20.	Warranty: The instrument Gel Doc System including UPS quoted for it should be under on site Comprehensive warranty for three (3) years from the date of installation by the OEM or its representative. Comprehensive warranty should explicitly include all spare parts and system consumable part. Any repair work or replacement of spares needs to be done on site, the manufacturer must confirm this in their quotation.	
21.	Comprehensive Maintenance Contract (CMC): After the completion of 3 years OEM warranty, two years extended CMC must be quoted without which the tender will be rejected.	

22.	Installation in India: Detailed lists of users in India with contact details for the quoted equipment should be provided. Preferably, there should be atleast three same quoted equipment installed/ordered in India in last 5 years otherwise the tender will not be considered.	
23.	Performance: Satisfactory performance of instrument and after sales service from existing users will be considered by the committee in evaluating the technical bid.	
24.	dity of Quotation: Minimum 3 months.	
25.	Submission of Bids: Tender should be submitted in two parts- Technical and Financial.	

5. Technical Specification for Aerosol Mass Monitor

Sr. No.	Specification and Description	Compliance Yes/No
1.	High precision pump-suction sensor.	
2.	Laser Mie-scattering Principle.	
3.	Working temperature ranges between 0-50^{0}C	
4.	Storage Temperature Range; -20^{0}C to 60^{0}C	
5.	High stability air pump imported	
6.	User-defined five-channel particle size options	
7.	Built-in temperature and humidity sensor	
8.	LCD large display with intuitive data	
9.	Measuring Range 0-1000µg/m^3	
10.	Resolution: 0.1µg/m^3	
11.	Accuracy: ±10%	
12.	Sampling Rate: 10s or less	
13.	Laser emitter: 40mW, 780nm	
14.	Point source location monitoring, fugitive emission monitoring.	
15.	Hand held operation	
16.	Five Mass Ranges (PM1.PM2.5, PM4, PM10 &TSP	
17.	Rechargeable: Battery Charger/Adapter operated	
18.	Data Storage: 2500 records or more	
19.	Pre-installation requirement: Necessary pre-installation advice should be sent immediately after the placement of the order.	
20.	Installation Commissioning and Application training: Free of cost at site for a group of technical staff/ students for operating the instrument.	
21.	Warranty: The instrument Aerosol Mass Monitor including 3.5 KVA UPS should be under on site Comprehensive warranty for three (3) years from the date of installation by the OEM or its representative. Comprehensive warranty should explicitly include all spare parts and system consumable part. Any repair work or replacement of spares needs to be done on site, the manufacturer must confirm this in their quotation.	
22.	Comprehensive Maintenance Contract (CMC): After the completion of 3 years OEM warranty, two years extended CMC must be quoted without which the tender will be rejected.	

23.	Installation in India: Detailed lists of users in India with contact details for the quoted equipment should be provided. Preferably, there should be atleast one same quoted equipment installed/ordered in India in last 5 years otherwise the tender will not be considered.	
24.	Performance: Satisfactory performance of instrument and after sales service from existing users will be considered by the committee in evaluating the technical bid.	
25.	Validity of Quotation: Minimum 3 months.	
26.	Submission of Bids: Tender should be submitted in two parts- Technical and Financial.	

6. Technical Specifications For Real Time PCR

Sr. No.	Specification and Description	Compliance Yes/No
1.	The system should have block of 96 x 0.2 ml tubes or plate to run typical 0.2ml tubes, strips, and plates	
2.	The base thermal cycler should be able to do standard PCR	
3.	The System should have a gradient block offering temperature differential range of 1-24º C.	
4.	The Gradient Block should offer Dynamic Ramping.	
5.	Excitation Source: LEDs ,Detection Source: Photodiodes	
6.	The system should be able to detect at least2 fluorophores in the same tube.	
7.	The system should be capable of Detecting commercially available universal dyes like FAM,SYBR Green I, VIC, HEX, TET, Cal Fluor gold 540, ROX, Texas sRed, etc.	
8.	The system should have ramping speed of at least / sec.	
9.	Peltier Cooling & Heating for uniform temp control	
10.	Channel dedicated for FRET experiments is preferred	
11.	Excitation –Emission range: 450- 580nm or better	
12.	Dynamic range of 9 orders or above	
13.	Open system capable of running various chemistries, reagents and plastic ware so that different chemistries using TaqMan, SYBR green etc all can be performed.	
14.	Temperature range 40– 100 ^{O}C with accuracy of ±0.2 ^{O}C and uniformity of b. ±0.4 ^{O}C within 10 sec of arrival at 90 ^{O}C	
15.	System must be capable of working with minimum sample volume from 1- 50µl with 10-25 µl recommended.	
16.	Should have multiple scan modes with a FAST scan option for reading all wells in 3 seconds	

17.	A special software to publish data should be supplied free of cost.	
18.	Real time PCR should be licensed for both IVD and Research applications and license copy must be provided.	
19.	E-mail Notification facility with data file after the run is complete is needed.	
20.	A compatible branded PC Minimum i7, 8GB Ram, 1000GB SSD,21 inches flat color monitor, Windows 10 professional should be provided for running the system.	
21.	2.0 kva Online UPS with at least 15 minutes back-up to be provided with the machine and rates to be quoted separately with offer.	
22.	Pre-installation requirement: Necessary pre-installation advice should be sent immediately after the placement of the order.	
23.	Installation Commissioning and Application training: Free of cost at site for a group of technical staff/ students for operating the instrument.	
24.	Warranty: The instrument Real Time PCR including UPS quoted for it should be under on site Comprehensive warranty for three (3) years from the date of installation by the OEM or its representative. Comprehensive warranty should explicitly include all spare parts and system consumable part. Any repair work or replacement of spares needs to be done on site, the manufacturer must confirm this in their quotation.	
25.	Comprehensive Maintenance Contract (CMC): After the completion of 3 years OEM warranty, two years extended CMC must be quoted without which the tender will be rejected.	
26.	Installation in India: Detailed lists of users in India with contact details for the quoted equipment should be provided. Preferably, there should be atleast three same quoted equipment installed/ordered in India in last 5 years otherwise the tender will not be considered.	

27.	Performance: Satisfactory performance of instrument and after sales service from existing users will be considered by the committee in evaluating the technical bid.	
28.	dity of Quotation: Minimum 3 months.	
29.	Submission of Bids: Tender should be submitted in two parts- Technical and Financial.	

7. Technical Specification for Gas Chromatograph Mass Spectrometer (GCMS)

Sr. No.	Specification	Description	Comliance Yes/No
1.	Column Oven :	Large column oven (>13.5 litre) up to 450 ^{o}C from room temp to ± 3 ^{o}C with a temperature programming up to 30 steps or higher and rate setting range up to -125 ^{o}C /min with a total time for all steps up to 9999.99 minutes max and oven cool down time from 450C to 50C in 4.0 minutes or less.	
2.	tion Port:	Two Capillary Injection port up to 400 ^{o}C or more with Electronic Control and AFC pressure range should upto 970 kPa or 145 psi. The Same injection port should be able to connect upto 0.53 Capillary column directly. The Electronic Flow control should be able to program for Pressure /flow minimum 7 step with a split ratio setting up to 9999.9:1. System should be upgradable to 2 injector ports simultaneously.	
		FID Detector sensitivity should be 1.2 pg/C , G C should be upgradable to 4 detectors simultaneously (4th detectors must be MSD).	
		Liquid Auto Injector of Minimum 100 Vials or more should be included.	

3.	Mass Spectrometer :	Mass Analyzer with Range up to 1.2 to 1000 amu with scanning speed of 20,000 amu/sec , maximum scan cycle should be 100. Number of temperature Zone should be 8 GCMS should have a TMP pump must be more than 300 L and Rotary pump. Filament should be dual and automatic switchover and possible Dynamic Range should be >109 or more.	
		Retention time should be highly precise for correction over the entire chromatogram, and analytical conditions are not changed, so the SOP does not need to be changed.	
		Starting/stopping the system fully automatically from the computer.	
		Software should allow flagging with two criteria on both the upper and lower ends, and displays a list of quantitative results and chromatograms for all components and all samples. Detailed verification and correction for each component also should be possible. Reports can be output as summary reports.	
		SIM channel should take up to 64 x 128 Channel Ion source can be independently heat up to 200 deg and energy can be varied up to 200 eV.	
		GCMS Should be quoted with Simultaneous SCAN & SIM mode GCMS should be with EI Scan sensitivity 1 Pg for OFN at S/N >= 1500 RMS and with a Licensed version only.	

4.	Data Processor – Software and utilities	Latest 32 bit software of the Creation of automatic SIM Table, Automatic adjustment of Retention time, Similarity Search, with retention index . GCMS instrument tuning should be automatic. Latest licensed NIST 2020 library should be offered along with the instrument.	
		PC based latest version GC with Large LCD Display with touch screen to view Real time Chromatogram on the LCD and built in GC System check and self-diagnostic function with following specification GCMS should be upgradable for online connection with reactor with a automated valve connection .	
		GCMS Should be supplied with all installation accessories required like branded PC, Printer , He, H_2,N_2, Air cylinder with regulator- 1 no Each, gas purification panel with necessary accessories , one capillary column, Liquid Syringe.	
		Following consumables to be offered with the quotation: Graphite and Vespel Ferrules (10 each), Silica wool, Septum (50 pcs), Filament (02 pcs) Split and Splitless liner (05 each) Nuts (10 pcs), O-Ring (10 pcs), 1.5 ml vials with caps and septa (200 no's), Gas Filter Kit, Split Filter. Tool Kit.	
5.	UPS	Online 7.50 KVA or more UPS branded with at least 30 minutes back up to be quoted separately with offer	
6.	Pre-installation requirement:	Necessary pre-installation advice should be sent immediately after the placement of the order.	

7.	Installation Commissioning and Application training:	Free of cost at site for a group of technical staff/ students for operating the instrument. On-site Training should be provided twice in a year up to warranty period of 3 years.	
8.	Warranty:	The instrument GCMS including UPS quoted for it should be under on site Comprehensive warranty for three (3) years from the date of installation by the OEM or its representative. Comprehensive warranty should explicitly include all spare parts and system consumable part. Any repair work or replacement of spares needs to be done on site, the manufacturer must confirm this in their quotation.	
9.	Comprehensive Maintenance Contract (CMC):	After the completion of 3 years OEM warranty, two years extended CMC must be quoted without which the tender will be rejected.	
10.	Installation in India:	Detailed lists of users in India with contact details for the quoted equipment should be provided. Preferably, there should be atleast one same quoted equipment installed/ordered in India in last 5 years otherwise the tender will not be considered.	
11.	Performance:	Satisfactory performance of instrument and after sales service from existing users will be considered by the committee in evaluating the technical bid.	
12.	Validity of Quotation:	Minimum 3 months.	
13.	Submission of Bids:	Tender should be submitted in two parts- Technical and Financial.	

8.Requirement for Combined SEM, EDS, AFM and MFM System -1 Set

We require the combination of different analytical methods within one instrument for the simultaneous acquisition of complementary data. We need SEM, EDS, AFM, SEM and other measurement options in one seamlessinstrumentto allow completely new insights into the micro- and nanoworld using true correlative microscopy techniques.

VI.	**Basic Features:**	**Compliance (Yes/No)**
k)	System must offer fully functional and integrated Scanning electron microscope (SEM), Energy dispersive X-ray spectroscopy (EDS) and atomic force microscope within one Instrument.	
l)	It should offer a shared coordinatesystem to automatically align AFM, SEM, andEDS operations for measurements and samplepositioning, within a single software interface to easily identify the area of interest. Once an area of interest is found using SEM, then the system should automatically find that same area with the AFM for true Correlated Coordinate System.	
m)	It should facilitate the measurement of the sample and combiningthe imaging data in real time for different measurements listed.	
n)	System must offer a live profile view from the electron Microscope to observe the movement of the AFM cantilever on the sample surface live.	
o)	With Profile View it should be possible to position the AFM tip very precisely on the sample surface allowing hard-to-reach areas of a sample approached precisely with the AFM and complex samples can be measured.	
p)	For optimum Profile View, at least 75 degree tilt of the combined sample stage and AFM scan head is desired so the user can position the AFM tip quickly and precisely,	

even on complex and challenging sample surfaces.	
q) The offered system should have very low Thermal drift and vibrations for high performance. We prefer to have thermal drift of ≤ 0.3 nm/min in X and ≤ 0.1 nm/min in Y directions.	
r) The system should offer very fast sample exchange (<10 minutes) for better efficiency of measurement.	
s) Vendors must provide the correlated SEM, EDS and AFM measurements data with the offer for proven capability.	
t) Typical chamber vacuum of 1μTorr to 10 μTorr range and quick pumping time of less than 5 minutes preferred. All required pumping system and accessories should be included and must be software controlled.	
VII. Measurement Options:	
3. Scanning electron microscopy:	
k) Using its focused electron beam, System should achieve high-resolution topographic imaging from the surface of the sample. There should be a surface-sensitive mode to collect topographic information from within a few nanometers of the surface.	
l) There should be provision for tilting to reveals additional "side" features of samples and allows for cross-sectional images	
m) Probe current measuring by integrated Faraday Cup interface	
n) Multiple beam-defining options should allow the user to select different beam currents on-demand.	
o) Acceleration voltage: 3.5 kV to ≥ 15 kV	
p) Probe current range of 10 pA to 2.5 nA	
q) Magnification of 25X to 200,000X or more.	

r) Detectors: In-Chamber SE Everhart-Thornley	
s) Energy Dispersive X-ray Spectroscopy (EDS) must be included for qualitative and quantitative elemental analysis.	
t) The EDS in system must be completely integrated with SEM and AFM functions, including the use of the same shared coordinate system and analysis within one user interface.	
4. Atomic Force Microscopy:	
h) System must be able to perform state-of-the-art atomic force microscopy to easily characterize Nanostructures such as nanowires, 2D-materials, and nanoparticles.	
i) System should provide full control to locate the nanostructures and perform the different AFM measurements utilizing the visibility of the cantilever tip in combination with the high-resolution SEM. Users should be able to navigate the cantilever precisely to the specific nanostructures of interest.	
j) Following measurement modes should be available in the AFM-	
• Contact Mode- where the tip is in continuous contact with the surface of the sample and follows the topography closely in the repulsive regime.	
• Dynamic mode-where the cantilever is oscillated near its resonance frequency.	
• Finite Impulse Response Excitation (FIRE) mode which is an off-resonance intermittent contact scanning force microscopy technique.	
• Conductive AFM (C-AFM)-where tip works in static or contact mode by simultaneously measuring the sample topography and the conductive properties of the sample using a sharp conductive tip.	
• Electrostatic Force Microscopy (EFM) mode-where a	

phase imaging mode used to study imaging variations in the electric field of the sample substrate and therefore study the surface potential and charge distribution.	
• Magnetic Force Microscopy (MFM)- where a phase imaging mode used to study the properties of magnetic materials using a magnetic AFM tip	
k) AFM Scan range is XY: ≥ 20 x 20 µm (Closed Loop)	
l) AFM Scan range in Z : ≥ 10 µm	
m) Imaging Noise: <50 pm @ 1 kHz	
n) Cantiliver probes: Self-Sensing Piezoresistive	
VIII. Sample Parameters: System should accommodate up to 20 mm diameter and 20 mm height samples with maximum weight of 500g	
IX. Data acquisition and analysis:	
d) Licensed operating software and computer control system compatible with the measurement options. Software should able to acquire, operate and analyze all the relevant information.	
e) Software should provide a wizard-like experience through its tasks and workflows that guides users through the multi-step processes of operating and configuring the instrument. Any added animations withdemonstrations of the steps will be preferred.	
f) All data – for both AFM and SEM – acquired for a given sample and AFM tip used should be automatically stored in a single "experiment." to makes sure that all related data is kept together in a single project file. The experiment file must store original data as acquired, as well as any additional results from post processing.	

X.	**Points to note:**	
5)	Vendor must provide the detail specifications in the compliance statement with respect to each technical specification in the tender document duly supported by the manufacturer's literature and published papers.	
Mere saying Yes to compliance sheet without supporting data, measurement will not be accepted.		
6)	Warranty: Minimum 1 year from the date of installation.	
7)	Technical evaluation may include demonstration to verify functionalities and capabilities of the system quoted.	
8)	Vendor must have sales and service support available in India. It is preferred to have a service Engineer locally in Madhya Pradesh.	

9.Technical Specifications of ADVANCE AND UPDATED VERSION OF BET

Sr. No.	Parameter	Technical Specifications	Compliance Yes/No
1	**Analyzer**	Three stations automatic chemisorption and physisorption analyzer for determining metal area/dispersion/ crystallitesize of catalysts plus surface area, mesopore size and micropore distributions. Static chemisorption capability,on the first station, including flow-through in-situpreparation, and 1100 °C furnace or better with fast-cooling technology. High vacuum system for low pressuremicropore analysis with the first station using a dedicatedset of one transducer: 1300 torr (minimum), 10 torr and 1torr and a 1300 torr, 10 torr and 1 torr transducer on otherstation and third station have transducer: 1300 torr(minimum) for surface area and mesopore size – eachstation having its own dedicated dosing/measuringmanifold. The system must have Continuous $P_o$measurement (physisorption) using dedicated cell andtransducer without interruption to the analysis. Vacuumsystem oil free turbo pump. The system must include a long-life dewar.	
2	**Measurement Principle**	Volumetric gas adsorption technique.	
3	**Analyzer Capability**	a) Surface area: BET, Langmuir, t-plot, BJH/DH, DR, DFT b) Mesopore size: QSDFT, NLDFT, BJH/DH c) Micropore Size: QSDFT, NLDFT, SF, HK, DA d) Pore Volume: α-s, BJH/DH, DFT, DR e) Adsorption energy: Clausius-Clapeyron, DR	

4	**Adsorptive Gases**	Should be compatible with He, N_2, Ar, Kr, CO_2, H_2, CH_4, and other non-corrosive gases.	
5	**Port for Saturation Vapor** **Pressure.**	System should have a dedicated port with its own pressuresensor to measure saturation vapor pressure, the materialshould be of the suitable material as that of sample celltoexperience the same thermal conditions as that of thesample cell.	
6	**Gas inlet ports**	7 or more gas inlet connections with automatic port selection through software.	
7	**Analysis port**	The Pressure Specifications of the Analyzer should comply to below range of port: a) Accuracy, 1300 torr range: <± 0.15% of full-scale or better b) Accuracy, 10 torr range: <± 0.15% of reading or better c) Accuracy, 1 torr range: <± 0.15% of reading or better	
8	**Measurement range**	• Surface area: 0.01 m2/g and above with (N_2) and 0.0005 m2/g and above with (Kr). • Pore Diameter Range: 0.35- 500 nm or better. • Low pressure isotherm starting from P/P0 = <3 x 10-**8** to 0.997 better with (N_2 @77K).	
9	**Degassing system**	The System should be supplied with a Turbo Moleculardrag pump and a dry diaphragm pump for the degasserwith cold trap to avoid incoming moisture towards pumpand to enhance degassing efficiency.	

10	**Void volume correction**	The Instrument should use small void volume to enhancesensitivity such that all of cell stem is not cooled. Systemmust have coolant level sensor with dewar upliftingmechanism or any other advanced technology to ensureminimum void volume.	
11	**Intelligent Dosing Regimes**	Software should have provision to reduce the totalmeasurement time with software-based optimization ofexcess gas dosing, software should be able to optimize thegas dosing amounts based on isotherm data measured inthe past and estimate the optimal excess gas dosingamount is automatically.	
12	**Sample Pretreatment**	The Instrument must have six degassing stations withcapability to run two different heating regimessimultaneously. Degassing temperature control should be up to 450 °C or better. Temperature setting: 0.1°C increments or better Temperature accuracy: ± 1% of set point at control thermocouple or better Temperature stability: < 5 °C or better Thermocouples per mantle: 2 (one control, one safety over temperature) Degas Monitor: by sensor Degas cold trap: 1L Backfill transducer: 1300 torr Backfill pressure: programmable Backfill gas: dedicated input The software must ensure completion of degassing. The degassing should be able to program multiple heating	

		ramps and hold times The system should have programmable evacuation with multiple valves to prevent carryover of the sample.	
13	**Dewar**	Dewar vessel of capacity: 3L or more, with LN2 holding time: 90 hours or more	
14		The control software should control and monitor all the operating parameters during degassing as well as analysis. • System check program for analyzer status anddiagnostics should be available. Instrument schematicwith valve controls should be displayed and should beeasily accessible • The software should display the gas Adsorption,desorption isotherm for the sample measurements • The software should be able to provide strong, weak and combined chemisorption isotherms. • Facility to monitor the progress of measurement in real time should be available	
15	**Software for Analysis /** **measurement**	Software should be capable of calculating specific surface area by Langmuir and BET equations. • Software should have the provision to measure the pore volume, pore area for mesoporous samples based on BJH, DH, method. • Software should have the provision to calculate the Pore specific surface area based on Adsorption/Desorption • t plot, αs plot, MP method should be	

		available for the evaluation of Microporous samples. • User should be able to create reference isotherms for t- curve and αs curve • Different standard t curve data (at least five standard curves) should be available for data evaluation. Software should be able to measure vacuum volumetric chemisorption with combined, weak and strong isotherms The software should have provision to calculate monolayer uptake using Langmuir, Freundlich and Tempkin models The software should have provision to calculate differential and integral heat of adsorption in physisorption as well as chemisorption isotherms The software should be able to provide monolayer uptake, Active metal surface area, Crystallite size, and metal dispersion. • Software should be capable of parallel plotting the values during measurement. • Features like, isotherm overlay, BET plot overlay, differential isotherm should be available. • Software should have the provision to export data to spreadsheet and plotting programs	

		using CSV file format. • Option to print isotherm, various plot should be available. • Facility to speed up the measurement with optimum amount of gas dosing based on adsorption isotherm data from previous sample measurement should be available The analysis software for measured data should be provided. The software should have the data handling features like user defined report generation, data/ figures export to spread sheets and offline data processing etc. • Data analysis for various models including BET specific surface area I type (ISO 9277), BET automatic analysis, Langmuir specific surface area, BJH, DH, method, t-plot, • Software must have standard capability for Adsorption rate measurement, differential adsorption isotherm, NLDFT/QSDFT/GCMC models.	
16	**Necessary requirements and** **added items**	a) Recirculating Dewar Kit- Recirculating Dewar and items required to interface a temperature controller with the equipment. Includes jacketed Dewar with support for CO2 analysis. The system should constantly monitor measurement of manifold temperature and pressure b) Refrigerated Circulator: Temp. Range: -10 to 100°C or better Bath capacity: 5 litres or better, Flow	

		Rate (Max.): 10 lit / min or better temperature Accuracy: +/-0.1°C c) The furnace temperature should go ≥ 1100 °C. Accuracy should be of 0.1% of span & stability of ± 1° C. Ramp rate should be 1°C to 50°C per minute. The furnace cool down should be fast and should take place without any additional utility but using fan assisted. Or better (in case of compressed air the noise level should be below 60 decibel to avoid any inconvenience. d) Surface area reference materials – one for micropore, one for low surface area. e) Active area reference material – one for H_2 and CO analysis f) List of Gases to be supplied with 2 stage regulator – N2, He, CO2, H2, Kr (10L), CO (10L), Zero Air g) All nuts, ferrules and SS tubing 100m (2 qty) to be supplied for full operation of instrument h) Desktop Computer i7, 16GB, 1TB SSD, 21inch Display Brand with Mouse and keyboard Win 10 i) Wide Mouth Dewar Assembly with Level sensor (1 qty), cell (5 qty) and rod (2 qty) for	

		thin Film Samples j) Cryocan 10 L k) 9 mm Cyl Bulb Sample Cell – 25 nos. l) Long cell 6 mm CYL BULB – 5 qty m) Long Cell 12 mm CYL BULB – 5 qty n) O- Rings- 6mm, 12 mm 20 nos. each & 9mm 30 nos.	
17	**Literature**	a) The model should have a catalogue in original from the original manufacturer and should be included in the bid. b) All technical specifications should be printed explicitly in the catalogue. c) Product brochure/booklet should be included along with the bid.	
18	**Installation and** **Commissioning**	a) The vendor should have at least 8 or more satisfactory installations within India along with at least a few performance certificates. Five of these installations should be in government organizations/labs/autonomous bodies such as CFTIs/ IITs/IISERs/NITs/Central Universities b) Vendor should preferably have a full-fledged local service center. c) List of institutes in India, where the quoted model is provided. d) Installation, complete interfacing of	

		the system with its subsystems, and commissioning are to be carried out by the vendor's factory-trained engineers, followed by a demonstration of the system's performance to the user's complete satisfaction. e) An estimated time schedule for installation, commissioning, and training must be provided.	
19	**Training**	a) The manufacturer/supplier of BET Surface Analyzer should provide onsite training initially during the installation. b) The supplier or manufacturer should also provide additional training subsequent to the above training installation. c) Regular follow up training every six months during warranty period on mutually convenient dates for hardware, software, and application to the laboratory personnel in the installation, operation and maintenance of the instruments.	
20	**Warranty**	The system should be covered for a comprehensive warranty for 3 years and additional 2 years AMC after the 3 years warranty from the date of a	

		successful installation. Manufacturer All parts including spares should be covered under the warranty and this fact should be clearly and explicitly specified in the tender document.	
21	**Power Supply**	Should meet Indian Power standards preferably without the use of external converters. Additional 5 KV UPS	
22	**Support and Service**	a) The manufacturer and/or their Indian representative must have at least two qualified and factory-trained service engineer in India to be able to attend to service at JiwajiUniversitywithin 48 hours on submitting a complaint b) For the warranty period only factory-trained and certified engineers are acceptable to attend the service. c) The response time with an engineer on site must beless than 5 working days from the notification of the failure. The company must provide evidencethat it can fulfil this requirement.	
23	**Delivery Location**	JiwajiUniversity, Gwalior	
24	**Delivery Period**	14-16 weeks from the date of release of purchase order.	

25	**Upgradability**	The same instrument in future should be upgradable to dynamic chemisorptions	

10.Technical Specifications of ADVANCE AND UPDATED CYCLIC VOLTAMMETRY

S.N.	Parameter	Details	Compliance Yes/No
1	**Potentiostat**	• Zero resistance ammeter • 2- or 3- or 4-electrode configuration • Floating (isolated from earth) or earth ground • Maximum potential: ±10 V • Maximum current: ±250 mA continuous, ±350 mA peak • Compliance Voltage: ±13 V • Potentiostat rise time: < 1 µs, 0.8 µs typical • Potentiostat bandwidth (-3 dB): 1 MHz • Applied potential ranges: ±10 mV, ±50 mV, ±100 mV, ±650 mV, ±3.276 V, ±6.553 V, ±10 V • Applied potential resolution: 0.0015% of potential range	

		• Applied potential accuracy: ±1 mV, ±0.01% of scale • Applied potential noise: < 10 μV rms • Measured current range: ±10 pA to ±0.25 A in 12 ranges • Measured current resolution: 0.0015% of current range, minimum 0.3 fA • Current measurement accuracy: 0.2% if current range >=1e-6 A/V, 1% otherwise • Input bias current: < 20 pA	
2	**Galvanostat:**	• Galvanostat applied current range: 3 nA – 250 mA • Applied current accuracy: 20 pA ±0.2% if > 3e-7A, ±1% otherwise • Applied current resolution: 0.03% of applied current range • Measured potential range: ±0.025 V, ±0.1 V,	•

		±0.25 V, ±1 V, ±2.5 V, ±10 V • Measured potential resolution: 0.0015% of measured range	
3	**Electrometer:**	• Reference electrode input impedance: 1e12 ohm or better • Reference electrode input bandwidth: 10 MHz or better • Reference electrode input bias current: <= 10 pA @ 25°C	•
4	**Waveform Generation and Data Acquisition:**	• Fast waveform update: 10 MHz @ 16-bit • Fast data acquisition: dual channel 16-bit ADC, 1,000,000 samples/sec simultaneously • External signal recording channel at maximum 1 MHz sampling rate	•
5	**Experimental Parameters:**	• CV and LSV scan rate: 0.000001 to 10,000 V/s or better • Potential increment during scan: 0.1 mV @	•

		1,000 V/s • CA and CC pulse width: 0.0001 to 1000 sec • CA and CC minimum sample interval: 1 µs • True integrator for CC • DPV and NPV pulse width: 0.001 to 10 sec • SWV frequency: 1 to 100 kHz • i-t sample interval: minimum 1 µs • ACV frequency: 0.1 to 10 kHz or better • SHACV frequency: 0.1 to 5 kHz or better • FTACV frequency: 0.1 to 50 Hz, simultaneously acquire 1st, 2nd, 3 rd, 4th, 5th, and 6th harmonics ACV data • IMP frequency: 0.00001 to 1 MHz • IMP amplitude: 0.00001 V to 0.7 V rms	
6	**Other Features:**	• Automatic and manual iR compensation • Current measurement bias: full range with 16-	•

		bit resolution, 0.003% accuracy • Potential measurement bias: ±10V with 16-bit resolution, 0.003% accuracy • External potential input • Potential and current analog output • Programmable potential filter cutoff: 1.5 MHz, 150 KHz, 15 KHz, 1.5 KHz, 150 Hz, 15 Hz, 1.5 Hz, 0.15 Hz • Programmable signal filter cutoff: 1.5 MHz, 150 KHz, 15 KHz, 1.5 KHz, 150 Hz, 15 Hz, 1.5 Hz, 0.15 Hz • RDE control output (Model 630E and up): 0-10V (corresponding to 0-10000 rpm), 16-bit, 0.003% accuracy • Digital input/output lines programmable through macro command • Flash memory for quick software update	

		• Serial port or USB port selectable for data communication • Cell control: purge, stir, knock • CV simulation and fitting program, user-defined mechanisms • Impedance simulation and fitting program • Maximum data length: 256K-16384K selectable • Dimensions: 14.25”(W) × 9.25”(D) × 4.75”(H) • Weight: 12 lb.	
7	**Software Techniques**	• Cyclic Voltammetry (CV) • Linear Sweep Voltammetry (LSV) • Staircase Voltammetry (SCV) • Tafel Plot (TAFEL) • Chronoamperometry (CA) • Chronocoulometry (CC) • Differential Pulse Voltammetry (DPV) • Normal Pulse Voltammetry (NPV) • Differential Normal Pulse Voltammetry	•

		(DNPV) • Square Wave Voltammetry (SWV) • AC Voltammetry (ACV) • 2nd Harmonic AC Voltammetry (SHACV) • Fourier Transform AC Voltammetry (FTACV) • Amperometrici-t Curve (i-t) • Galvanostatic Intermittent Titration Technique GITT • Potentiostatic Intermittent Titration Technique PITT • Differential Pulse Amperometry (DPA) • Double Differential Pulse Amperometry (DDPA) • Triple Pulse Amperometry (TPA) • Integrated Pulse Amperometric Detection (IPAD) • Bulk Electrolysis with Coulometry (BE) • Hydrodynamic Modulation	

		Voltammetry (HMV) • Sweep-Step Functions (SSF) • Multi-Potential Steps (STEP) • AC Impedance (IMP) • Impedance - Time (IMPT) • Impedance - Potential (IMPE) • Chronopotentiometry (CP) • Chronopotentiometry with Current Ramp (CPCR) • Multi-Current Steps (ISTEP) • Potentiometric Stripping Analysis (PSA) • Potentiostatic intermittent titration technique (PITT) • Electrochemical Noise Measurement (ECN) • Open Circuit Potential - Time (OCPT) • Galvanostat • Galvanostatic intermittent titration technique (GITT)	

		• RDE control (0-10V output) • Full version of CV simulation and fitting program • Limited version of CV simulation and fitting program • Impedance simulation and fitting program • iR Compensation	
8	**External Potential Input**	AC Impedance Plots with Simulation Bode: log Z vs log (freq) Bode: P{hase , vs log (freq) Bode: log Z" & Z' vs log (freq) Bode: log Y vs log (freq) Nyquist; Z" vs Z' Admittance; Y" vs Y' Warburg: Z" & Z' vs w1/2 w-angular frequency Z' vs w Z" Z' vs Z"/w Cot (phase) vs w ½	
9	**Cell & Electrodes**	Electrochemical Cell stand System includes 4 glass cells	

		with one Cell top, • Pt flag Working 1cm x 1cm Electrode 5 nos. • GC Working Electrode 5 nos. • Pt Wire Counter Electrode 5 nos. • Ag/AgCI Reference (aq) with vycor frit 5 nos. • Carbon cloth • ITO plate • Graphite rod of diameter 4mm	
10	**Photoelectrochemical cell**	• Glass Cell with provision for accommodating reference, Pt mesh counter and working electrodes • Specialized cell for doing Photoelectrochemical cell reactions • Small and big glass tube for purging and sensing • 25mm quartz window for light input, and provision for ITO WE	•

11	**Short Arc Xenon Lamp:**	Density Range: 0.1 - 5 Sun Max Power: 500W Current Range: 15 - 25A - Spectrum: 300 - 2500nm Power Supply Stability. 0.01% Light Source Stability: 0.5% Beam Diameter: 50 - 60 mm AREF + AM1.5 NREL-Based Calibrated Reference Cell, 1x1cm	
12	**Band pass filter:**	VIS-NIR High pass filter round, 630nm	
13	**RDE/RRDE**	Linear sweep for concentration ratio of metal ion diff oxd^{n} states, Hydrodynamic Modulation Voltammetry (HMV) change in voltage w.r.t. ramp of the motor, RDE control (0-10V output, instrument should be upgradable to bipot for RRDE measurements	
14	**Computer**	32/64/86bit Windows-based software, i-7 with 16 gb ram, 27inch monitor/better	

		configuration and auto double-sided laser printer	
15	**Power Supply**	Should meet Indian Power standards preferably without the use of external converters, 230VAC, 16 Amp.	
16	**General software features**	Multi user license Software for Electrochemistry • 32/64/86 bit Windows-based software • Multi-document interface • Open, save, delete, list, conversion, and print files • Run, macro, iR compensation, filtering, RDE control, preconditioning, step functions, and cell control • Data plot, overlay and parallel plots, x-y plot, ip~v plot, ip~v1/2 plot, Ep~log v plot, semilog plot • Graphics options, color and font selections • Smoothing, derivatives, integration, semi-	

		derivative and semi-integral, interpolation, baseline fitting & subtraction, linear baseline correction, data point removing, data point modification, background subtraction, signal averaging, mathematical operation, Fourier Spectrum • Calibration curve, standard addition, data file report, concentration - time dependence report and plot • Digital simulation, user defined mechanisms • Data information, data listing, equations, clock, toolbar, status bar • Context sensitive help • Purge, knock, stir controls for mercury electrode • Maximum data length: 128K-4096K selectable	

		Impedance simulation software including Cole plots	
17	**Training**	d) The manufacturer/supplier should provide onsite training initially during the installation. e) The supplier or manufacturer should also provide additional training subsequent to the above training installation. f) Regular follow up training every six months during warranty period on mutually convenient dates for hardware, software, and application to the laboratory personnel in the installation, operation and maintenance of the instruments.	g)
18	**Support and Service**	d) The manufacturer and/or their Indian representative must	g)

		have at least two qualified and factory-trained service engineers in India to be able to attend to service within 48 hours on submitting a complaint e) For the warranty period only factory-trained and certified engineers are acceptable to attend the service. f) The response time with an engineer on site must be less than 5 working days from the notification of the failure. The company must provide evidence that it can fulfil this requirement.	
19	**Delivery Period**	6-12 weeks from the date of release of purchase order.	
20	**Warranty**	The system should be covered for a comprehensive warranty for 3 years and additional 2 years AMC after the 3 years warranty from the date of a successful installation. Manufacturer All parts	

		including spares should be covered under the warranty and this fact should be clearly and explicitly specified in the tender document.	

11.TECHNICAL SPECIFICATIONS PULSED FOURIER TRANSFORM NMR SPECTOMETRE

S. No.	Parameter	REQUIRED SPECIFICATIONS	Compliance Yes/No
1	Instrument Type:	Pulsed Fourier Transform NMR Spectrometer	
2	Operating Frequency:	100 MHz (2.35 T) (1H) or better.	
3	Nuclei selection:	^{1}H, ^{13}C in single probe and should be upgradable to more nuclei.	
4	Sensitivity	$_{1}H/_{13}C$ system with $_{1}H$ sensitivity of ≥ 240:1 or ≥ 220:1 when PFG incl. (1% ethyl benzene, 1scan)	
5	Gradient strength:	≥ 0.25 T/m (25 G/cm)	
6	Magnet Type:	Permanent, Cryogen-Free	
7	Magnet Temperature Control:	Active Heating and Cooling	
8	Automation:	PAL RSI sample changer; up to 120 samples + 12 reference samples	
9	^{1}H Resolution (@ 50/0.55/ 0.11% signal height):	Standard: ≤ 0.4/ 15/ 30 Hz (<0.005 ppm) HD-Option: ≤ 0.3/ 10/ 15 Hz LW(50%) <0.5 Hz <0.005 ppm	
10	Shimming:	Shimming is fully automated. Shimming for each sample is	

		not required.	
11	Digital Lock:	• External, no deuterated solvents needed. It should have gradient upgradability. • Solvent Suppression should be available in the same software and should have capability to upgrade to HPLC Hyphenation.	•
12	Sample Tubes:	Standard 5mm diameter, 7-long NMR tubes: compatible with Young tubes	
13	Stray Field:	<2 G all around system.	
14	Adjustable temperature	25°C – 60°C or better	
15	Lab temperature	18-28°C; Measurements at sample temperature > 40°C: 18-25°C	
16	Lab Infrastructure needed:	No liquid nitrogen or helium required, no water cooling required, power consumption typically <300 W, Power: 100 – 240 VAC, 50 – 60 Hz, No additional venting required	
17	Probe Tune and Match:	Preset, no user intervention required, at time 2 probe ^{1}H and ^{13}C should work	
18	NMR Experiments:	^{1}D, COSY, JRES, HSQC, HSQC-ME, DEPT, APT,	

		HETCOR, TOCSY, NOESY, ROESY, Nutation	
19	Control Computer.	Suitable computer should be provided, no standalone operations. Desktop computer with intel i7 processor or higher, 4 TB hard disk or higher, 24inch LED monitor or higher, 32 GB RAM or higher, 6GB graphical card or higher, keyboard, mouse, mouse pad and other accessories *etc*.	
20	Software & Hardware:	Mnova, TopSpin, ACD/Labs, MATLAB *etc*. for Data Acquisition, Instrument control and Data analysis. Additional software license should be provided. Data should be compatible with JCAMP-DX and CSV	
21	Connectivity:	Ethernet/WiFi, USB, Serial, HDMI	
22	Installation and training information:	Should be in scope of supplier. Also, intimate service station availability in MP & India. Every year there should be a training for the students.	
23	Quantity of NMR	5 mm 500 NMR tube should	

	Tubes (in Numbers):	be provided	
24	Warranty	The system should be covered for a comprehensive warranty for 3 years and additional 2 years AMC after the 3 years warranty from the date of a successful installation. Manufacturer All parts including spares should be covered under the warranty and this fact should be clearly and explicitly specified in the tender document.	

ANNEXURE – 06

'INSTRUCTIONS TO BIDDERS'

Downloading of Tender Documents : : 02-12-2024 (05:00 PM)

e-Bid Submission Closing Date : : 24-12-2024 (05:00 PM)

Date of Opening of Technical Bids : : 27-12-2024 (11:00 AM)

The Instructions given below must be read very carefully, as failure in compliance with any of these may render the offer liable for rejection. If a bidder has any doubt about the meaning of any stipulation herein, General Purchase Condition, specification of *materials or any otherenclosed* document, he should immediately obtain the clarification/information in writing.

1. Ernest money Deposit (EMD)

1/1. Offers must accompany online EMD submission slip (www.mptenders.gov.in) drawn- in favour of "Registrar, Jiwaji University, Gwalior", .

1/2. The EMD shall be forfeited, if:

i) Bidder withdraws the bid before expiry of its validity.

ii) Successful bidder does not accept the order or fails to enter into a contract within validity period of offer.

iii) Successful bidder fails to furnish Security Deposit within one month of intimation/ date of issue of PurchaseOrder.

1/3. The EMD of unsuccessful bidders shall be returned as soon as the tenders are finalized.

2. **Acceptance of University Payment Terms**

The Standard Payment terms shall be –

2 (1) 100% of all inclusive price of the materials will be paid on receipt and acceptance
of the material in good condition, installation and commissioning of the equipment supplied at site and after furnishing of Bank Guarantee / FDR for 3% of the contract covering the guarantee period subject to penal provisions applicable in case of delay in supply and commissioning as per the condition 2.4 of Annexure – 07.

2 (2) LC will be opened in case of imported equipments if quoted in foreign exchange in the currency of country of origin.

Company/bidder should attach a letter in a sealed envelope stating in which currency they have quoted the price in price bid form.

3. **Price Basis** :

The prices quoted shall be on FOR destination basis as per annexure-04 and also shall include :

(a) Transit Insurance :

(b) All Taxes, Duties and Levies.

4. **Cost compensation for Deviation** :

Deviations specifically declared by the bidders in respective Deviation Schedules of Bid Proposal Sheets only will be taken into account for the purpose of evaluation . The bidders are required to declare the prices for the withdrawal of the deviations declared by them in the Deviation Schedules.

Offers should strictly be in conformity with specifications / drawings/samples as stipulated in the enquiry. In case no deviations are indicated, it shall be taken for granted that item(s) has/have been offered strictly as per the requirements given in the enquiry.

5.0 **Delivery** :

5.1 Delivery Schedule :

The Supply, Installation, and Commissioning of the material: The bidder shall offer his best, realistic and firm delivery, which shall be specific and guaranteed. Delivery period shall be reckoned from the date of P.O. which is the first intimation of acceptance of bidder's offer. Final date of delivery shall be evidenced by date of dispatch of materials as per transporter's Lorry Receipt/Goods Receipt/RR/PWB/AWB. For delivery beyond contractual delivery period, provisions of 'General Purchase, conditions' shall apply.

5.2 **Early Delivery** :

It shall be noted that if an order is placed on higher bidder, in preference to lowest acceptable offer, in consideration of an earlier delivery, the bidder shall be liable to the University, the difference between the ordered rate(s) and the rate(s) quoted by the lowest acceptable bid in case the tenderer fails to complete the supply in terms of such order within the date(s) of delivery specified in the tender and incorporated in the order. This is without prejudice to other rights of the University under terms of order.

6. It is not binding on University to accept the lowest or any bid. The University reserves the right to place orders for individual items with different bidders and to revise the quantities at the time of placing the order and in such event also, the quoted rates, terms and conditions shall apply. The order for the materials may also be split up between different bidders to facilitate quick delivery of critically required materials. University further reserves the right to accept or reject any/all bids without assigning any reason thereof. Final decision on bids also depends on the components/accessories/additional features offered.

7. The University at its sole discretion unilaterally may change the quantities to the extent of $\pm$ 30% as indicated in tender enquiry. The successful bidder shall

be bound to supply these quantities at the same rate and on the same terms and conditions.

8. Tenderers shall fill in the enclosed Performa with regard to deviations /variations (Annexure -08) and submit the same along with their offer.
9. Orders placed against this tender enquiry shall be subject to 'General Purchase Conditions of University, copy of which is enclosed. Bidders are requested to confirm acceptance of these conditions into in their offer.
10. Make/Brand of items offered shall be specified failing which offers are liable to be rejected. It shall be appreciated if one copy of detailed descriptive literature/ pamphlets is enclosed along with the offer which may help technical evaluation. In a case material offered is ISI Marked /tested at any Govt. Recognized test house; copies of relevant certificates shall be furnished along with the offer.

ANNEXURE -07

GENERAL PURCHASE CONDITIONS

SECTION –I

GENERAL

1.1 The following terms and expressions used herein shall have the meaning as indicated therein Supplier / Vendors; shall mean the individual firm or company whether incorporated or otherwise in whose name the purchase order is addressed and shall include its permitted assignees and successors. Purchaser shall mean Registrar Jiwaji University, Gwalior – 474011.

1.2 **Reference :**
The purchase order number must appear on all the correspondence, packing slips, invoices, drawing or any other document or paper connected with the purchase order:

1.3 **Waiver :**
Any waiver by the purchaser of the terms and conditions of the purchase order shall not constitute any right for subsequent waiver of any other terms or conditions.

1.4 **Sub-letting and Assignment :**
The supplier shall not, save with prior consent in writing of the University/ sublet, transfer or assign this order or any part thereof or interest therein or benefit or advantage, thereof in any manner, whatsoever provided nevertheless that any such consent shall not relieve the supplier from any obligation, duty or responsibilities under the contract.

1.5 **Information provided by the University** :
All drawings, data and documentation that are given to the supplier by the University for the Execution of the order are the property of the University and shall be returned when demanded. Except for the purpose of executing the order of the University, the supplier shall ensure that the above documents are not used for any other purpose. The supplier shall further ensure that the information given by the University is not disclosed to any person, firm body, corporate and/or authority and make every effort to keep the above information strictly confidential. All such information shall remain the absolute property of the University.

1.6 **Supplier Liability** :
Supplier hereby accepts full responsibility and indemnifies the University and shall hold the University harmless from all acts of omission and commission on the part of the supplier, his agents, his subcontractors and employees in execution of the purchase order. The supplier also agrees to defend and hereby

undertakes to indemnify the University and also hold it harmless from any and all claims for injury to or death of any and all persons including but not limited to his/her employees and for damage to the property arising out of or in connection with the performance of the work under the purchase order.

1.7 Access to supplier's premises :

The University and/or its authorized representative shall be provided access to the supplier's and/or his sub-contractor's premises, at any time during the pendency of the purchase order, for expediting the supplies, inspection, checking etc.

1.8 Modifications :

The purchase order constitutes an entire agreement between the parties hereto. Any modification to this order shall become binding only upon the same being confirmed in writing duly signed by both the parties.

1.9 **Inspection/Checking/Testing :**

All materials/ equipment to be supplied against this purchase order shall be subject to inspection/ checking /testing by the University or its authorized representative at all stages and places, before, during and after the manufacture. All these tests shall be carried out in the presence of authorize representative of the University. Supplier shall notify the University for inspection of materials/equipment when they are ready, giving at least 10 days notice. If upon receipt at our Stores, the material/equipment does not meet the specifications, they shall be rejected and returned to the supplier for repair/modification etc. or for replacement. In such cases all expenses including to-and- fro freight, re-packing charges, transit insurance etc shall be to the account of supplier.

Inspection by the authorized representative of the University or failure of the University to inspect the material/equipment shall not relieve the supplier of any responsibility or liability under this purchase order in respect of such material/ equipment and it shall not be interpreted in any way to imply acceptance thereof by the University. Whenever specifically asked for by the University, the supplier shall arrange for inspection/ testing by Institutional Agencies such as Lloyds Register of Industrial Services, Boiler Inspectorate, RITES. In such cases supplier shall adhere to the inspection/ testing procedures laid down by such agencies. All expenses in this regard including inspection fees shall be to the suppliers account unless agreed to the contrary and specified in the purchase order.

1.10 **Packing and Marking** :

All materials/equipment shall be securely packed to the requirements of transportation by Air/Rail/Road/Sea. All exposed services/ connections/, protrusions shall be properly protected. All unexposed part shall be

packed with due care and the packages should bear the words 'handle with care'. The packing requirements of Air/Rail/Road transport shall be complied with so as to obtain clear Airway/Railway Receipt/Lorry Receipt i.e. without any qualifying remarks.

All packages and unpacked materials shall be marked with the name of Consignor, Consignee, purchase order No., gross and Net weight, sign of handling, if any, with indelible paint in English at least at two places. In case of bundles, metallic plates marked with the above details shall be tagged to such bundles.

1.11 **Dispatch of Materials**:
The supplier is responsible for the safe delivery of the goods in good condition at destination stores. The supplier should acquaint himself of the conditions relating to handling and transport of the goods to destination and shall include and provide for security and protective packing of the goods so as to avoid damage in transit.

1.12 **Validity of offers**:
The offers shall be valid for a period of 90 days (Depending on the type of equipment) from the date of opening of bids. The period of validity cannot be counted from any other date other than the date of opening the bids. During this period the tenderer shall not be permitted to withdraw or vary his offer made and if the tenderer does so, the EMD shall be forfeited.

1.13 **Jurisdiction**:
All and any disputes or difference arising out of or touching this order shall be decided only by the Courts or Tribunals situated in Gwalior.

1.14 The Registrar, Jiwaji University, Gwalior does not bind himself to accept the lowest or any tender and he reserves the right to reject any offer without assigning any reason.

SECTION-II
FINANCIAL

2.1 **Prices**:
Prices quoted shall be inclusive of all taxes and firm till completion of the programme.

2.2 **Terms of payment**:

2.2.1. Payments by the purchaser shall be made through Account payee cheques only. **Bank charges if any shall be borne by the supplier.**

2.2.2 If the supplier has received any overpayments by mistake or if any amounts are due to the University from the supplier due to any other reasons and when it is not possible to recover such amount under the present purchase order, the University reserves the right to collect the same from any other amounts and/ or Bank Guarantee given by the supplier due to or with the University.

2.3 **Liquidated Damages/ Failure and Termination**:

2.3.1 In the event of any delay in the supply of material beyond the stipulated date of completion including any extension permitted in writing, the University reserves the right to recover from the supplier a sum equivalent to 0.5% of the value of delayed materials/ equipment for each week of delay and part thereof subject to a maximum of 5% of the total value of the order.

2.3.2 Alternatively, the University reserves the right to give the contract else where at the sole risk and cost of the supplier and recover all such extra cost incurred by the University in procuring the materials from the other source.

2.3.3 Alternatively University may cancel the Purchase Order completely or partly without prejudice to its right under the alternatives mentioned above.

2.3.4 In case of recourse to alternative 2.3.2 and 2.3.3. above, the University shall have the right to repurchase the materials which is readily available in the market to meet the urgency requirements caused by supplier's failure to comply with the scheduled delivery period irrespective of the fact whether the material/ equipment is similar or not.

2.4 **Delivery Schedule**:
Time is essence of this order and no delay shall be allowed in the delivery time/ delivery schedule mentioned in the purchase order.

2.5 **Performance Bank Guarantee**:
The supplier shall ensure that all materials/equipment under this purchase order shall conform to University's requirements and specifications. An additional security in the form of Performance Bank Guarantee / FDR is essential for satisfactory performance of the equipment over a period of time. In view of this, the supplier shall be required to furnish a Bank Guarantee / FDR (3% of order value) as follows against any manufacturing defects/ poor workmanship/poor performance. In case any deficiencies are found during this period, the same shall be repaired/rectified/replaced free of cost. BG / FDR

shall be from any Scheduled Bank or any other bank as approved by University from time to time in the prescribed performa.

a. Bank Guarantee / FDR for 3% of the order value with validity up to warranty period from the date of installation of equipment.
The University shall at its discretion have recourse to the said bank guarantee / FDR for recovery of any or all amount due from, the supplier in connection with the purchase order including of guarantee obligations. Checking/approval of supplier's drawings, inspection and acceptance of materials/equipment furnishing to effect shipment and/or work done by erection, installation and commissioning of the equipment by University or any other agency on behalf of the University shall not in way relieve the supplier from the responsibility for proper performance during the guarantee period.

2.6 **Insurance**:
Supplier shall arrange suitable insurance cover at his risk and cost for the transit of the equipment upto for installation and testing.

2.7 **Removal of rejected goods and Replacement**:

a) If upon delivery, the material/equipment is found not in conformity with the specifications stipulated in the purchase order, whether inspected and approved earlier, or otherwise, such material/ equipment will be rejected by the University or his authorized representative. A notice to this effect shall be issued to the supplier, normally within 30 days from the date of receipt of materials at our Stores.

b) Supplier shall arrange suitable replacement supplies and remove the rejected goods within 30 days from the date of notice failing which, the goods shall be dispatched to, vendor by road transport on 'Freight to pay basis at supplier's risk and cost.

c) External damages or shortages that are prima-facie as a result of rough handling in transit or due to defective packing shall be intimated to the supplier within, a period of one month of the receipt of the materials, spares etc. In case of Internal defects, damages of shortages of any internal part, which cannot ordinarily be detected on a superficial visual examination, due to bad handling in transit of defective packing or any other reason, it should be intimated to the supplier within 3 months from the date of receipt of the material. In either case the damaged or defective material should be replaced by the supplier free of costs.

d) If no steps are taken within 15 days of receipt of intimation of defects or such other reasonable time as the University may deem proper to afford, the University may without prejudice to its other rights and remedies arrange for repairs/rectification of the defective materials or replace them entirely and recover the expenditure incurred on account of the seactions from the deposits

such as EMD, SD and performance guarantees or other monies available with the University or by resorting to legal action.

2.8 **Force Majeure** :-

2.8.1 The supplier shall not be liable for delay or failing to supply the material for reasons of Force Majeure such as Act of God, Act of War, Act of Public Enemy, Natural Calamities, fires, Floods, Frost, Strikes. Lockouts etc. Only those causes which have duration of more than 7 days shall be considered for force Majeure.

2.8.2 The Supplier shall within 10 days from the beginning of such delay notify the University in writing the cause of delay. The University shall verify the facts and grant such extension of time as facts justify.

2.8.3 No price variation shall be allowed during the period of force majeure and liquidated damages would not be levied for this period.

At the option; of University, the order may be cancelled. Such cancellation, would be without any liability whatsoever on the part of the University. In the event of such cancellation, supplier shall refund any amount advanced or paid to him by the University and deliver back any materials issued to him by the University and release facilities, if any, provided by the University.

ANNEXURE -08

DEVIATIONS

Bidder's Name and Address :_____

_____

To
The Registrar,
Jiwaji University
GWALIOR – 474011 (M.P.)

Dear Sir,

Sub :- Supply of _____ against enquiry No. _____ Dated _____.

We confirm that following are the only deviations and variations, from any exception to specifications and tender documents for the above mentioned subject supplies against enquiry offer. These deviations and variations are exhaustive. Except for these deviations, the entire supplies shall be executed as per specifications and tender documents. Further, we agree those additional conditions, if any, found in our offer other than those stated below, save that pertaining to any rebates offered shall not be given effect to.

Sl.No.	Description of Deviation Conditions of	Ref. of Page, Clause	*Monetary, Implications of the bid-documents in case of withdrawal Rs. (in figures) Rs. (Inwords)

Note : Here the tenderer should indicate the amount of money, if any, which conditions/deviations and accepting the condition as stipulated in tender documents (Use additional Sheet of the same size and format if necessary).

Signature : _____

Designation :_____

ANNEXURE -09

Guide-lines for Submission of Bank Guarantee towards Performance Security

The Bank Guarantee shall fulfill the following conditions failing which it shall not be considered valid:

1. Bank Guarantee shall be executed on non-judicial stamp paper of applicable value purchased in the name of bank.
2. Non-judicial stamp paper shall be used within 6 months from the date of purchase. Bank Guarantee executed on the stamp paper of more than 6 months old shall be treated as invalid.
3. The contents of the Bank Guarantee shall be as perourper form (Annexure -10)
4. The Bank Guarantee should be executed by a scheduled bank or banks viz. _____ _____ _____ _____
5. The executor of Bank Guarantee (Bank Authority) should mention the Power of Attorney No. and Date executed in his/her favour authorizing him/her to sign the document or produce the Photostat copy of Power of Attorney.
6. All conditions, corrections, deletion in the Bank Guarantee should be authenticated by signature of Bank Officials signing the Bank Guarantee.
7. Each page of Bank Guarantee shall bear signature and seal of the Bank.
8. Two persons should sign as witnesses mentioning their full name and address.

Registrar,
Jiwaji University,
Gwalior -474011 M.P.

ANNEXURE -10

BANK GUARANTEE PROFORMA FOR PERFORMANCE SECURITY

This agreement has to be executed on a Non-Judicial Stamped Paper worth Rs. 1000/-(Rs. One Thousand)Whereas the _____ here-in-after called (The Bidder) has submitted their bid dated_____for the supply of_____(Here-in-after called "the Bid")_____ KNOW ALL MEN by these presents that we_____(Hereinafter called the Bank") are bound unto Registrar, Jiwaji University, Gwalior, M.P. Hereinafter called "the purchaser") in the sum of _____ for which payment will and truly to be made to the said purchaser, the bank binds itself, its successors and assigns by these presents. Sealed with the common Seal of the said Bank this_____day of_____2024'

THE CONDITIONS OF THIS OBLIGATION ARE:

1. When the successful tenderer does not accept the order after issue of preliminary acceptance letter/letter of indent/purchase order.
2. When the successful tenderer fails to furnish the security deposit within 30 days from the date of issue of preliminary acceptance letter or the letter of indent or purchase order _____.
3. When tenderer is disqualified for reasons outlined in_____.
4. When tenderer alters his prices or withdraws his offer during the validity period. We undertake to pay to the purchaser the above amount within one week upon receipt of its first written demand without the purchaser having to substantiate his demand, without referring to the supplier and without questioning the right of University to make such demand or the propriety or legality of the demand provided that in its demand the purchaser will note that the amount claimed by it is due to it owing to any of the occurrence of the above mentioned conditions, specifying the occurred condition or conditions.

Notwith standing anything contained in the foregoing our liability under this guarantee is restricted to_____(Rupees_____ only). Our guarantee shall remain in force until_____. Unless a claim within 3 months from that date, all your rights under this guarantee shall be forfeited and we shall be relieved and discharged from all liability thereafter.

We_____Bank Limited lastly undertake not to revoke this guarantee during its currency except with the previous consent of University in writing.

Date the_____Day_____200 for_____Bank Ltd.

ANNEXURE-11

TECHNICAL BID FORM

S.No.	Documents	Copy submitted o not (Yes/No)
1	The Company/the tenderer should be in existence for the last 5 years As per Annexure-02	
2	The tenderer should be a Manufacturer or the authorized Distributor of equipment Manufacturer or other respective products/items	
3	IT returns for the last three Assessment years.	
4	Technical Specifications of Annexure- 05 (Complied or Not-Complied report) along with supporting documents of the items bided (items 1 to 12), for the scientific equipments clearly mentioning the make and model	
5	List mentioning the addresses and contact persons with phone numbers of the Service Centers	
6	The list of customers, to whom the bidder had supplied identical materials in the past	
7	Annexure-08	

ANNEXURE- 12

PROFORMA OF PERFORMANCE BANK GUARANTEE

In consideration of the Registrar, Jiwaji University, Gwalior (hereinafter called the "Client") having offered to accept the terms and conditions of the proposed agreement (hereinafter called the "said

Agreement") between Registrar, Jiwaji University, Gwalior and M/s..... (hereinafter called the "said Contractor") for the work of Catering Services having agreed to production of an irrevocable bank guarantee for Rs._____ (Rupees _____ only) as a security / guarantee from the contractor for compliance of its obligations in accordance with the terms and conditions in the said agreement.

We _____ (hereafter referred to as the "Bank") hereby undertake following:

1. We undertake to pay to the Client any money so demanded not withstanding any dispute or disputes raised by the contractor(s) in any suit or proceeding pending before any Court or Tribunal relating thereto, our liability under this present being absolute and unequivocal. The payment so made by us under bond shall be a valid discharge of our liability for payment thereunder, and the contractor(s) shall have no claim against us for making such payment.
2. We further agree that the Guarantee herein contained shall (indicate the name of the Bank) remain in full force and effect during the period that would be taken for the performance of the said agreement, and it shall continue to be enforceable till all the dues of the Client under or by virtue of the said agreement have been fully paid, and its claims satisfied or discharged, or till the Client certifies that the terms & conditions of the said agreement have been fully and properly carried out by the said contractor(s), and accordingly discharges this guarantee
3. We further agree with the Client that the Client shall have the fullest liberty without our consent , and without effecting in any manner our obligations hereunder, to vary any of the terms & conditions of the said agreement or to extend time of performance by the said contractor(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the Client against the said contractor(s) and to forbear or enforce any of the terms and conditions relating to the said agreement, and we shall not be relieved from our liability by reason of any such variation or extension being granted to the said contractor(s) or for any forbearance, act of omission on the part of the Client or any indulgence by the Client to the said contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but

for this provision, have effect of so relieving us.

4. This Guarantee will not be discharged due to the change in the constitution of the Bank or the contractor(s).
5. We lastly undertake not to revoke this Guarantee except with the prior consent of the Client in writing.
6. This guarantee shall be valid up to ..... unless extended on demand by the Client Notwithstanding anything mentioned above, our liability against this Guarantee is restricted to Rs._____ (Rupees _____ only) and unless a claim in writing is lodged with us under this Guarantee shall stand discharged.

   Dated the _____ day of ____ for _____

Signature of the authorized officer of the Bank

Name & Designation of the officer

Seal, Name & Address of the Bank and Address of the Branch

ANNEXURE-13

FORMAT OF CONTRACT AGREEMENT

(On Non-judicial Stamp Paper as per m.p Govt. rules)

THIS AGREEMENT made the ..... day of ....., 2024 Between Registrar, Jiwaji University,
Gwalior (hereinafter "the Client") of the one part and M/*s* _____
_____
(hereinafter called "the Contractor") of the other part:

WHEREAS the Client is desirous that certain services viz. Supply Catering Services in the tender referenceno. _____ Dated _____ and has accepted a bid by the Contractor for the performance services for the sum of *Rs.* _____ */- (Rupees* _____ *only)* (hereinafter called "the Contract Price") and supply of consumables as per rates given in the financial bid of its tender.

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract referred to, and they shall be deemed to form and be read and construed as part of this agreement.

2. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz.:

a) The Letter of Acceptance issued by the Client.
b) The supplier's bid including enclosures, annexure, etc.
c) Tender document along with all enclosed documents.
d) Any other document listed in the supplier's bid and replies to queries, clarifications issued by the service provider, such confirmations given by the bidder which are acceptable to the contractor and the entire Addendum issued as forming part of the contract.

3. In consideration of the payments to be made by the Client to the Contractor as hereinafter mentioned, the Contractor hereby covenant with the Client to provide, the goods and services and to remedy defects therein in conformity in all respects with the provisions of the Contract.

4. The Client hereby covenants to pay the Contractor in consideration of the provision of the goods and services and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

Brief particulars of the goods and services which shall be supplied / provided by the Contractor are as under.

Sl. No	**Brief Description of Services**	**Contract Duration**	**Total Price**	**GST tax in %**	**Total value inclusive of GST tax**
1					

IN WITNESS where of the parties here to have caused this Agreement to be executed in accordance with their respective laws the day and year first above written.

Signed, Sealed and Delivered by the Said
_____ (For the Client) In the presence of .....

Signature

Name

Address

Witness 1. 2.

Signed, Sealed and Delivered by the

Said _____ (For the Contractor)

In the presence of .....

Signature

Name

Address

Witness 1. 2.

ANNEXURE -14

JIWAJI UNIVERSITY, GWALIOR

COMMERCIAL BID (ONLINE) FOR PURCHASE OF Equipments

1. Name of the Firm :-

   .....

2. Address of the Firm :-

   .....

3. Name of the Proprietor / Partner / Director of the Firm :-

   ...

4. Telephone No and e-mail ID. :-

   ...

COMMERCIAL BID FORM (e-Bid)

Sr. No.	Equipment	Qty.	Rate/ Item	
			Rupees/ foreign currency	
			In Figure	In words
	Supply & Installation for [Name of Quoted each Instruments]	01		

(SIGNATURE OF THE BIDDER WITH NAME & SEAL)