TENDER DOCUMENT

FOR

PROCUREMENT OF

SCIENTIFIC EQUIPMENT

FOR

FACULTY OF LIFE SCIENCE

JIWAJI UNIVERSITY, GWALIOR

REGISTRAR

JIWAJI UNIVERSITY

GWALIOR - 474011 (M.P.)

JIWAJI UNIVERSITY, GWALIOR

Tender No./Store/2021/ 209 Date: 25/8/21

Online e-Tender Notice

Online tenders are invited through **www.mptenders.gov.in** from Manufacturer/ Authorized distributor only, for **Supply of Equipments, Handmade Paper Machinery, Degree Containers, Lift, Sound System, Material for Electrical Repairing and New boring work** at SOS, Jiwaji University, Gwalior

Tender document containing terms, conditions & specification of the items can be downloaded from the e-procurement website by paying rupees mention below per equipment cost online tender can also be seen at Universities website www.jiwaji.edu

S. No	Tender ID MP/JUG/ Tender NO.	Description of work	Qty.	Estimates Cost of work	EMD	Cost of Tender (Non refundable)
1	2021_JIWAJ_	Single Crystal X-ray Diffractometer **(Third Call)**	01	2,20,00,000/-	6,60,000/-	12,500/-
2	2021_JIWAJ_	Supply & Installation of Benchtop NMR Spectrometer **(Third Call)**	01	80,00,000/-	2,40,000/-	10,000/-
3	2021_JIWAJ_	SEM-EDAX **(Third Call)**	01	1,00,00,000/-	3,00,000/-	12,500/-
4	2021_JIWAJ_	PPMS **(Third Call)**	01	2,20,00,000/-	6,60,000/-	15,000/-
5	2021_JIWAJ_	CHN Analyser **(Third Call)**	01	40,00,000/-	1,20,000/-	5,000/-
6	2021_JIWAJ_	Total Organic Carbon System **(Third Call)**	01	9,00,000/-	27,000/-	2000/-
7	2021_JIWAJ_	Aerosol Mass monitor **(Third Call)**	01	4,00,000/-	12,000/-	2000/-
8	2021_JIWAJ_	Microarray System **(Third Call)**	01	1,00,00,000/-	3,00,000/-	12,500/-
9	2021_JIWAJ_	Supply of Handmade Paper Machinery & other Equipments. **(Third Call)**	Complete Plant.	900000/-	27000/-	2000/-
10	2021_JIWAJ_	Supply of Degree Containers **(Third Call)**	80,000	9,00,000/-	27,000/-	2000/-
11	2021_JIWAJ_	Supplying, Installation, Testing and Commissioning of Passenger Elevator (Lift) including required civil work at different building of Jiwaji University, Gwalior on MP PWD SOR building and electric work 01.08.2014 with up to date amendment **(Third Call)**	06	1,20,00,000/-	3,60,000/-	12,500/-
12	2021_JIWAJI_	High Quality Auditorium Sound System **(Third Call)**	-	8,50,000/-	25,500/-	2000/-
13	2021_JIWAJ_	Supply of Essential material for Electrical Repairing (Item Rate) **(Second Call)**	-	92,800/-	3000/-	2000/-
14	2021_JIWAJ_	New boring work of Atal Bihari Convention Center Jiwaji University, Gwalior **(Second Call)**	-	1,91,508/-	5800/-	1000/-

1. Last date of purchase of tender on line ---15/9/21--- up to 5:00 P.M.
2. Last date of submission of online price bid ---18/9/21--- up to 5:00 P.M.
3. Opening of Technical bid ---21/9/21--- at 3.00 PM
4. All terms and conditions of the tender can be seen on above websites
5. Registrar Jiwaji University Gwalior reserve right to accept / reject / cancel any tender without stating any reason

Registrar

JIWAJI UNIVERSITY, GWALIOR

Tender No./Store/2021/209 **Date: 25-08-2021**

Online e-Tender Notice

Online tenders are invited through **www.mptenders.gov.in** from Manufacturer/ Authorized distributor only, for **Supply of Equipments** at Jiwaji University, Gwalior

Tender document containing terms, conditions & specification of the items can be downloaded from the e-procurement website by paying rupees mention below per equipment cost online tender can also be seen at Universities website www.jiwaji.edu

S. No	Tender ID MP/JUG/ Tender NO.	Description of work	Qty.	Estimates Cost of work	EMD	Cost of Tender (Non refundable)
1.	2021_JIWAJ_156683	Single Crystal X-ray Diffractometer **(Third Call)**	01	2,20,00,000/-	6,60,000/-	12,500/-
2.	2021_JIWAJ_156684	Supply & Installation of Benchtop NMR Spectrometer **(Third Call)**	01	80,00,000/-	2,40,000/-	10,000/-
3.	2021_JIWAJ_156685	SEM-EDAX **(Third Call)**	01	1,00,00,000/-	3,00,000/-	12,500/-
4.	2021_JIWAJ_156686	PPMS **(Third Call)**	01	2,20,00,000/-	6,60,000/-	15,000/-
5.	2021_JIWAJ_156688	CHN Analyser **(Third Call)**	01	40,00,000/-	1,20,000/-	5,000/-
6.	2021_JIWAJ_156689	Total Organic Carbon System **(Third Call)**	01	9,00,000/-	27,000/-	2000/-
7.	2021_JIWAJ_156690	Aerosol Mass monitor **(Third Call)**	01	4,00,000/-	12,000/-	2000/-
8.	2021_JIWAJ_156691	Microarray System **(Third Call)**	01	1,00,00,000/-	3,00,000/-	12,500/-

1. Online tender can be purchased up to 5.00 PM till 15-09-2021
2. Online price bid can be submitted up to 5.00 PM till 18-09-2021
3. Technical bid will be opened on 21-09-2021 at 3.00 PM
4. All terms and conditions of the tender can be seen on above websites
5. Registrar Jiwaji University Gwalior reserve right to accept / reject / cancel any tender without stating any reason

Registrar

जीवाजी विश्वविद्यालय, ग्वालियर

Tender No./Store/2021/209 **Date: 25-08-2021**

// ऑनलाइन e-निविदा आमंत्रण //

जीवाजी विश्वविद्यालय, ग्वालियर के लिए केवल निर्माण/अधिकृत विक्रेता 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 अतिरिक्त विश्वविद्यालय की वेबसाइट www.jiwaji.edu पर भी देखी जा सकती है। विवरण निम्नानुसार है।

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

S. No	Tender ID MP/JUG/ Tender NO.	Description of work	Qty.	Estimates Cost of work	EMD	Cost of Tender (Non refundable)
9.	2021_JIWAJ_156683	Single Crystal X-ray Diffractometer **(Third Call)**	01	2,20,00,000/-	6,60,000/-	12,500/-
10.	2021_JIWAJ_156684	Supply & Installation of Benchtop NMR Spectrometer **(Third Call)**	01	80,00,000/-	2,40,000/-	10,000/-
11.	2021_JIWAJ_156685	SEM-EDAX **(Third Call)**	01	1,00,00,000/-	3,00,000/-	12,500/-
12.	2021_JIWAJ_156686	PPMS **(Third Call)**	01	2,20,00,000/-	6,60,000/-	15,000/-
13.	2021_JIWAJ_156688	CHN Analyser **(Third Call)**	01	40,00,000/-	1,20,000/-	5,000/-
14.	2021_JIWAJ_156689	Total Organic Carbon System **(Third Call)**	01	9,00,000/-	27,000/-	2000/-
15.	2021_JIWAJ_156690	Aerosol Mass monitor **(Third Call)**	01	4,00,000/-	12,000/-	2000/-
16.	2021_JIWAJ_156691	Microarray System **(Third Call)**	01	1,00,00,000/-	3,00,000/-	12,500/-

१. ऑनलाइन निविदा प्रपत्र क्रय करने की अंतिम तिथि 15-09-2021 **सायं** 5.00 **बजे तक है**
२. ऑनलाइन बिड डालने का दिनांक 18-09-2021 **सायं** 5.00 **बजे तक है**
३. ऑनलाइन बिड खुलने का दिनांक 21-09-2021 3:00 PM **निर्धारित है**
४. निविदा के शेष समस्त जानकारी उपरोक्त दर्शायी गयी वेबसाइट्स पर देखी जा सकती है
५. कुलसचिव जीवाजी विश्वविद्यालय को बिना कोई कारण बताये निविदा स्वीकृत / अस्वीकृत / रद्दीकरण करने का अधिकार होगा

कुलसचिव

NOTICE INVITING TENDER DETAILS

S.No.	Description	
1.	Department name	Jiwaji University Gwalior -474011 (M.P.)
2.	Tender Number	JU/COE /Tender E1/2021
3.	Tender Subject	Supply, Installation & commissioning of Scientific Equipments.
4.	Period of Contract	One Year
5.	Form of contract	Schedule Wise
6.	Tender type	Open
7.	Tender category	Products (both hardware and software)
8.	EMD/Bid Security (INR) (Enclose in separate cover)	1. Single Crystal X-ray Diffractometer-Rs.6.60 lakh 2. Benchtop NMR Spectrometer-Rs.2.40 lakh 3.SEM-EDAX-Rs.3.00 lakh 4. PPMS-Rs.6.60 lakh 5. CHN Analyser-Rs.1.20 lakh 6. Total Organic Carbon System-Rs.0.27 lakh 7. Aerosol Mass monitor-Rs.0.12 lakh 8. Microarray System-Rs. 3.00 lakh
9.	EMD/Bid security Payable to	Registrar ,Jiwaji University,Gwalior -474011 (M.P.) EMD has to be paid online through www.mptenders.gov.in
10.	Tender fee (non refundable)	The tender fee to be submitted online through www.mptenders.gov.in paid in the favour of Registrar, Jiwaji University, Gwalior.
11.	Downloading of Tender Documents	www.mptenders.gov.in /www.jiwaji.edu
12.	Last date of purchase of online tender	15-09-2021, 5.00 PM
13.	Bid Submission Closing Date	18-09-2021 (5.00 pm)
14.	Submission of E-Bid	www.mptenders.gov.in For delay, University cannot be held responsible.
15.	Technical Specification Bid	21-09-2021 (3:00 PM)

	Opening Date	
16.	Price Bid Opening	www.mptenders.gov.in
17.	Place of Technical Bid Opening	In the office of Registrar / meeting Hall of Jiwaji University. Gwalior
18.	Officer Inviting Bids/Contact Person	Registrar, Jiwaji University Gwalior - 474 011, (M.P.)
19.	Eligibility Criterion	As per the tender document (Annexure -02)
20.	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 Latest Income tax clearance certificate. 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.
21.	General Terms and Conditions	As per tender document

TENDER FEES (To be submitted online)

Sr. No.	Description of Work (Equipment names)	Tender Fees (Non refundable)
1	Single Crystal X-ray Diffractometer	12500.00
2	Benchtop NMR Spectrometer	10000.00
3	SEM-EDAX	12500.00
4	PPMS	15000.00
5	CHN Analyser	5000.00
6	Total Organic Carbon System	2000.00
7	Aerosol Mass monitor	2000.00
8	Microarray System	12500.00

Contents of the Tender Document

Annexure – 01

Schedule of Quantity

Supply, Installation and Commissioning of Scientific Equipments at Central Equipment Facility

Sl.No.	**Description of Work**	**Quantity**
1	Single Crystal X-ray Diffractometer	01
2	Benchtop NMR Spectrometer	01
3	SEM-EDAX	01
4	PPMS	01
5	CHN Analyser	01
6	Total Organic Carbon System	01
7	Aerosol Mass monitor	01
8	Microarray System	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 representative of equipment manufacturer or other respective products/ items.

B. SPECIAL TERMS AND CONDITIONS :

1. **Delivery Period:** The delivery should be made within 60 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. After the completion of 3 years OEM warranty, two years extended CMC must be quoted without which the tender will be rejected
3. **Installation:** The installation should be done at the Instrumentation Facility (IF) 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 open 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 thereof and after satisfactory installation and working of the entire equipment. In case of imported equipment LC is to be opened in the currency of the country of origin. It price is quoted in a currency different from the currency of the equipment manufacturing country the tender will be rejected.
6. This institution is exempted from payment of Central Excise duty in terms of Govt. Notification No. 1097-Central Excise dated 01.03.1997. Necessary copy to be provided by the University.
7. For imported equipments: The institution is registered with Department of Science and Industrial Research (DSIR) Govt. of India vide Government Notification No. TU/V/RG-CDE(56)/2009, dated 26.11.2009 is exempted from payment of custom duty.
8. Necessary certificate copy shall be provided by the University. 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.

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

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

11. 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 instead of an imported PC. The same would apply to a printer or any compiled other accessory or subsystem.

TENDERER
SEAL

Annexure-3

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 centres 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 years 2017-2018, 2018-2019, 2019-2020

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, to whom the bidder had supplied identical 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.

Annexure - 04

Address where the equipment to be installed

Jiwaji University

Gwalior -474011 (M.P.)

ANNEXURE – 5

1. TECHNICAL SPECIFICATIONS FOR SINGLE CRYSTAL X-RAY DIFRACTOMETER SYSTEM

S. No.	Items	Specifications
1	Mounting and Cooling Facility:	(a) Floor mounted system for dedicated use in a laboratory. b) The X-ray diffractometer system should overall be air-cooled without any need for external water chillers.
2	Sample and Detector Positioning System:	(a) The instrument should include a fully automated high precision 4-circle kappa goniometer with all axes and detector distance controlled through the system computer. (b) The sample to the detector distance should be variable over a range of at least 40-145 mm or higher.It should have very high angular precision and high angular coverage of minimum 150 deg. 2 Theta. (c) The XRD system must be equipped with sample-detector distance detection system in real mode. The goniometer's sphere of confusion should be less than 7 microns and must not be greater than 20 microns even when the detector is at its farthest distance.
3.	X-ray Source:	(a) Dual Mo and Cu Kα micro-focus X-ray source, pre-aligned, maintenance free and designed for continuous operation together with sealed micro focus X-ray generator with all essential and latest generation high performance optics as well as X-ray source (PhotonJet-Z,IμS 3.0 or better) for the computer controlled data collection of highest standards so that data can be collected by using the both molybdenum and copper radiation without the need for replacing the X-ray tube as well as without modifying the optics. The switching over from one radiation source to another should be user friendly, instantaneous and controlled through computer with fast interchange of system settings. (b) The X-ray source(s) must be completely air cooled to provide the highest stability in beam position and beam intensity. The micro-focus source should have good power output of 50 W or better, and the beam diameter at the crystal should be optimum through use of suitable pinholes / collimators. The X-ray source should comply with statutory safety regulations. Fully X-ray protected enclosure as per international safety norms. Manufacturer of the micro-focus source must be mentioned. The X-ray source should be covered by minimum 5 years replacement warranty from the date of installation.
4.	X-ray Detector:	(a) State-of-the-art detector suitable for both Mo and Cu radiation with highest sensitivity and latest technology. Detector should be based on Charge Integrating Pixel Array Detector (CPAD) / Hybrid Pixel Array(HPAD) /Hybrid Photon Counting(HPC) or better technology with no dead area for

		detecting the diffracted X-rays and accurately measuring their intensities from the diffraction pattern of single crystals. (b). The detector should be able to capture very weak as well as very strong reflections on a single frame with minimum global counts of at least 200,000 cps or better. The detector should have high signal to noise ratio with virtually noise free readout electronics and should be capable of shutter-less operation with auto air cooled facility. Vendor must specifythe dark current and noise of the Detector Chip. Resolution of the detector should be 135 microns or better. The size of detector should be minimum 77 mm x 80 mm area or larger. Detector should carry a warranty of 5 years from the date of installation.
5.	Computer and Printer:	The Diffractometer Instrument should come with a PC with Factory loaded Software. Specifications of the PCs should be the following or better: Licensed Windows 10 operating system, Intel i5 CPU, 2.5 GHz or better, 8 GB RAM, 64bit Operating System, 1 TB SSD or better / higher. Intel Mother board, graphics card 2GB or higher, DVD RW. Latest LED monitor > 22 inch. 2 TB external hard drive, colour laser Printer.
6	Application Software:	(a) The software suite provided with the system shall consist of a complete suite of well tested and user proven routines for the collection and integration of frame data on single crystals and for solving, refining, and displaying single crystal structures. (b) Software shall allow remote access to the instrument including diffractometer, goniometer, and X-ray generator functions to setup the experiment, view data as collected, process the data, solve and refine the structures remotely or off-line. (c) Software for auto structure solution, twins, low/high temperature, high pressure, charged density and modulated structure should be included. (d) An unlimited number of data integration and analysis software licenses should be available so that all local and remote dependents of the equipment should have the capability to analyze the data independently. (e) Manufacturer must offer their latest version of licensed software developed by them. No public domain software is acceptable. There must be an undertaking that updates to the instrument control/data collection and automated structure solution and refinement software will be provided as available free of charge and in perpetuity. (f) For data collection strategies, the software shall have predefined runs including Sphere, Hemisphere and Quadrant. Optimized runs shall provide for completeness / coverage as well as the facility for user defined runs. Software shall allow easy change of exposure time, scan ranges, scan width and detector distance and provide automatic re-measurement of overflow frames, automatic dark image acquisition and optional reference frames for tracking decaying samples.

		(g) The offered data acquisition software package must be compatible with SHELX, WINGX and OLEX2. (h). Software for Auto Structure solution should be quoted along with basic scope. (i) Most recent and advanced software for data analysis are required. Atleast 10 licenses within the campus for data analysis should be provided.
7.	Cooling Facility:	The X-ray diffractometer should be supplied with a sample cooling device that allows the control of the sample environment from 80-400K (Preferably Oxford 800 series) with an error not larger than ±0.1K over the whole temperature range. A liquid nitrogen storage tank for 150 or more liters with auto refill accessory and necessary valves, regulators, transfer line and other accessories should be included.
8.	Sample Temperature:	The sample temperature should be set and varied in a stepwise fashion by the instrument control software to allow for easily creating variable temperature measurements.
9.	Video Microscope & Illumination:	The system must include a colour video microscope which records colour images of the crystal mounted on the goniometer platform to assist alignment, monitoring, and face-absorption corrections. In addition, provision should be available to transfer and store images.
10.	Consumables:	Following Consumables should be supplied along with the system: i. Mounted cryo-loops of different sizes (0.1-0.2,0.2-0.3, 0.3-0.4, 0.4-0.5, 0.5-0.6, 0.6 – 0.7 mm-25 each) for cryo-mounting. ii. Lindeman capillaries made of special glass with outer diameter of 0.2mm, 0.3mm, 0.5 mm -25 pcs of each type. iii. Five (5) Nos. of Goniometer head in the basic system. iv. Paraton N or equivalent Cryo mounting oil – 5 nos. v. Capillary Sealants: Duco Cement 29 ml x 5 nos. vi. Red sticky wax 2 box vii. Calibrating YLID Standard Crystal on Goniometer head – 1 no. viii. Super Glue 4 g tube- 5 nos. ix. Magnetic Base to mount on XYZ-Goniometer head. 49/64 mm – 10 no. x. MiTeGenmicromeshes 400/25- 10 no.
11.	UPS System:	A suitable Branded UPS for back up complete system and accessories including Low Temperature attachment for uninterrupted data collection for minimum one hour back-up should be quoted.
12	Microscope for Sample Selection	A stereo-zoom optical microscope with polarizer for crystal mounting.
13.	Manuals / Circuit-	All the manuals and instruction sheets must be supplied in English for the purpose of service engineer's reference. The

	Diagrams and Instruction Sheets:	offered SCXRD system model should preferably comply with the latest machinery directive, for electrical equipment and electromagnetic compatibility under fully CE compliant guidelines (or equivalent).
14.	Spares:	One (1) No. of additional Mo X-ray micro focus tube, one (1) additional beam stopper and one (1) additional test crystal for calibration. Other spares as per standard practice should be provided. The detail list of spare to be enclosed with the offer for evaluation purpose. Supplier should confirm the availability of spares for next 10 years from the date of installation.
15.	Service Facility and Down-time Call Attendance:	Supplier should clearly mention about their service set up in India (preferably in Northern part of India for prompt service support. The manufacturer and/or their Indian representative must have at least three qualified and factory trained service engineer in India to be able to attend to service at Jiwaji University Gwalior within 48 hours on submitting a complaint. Training certificates from the manufacturer have to be provided with the tender. During the warranty period, only factory trained and certified engineers are acceptable to attend the service. In case the equipment/system remains non-operational for more than 5 days then warranty period will be extended for the equivalent period for which equipment/system remained non-operational. Warranty extension in such case shall be done without prejudice to any other term & condition of the contract. JU Gwalior would like to enter in service agreement through which JU Gwalior will receive replacement of defective spares/part (if any, that are not covered under warranty) immediately so as to minimize the down time. Order, if any, required to be placed for such spares/parts will be done by JU Gwalior in due course of time.
16.	Qualification Criteria of the Instrument:	The data collected in the offered XRD system must be publishable as per the Acta Crystallographica guideline. This is applicable for both Mo and Cu radiation.
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 10 working days for a group of technical staff/students for operating the instrument to complete structure determination/solution. There will be minimum two basic pieces of training namely installation training and after few months advanced application training. Apart from these two, there will be application training every six months on mutually convenient dates. The application training must be provided by the application scientist having expertise on the X-ray Crystallography.
19.	Warranty:	The single crystal X-ray diffractometer system including X-ray tube, detector, cryo-system, and 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 i.e. valves washers, gaskets,

		anything which does not get consumed with sample preparation or running. Any repair work or replacement of spares needs to be done on site, the manufacturer must confirm this in their quotation
20.	Extended Warranty	After the completion of 3 years OEM warranty, two years extended CMC must be quoted without which the tender will be rejected **i.e. the system should be covered for comprehensive warranty for 5 years from the tenderer.**
21.	Installation in India and Abroad:	Detailed lists of users in India with contact details for the quoted equipment. Preferably, there should be at least one same quoted equipment installed/ordered in India in last 5 years. If required JU Gwaliorteam will visit the installation site.
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

ANNEXURE-I

COMPLIANCE SHEET

TECHNICAL SPECIFICATION

Single Crystal X-ray Diffractometer System **Quantity: 1 no.**

S. No.	Items	Specifications	Compliance (Yes/No)
1	Mounting and Cooling Facility:	(a) Floor mounted system for dedicated use in a laboratory. b) The X-ray diffractometer system should overall be air-cooled without any need for external water chillers.	
2	Sample and Detector Positioning System:	(a) The instrument should include a fully automated high precision 4-circle kappa goniometer with all axes and detector distance controlled through the system computer. (b) The sample to the detector distance should be variable over a range of at least 40-145 mm or higher.It should have very high angular precision and high angular coverage of minimum 150 deg. 2 Theta. (c) The XRD system must be equipped with sample-detector distance detection system in real mode. The goniometer's sphere of confusion should be less than 7 microns and must not be greater than 20 microns even when the detector is at its farthest distance.	
3.	X-ray Source:	(a) Dual Mo and Cu Kα micro-focus X-ray source, pre-aligned, maintenance free and designed for continuous operation together with sealed micro focus X-ray generator with all essential and latest generation high performance optics as well as X-ray source (PhotonJet-Z,IμS 3.0 or better) for the computer controlled data collection of highest standards so that data can be collected by using the both molybdenum and copper radiation without the need for replacing the X-ray tube as well as without modifying the optics. The switching over from one radiation source to another should be user friendly, instantaneous and controlled through computer with fast interchange of system settings. (b) The X-ray source(s) must be completely air cooled to provide the highest stability in beam position and beam intensity. The micro-focus source should have good power output of 50 W or better, and the beam diameter at the crystal should be	

		optimum through use of suitable pinholes / collimators. The X-ray source should comply with statutory safety regulations. Fully X-ray protected enclosure as per international safety norms. Manufacturer of the micro-focus source must be mentioned. The X-ray source should be covered by minimum 5 years replacement warranty from the date of installation.	
4.	X-ray Detector:	(a) State-of-the-art detector suitable for both Mo and Cu radiation with highest sensitivity and latest technology. Detector should be based on Charge Integrating Pixel Array Detector (CPAD) / Hybrid Pixel Array(HPAD) /Hybrid Photon Counting(HPC) or better technology with no dead area for detecting the diffracted X-rays and accurately measuring their intensities from the diffraction pattern of single crystals. (b). The detector should be able to capture very weak as well as very strong reflections on a single frame with minimum global counts of at least 200,000 cps or better. The detector should have high signal to noise ratio with virtually noise free readout electronics and should be capable of shutter-less operation with auto air cooled facility. Vendor must specifythe dark current and noise of the Detector Chip. Resolution of the detector should be 135 microns or better. The size of detector should be minimum 77 mm x 80 mm area or larger. Detector should carry a warranty of 5 years from the date of installation.	
5.	Computer and Printer:	The Diffractometer Instrument should come with a PC with Factory loaded Software. Specifications of the PCs should be the following or better: Licensed Windows 10 operating system, Intel i5 CPU, 2.5 GHz or better, 8 GB RAM, 64bit Operating System, 1 TB SSD or better / higher. Intel Mother board, graphics card 2GB or higher, DVD RW. Latest LED monitor > 22 inch. 2 TB external hard drive, colour laser Printer.	
6	Application Software:	(a) The software suite provided with the system shall consist of a complete suite of well tested and user proven routines for the collection and integration of frame data on single crystals and for solving, refining, and displaying single crystal structures. (b) Software shall allow remote access to the instrument including diffractometer, goniometer, and X-ray generator functions to setup the experiment, view data as collected, process the data,	

		solve and refine the structures remotely or off-line. (c) Software for auto structure solution, twins, low/high temperature, high pressure, charged density and modulated structure should be included. (d) An unlimited number of data integration and analysis software licenses should be available so that all local and remote dependents of the equipment should have the capability to analyse the data independently. (e) Manufacturer must offer their latest version of licensed software developed by them. No public domain software is acceptable. There must be an undertaking that updates to the instrument control/data collection and automated structure solution and refinement software will be provided as available free of charge and in perpetuity. (f) For data collection strategies, the software shall have predefined runs including Sphere, Hemisphere and Quadrant. Optimized runs shall provide for completeness / coverage as well as the facility for user defined runs. Software shall allow easy change of exposure time, scan ranges, scan width and detector distance and provide automatic re-measurement of overflow frames, automatic dark image acquisition and optional reference frames for tracking decaying samples. (g) The offered data acquisition software package must be compatible with SHELX, WINGX and OLEX2. (h). Software for Auto Structure solution should be quoted along with basic scope. (i) Most recent and advanced software for data analysis are required. Atleast 10 licenses within the campus for data analysis should be provided.	
7.	Cooling Facility:	The X-ray diffractometer should be supplied with a sample cooling device that allows the control of the sample environment from 80-400K (Preferably Oxford 800 series) with an error not larger than ±0.1K over the whole temperature range. A liquid nitrogen storage tank for 150 or more litres with auto refill accessory and necessary valves, regulators, transfer line and other accessories should be included.	
8.	Sample Temperature:	The sample temperature should be set and varied in a stepwise fashion by the instrument control software to allow for easily creating variable temperature measurements.	
9.	Video Microscope & Illumination:	The system must include a colour video microscope which records colour images of the crystal mounted on the goniometer platform to assist alignment,	

		monitoring, and face-absorption corrections. In addition, provision should be available to transfer and store images.	
10.	Consumables:	Following Consumables should be supplied along with the system: i. Mounted cryo-loops of different sizes (0.1-0.2,0.2- 0.3, 0.3-0.4, 0.4-0.5, 0.5-0.6, 0.6 – 0.7 mm-25 each) for cryo-mounting. ii. Lindeman capillaries made of special glass with outer diameter of 0.2mm, 0.3mm, 0.5 mm -25 pcs of each type. iii. Five (5) Nos. of Goniometer head in the basic system. iv. Paraton N or equivalent Cryo mounting oil – 5 nos. v. Capillary Sealants: Duco Cement 29 ml x 5 nos. vi. Red sticky wax 2 box vii. Calibrating YLID Standard Crystal on Goniometer head – 1 no. viii. Super Glue 4 g tube- 5 nos. ix. Magnetic Base to mount on XYZ-Goniometer head. 49/64 mm – 10 no. x. MiTeGenmicromeshes 400/25- 10 no.	
11.	UPS System:	A suitable Branded UPS for back up complete system and accessories including Low Temperature attachment for uninterrupted data collection for minimum one hour back-up should be quoted.	
12	Microscope for Sample Selection	A stereo-zoom optical microscope with polarizer for crystal mounting.	
13.	Manuals / Circuit-Diagrams and Instruction Sheets:	All the manuals and instruction sheets must be supplied in English for the purpose of service engineer's reference. The offered SCXRD system model should preferably comply with the latest machinery directive, for electrical equipment and electromagnetic compatibility under fully CE compliant guidelines (or equivalent).	
14.	Spares:	One (1) No. of additional Mo X-ray micro focus tube, one (1) additional beam stopper and one (1) additional test crystal for calibration. Other spares as per standard practice should be provided. The detail list of spare to be enclosed with the offer for evaluation purpose. Supplier should confirm the availability of spares for next 10 years from the date of installation.	
15.	Service Facility and Down-time Call Attendance:	Supplier should clearly mention about their service set up in India (preferably in Northern part of India for prompt service support. The manufacturer and/or	

		their Indian representative must have at least three qualified and factory trained service engineer in India to be able to attend to service at Jiwaji University Gwalior within 48 hours on submitting a complaint. Training certificates from the manufacturer have to be provided with the tender. During the warranty period, only factory trained and certified engineers are acceptable to attend the service. In case the equipment/system remains non-operational for more than 5 days then warranty period will be extended for the equivalent period for which equipment/system remained non-operational. Warranty extension in such case shall be done without prejudice to any other term & condition of the contract. JU Gwalior would like to enter in service agreement through which JU Gwalior will receive replacement of defective spares/part (if any, that are not covered under warranty) immediately so as to minimize the down time. Order, if any, required to be placed for such spares/parts will be done by JU Gwalior in due course of time.	
16.	Qualification Criteria of the Instrument:	The data collected in the offered XRD system must be publishable as per the Acta Crystallographica guideline. This is applicable for both Mo and Cu radiation.	
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 10 working days for a group of technical staff/students for operating the instrument to complete structure determination/solution. There will be minimum two basic pieces of training namely installation training and after few months advanced application training. Apart from these two, there will be application training every six months on mutually convenient dates. The application training must be provided by the application scientist having expertise on the X-ray Crystallography.	
19.	Warranty:	The single crystal X-ray diffractometer system including X-ray tube, detector, cryo-system, and 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 i.e. valves washers, gaskets, anything which does not get consumed with sample preparation or running. Any repair work or replacement of spares needs to	

		be done on site, the manufacturer must confirm this in their quotation	
20.	Extended Warranty	After the completion of3 years OEM warranty, two (2) years extended CMCmust be quoted without which the tender will be rejected **i.e., the system should be covered for comprehensive warranty for 5 years from the tenderer.**	
21.	Installation in India	Detailed lists of users in India with contact details for the quoted equipment must be provided. Preferably, there should be at least one same quoted equipment installed/ordered in India in last 5 years otherwise the tender will not be considered. If required JU Gwaliorteam will visit the installation site.	
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	

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

Signature of Tenderer

Name:

Designation:

Organization Name:

Contact No.:

2. Technical Specification for Benchtop NMR Spectrometer

Items	Specification
1. InstrumentType	It should be PulsedFourierTransformNMR Spectrometer
2. SamplePresentation	Standard5mmOD,178mm(7")longNMRtubes
3. MagnetType	Permanent,Cryogen-Free, should provide frequency to entire sample without tube movement.
4. Field Strength	2 Tesla Magnet
5. MagnetTemperatureControl	It should have ActiveHeatingandActiveCooling
6. Operating frequency	It should have 80 MHz
7. Probe	It should have **Single Probe for ^{1}H, ^{19}F, ^{13}C**
8. Spectral Resolution	
^{1}H 50% Linewidth:	<0.5Hz (Instrument software Shim test report should be submitted along with 10% H2O in D2O or shim standard peak with resolution at 1H 50% Linewidth
^{1}H 0.55% Linewidth:	<20Hz (Instrument software Shim test report should be submitted along with 10% H2O in D2O or shim standard peak with resolution at 1H 50% Linewidth <0.5 Hz and at 1H 0.55% Linewidth <20 Hz)
9. Signal:Noise	It should offer >200:1 for 1% Ethyl Benzene, Measured in a single scan on the quartet of the CH2 group. (Spectra of with sensitivity >200:1 should be submitted as a proof)
10. LockType	External Hardware Lock should be Independent of the sample and No Deuterated solvent should be required
11. ProbeTuneandMatch	Should be Preset,nouserinterventionrequired
12. Shimming	Shimming should be fully automated. Shimming for each sample should not be required.
	No sample spinning should be required
13. Experimental Protocols	It should perform following protocols with ease for all nuclei H, F and C 1- D (H, F, and C), 1-D Paramagnetic, 2-D COSY (Correlation Spectroscopy), 2-D TCOSY (Total Correlation Spectroscopy), 2-D JRES (Homonuclear J-Resolved Spectroscopy), Relaxation T1 and T2, Proton Pulse-Decoupled, DEPT (Distortionless Enhancement by Polarization Transfer), APT (Attached Proton Test): HETCOR (Heteronuclear Correlation Spectroscopy), HMBC (Heteronuclear Multiple Bond Correlation), HMQC (Heteronuclear Multiple-Quantum Correlation), HSQC (heteronuclear single quantum correlation) HSQC-ME (multiplicity-edited HSQC)
14.Service required:	No cryogenic liquids required No compressed air required No water cooling required

	No gases required
15.Operating temperature	20° C to 25° C
16.Software	Most recent and advanced Software with permanent license should be offered along with system.
17. Computer and Printer	The NMR Instrument should come with a PC with Factory loaded Software. Specifications of the PCs should be the following or better: Licensed Windows 10 operating system, Intel i5 CPU, 2.5 GHz or better, 8 GB RAM, 64bit Operating System, 1 TB SSD or better / higher. Intel Mother board, graphics card 2GB or higher, DVD RW. Latest LED monitor > 22 inch. 2 TB external hard drive, ColourLaser Printer.
18.Consumables	Following consumables should be supplied along with the system: 1. NMR tubes 5 mm no.# 200 2. Two bottles of $CDCl_3$ 100 mL each.
19.UPS System:	A suitable Branded UPS for back up complete system and accessories for uninterrupted data collection for minimum one hour back-up should be quoted.
20.Manuals / Circuit-Diagrams and Instruction Sheets:	All the manuals and instruction sheets must be supplied in English for the purpose of service engineer's reference. The offered benchtop NMR system model should preferably comply with the latest machinery directive, for electrical equipment and electromagnetic compatibility under fully CE compliant guidelines (or equivalent).
21.Service Facility and Down-time Call Attendance:	Supplier should clearly mention about their service set up in India (preferably in Northern part of India for prompt service support. The manufacturer and/or their Indian representative must have at least three qualified and factory trained service engineer in India to be able to attend to service at Jiwaji University Gwalior within 48 hours on submitting a complaint. Training certificates from the manufacturer have to be provided with the tender. During the warranty period, only factory trained and certified engineers are acceptable to attend the service. In case the equipment/system remains non-operational for more than 5 days then warranty period will be extended for the equivalent period for which equipment/system remained non-operational. Warranty extension in such case shall be done without prejudice to any other term & condition of the contract. JU Gwalior would like to enter in service agreement through which JU Gwalior will receive replacement of defective spares/part (if any, that are not covered under warranty) immediately so as to minimize the down time. Order, if any, required to be placed for such spares/parts will be done by JU Gwalior in due course of time.
22.Installation, Commissioning and Application Training:	Free of cost at site for 5 working days for a group of technical staff/students for operating the instrument to complete structure determination/solution. There will be minimum two basic pieces of training namely installation training and after few months advanced application training. Apart from these two, there will be application

	training every six months on mutually convenient dates. The application training must be provided by the application scientist having expertise in NMR Spectroscopy.
23.Warranty:	The benchtop NMR spectrometer system and UPS quoted for it should be under on sitecomprehensive 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, anything which does not get consumed with sample preparation or running. Any repair work or replacement of spares needs to be done on site, the manufacturer must confirm this in their quotation.
24.Extended Warranty	After the completion of 3 years OEM warranty, two years extended CMC must be quoted without which the tender will be rejected **i.e., the system should be covered for comprehensive warranty for 5 years from the tenderer.**
25.Installation in India	Detailed lists of users in India with contact details for the quoted equipment. Preferably, there should be at least one same quoted equipment installed/ordered in India in last 5 years. If required JU Gwaliorteam will visit the installation site.
26.Performance	Satisfactory performance of instrument and after sales service from existing users will be considered by the committee in evaluating the technical bid.
27.Validity of Quotation:	Minimum 3 months.
28.Submission of Bids:	Tender should be submitted in two parts – technical and financial

COMPLIANCE SHEET **ANNEXURE-I**

Technical Specification
Benchtop NMR Spectrometer **Quantity: 1 no.**

Items	Specification	Compliance (Yes/No)
1. InstrumentType	It should be PulsedFourierTransformNMR Spectrometer	
2. SamplePresentation	Standard5mmod,178mm(7")longNMRtubes	
3. MagnetType	Permanent,Cryogen-Free, should provide frequency to entire sample without tube movement.	
4. Field Strength	2 Tesla Magnet	
5. MagnetTemperature Control	It should have ActiveHeatingandActiveCooling	
6. Operating frequency	It should have 80 MHz	
7. Probe	It should have Single Probe for 1H, 19F, 13C	
8. Spectral Resolution		
^{1}H 50% Linewidth:	<0.5Hz (Instrument software Shim test report should be submitted along with 10% H2O in D2O or shim standard peak with resolution at 1H 50% Linewidth	
^{1}H 0.55% Linewidth:	<20Hz (Instrument software Shim test report should be submitted along with 10% H2O in D2O or shim standard peak with resolution at 1H 50% Linewidth <0.5 Hz and at 1H 0.55% Linewidth <20 Hz)	
9. Signal:Noise	It should offer >200:1 for 1% Ethyl Benzene, Measured in a single scan on the quartet of the CH2 group. (Spectra of with sensitivity >200:1 should be submitted as a proof)	
10. LockType	External Hardware Lock should be Independent of the sample and No Deuterated solvent should be required	
11. ProbeTuneandMatch	Should be Preset,nouserinterventionrequired	
12. Shimming	Shimming should be fully automated. Shimming for each sample should not be required.	

	No sample spinning should be required	
13. Experimental Protocols	It should perform following protocols with ease for all nuclei H, F and C 1- D (H, F, and C), 1-D Paramagnetic, 2-D COSY (Correlation Spectroscopy), 2-D TCOSY (Total Correlation Spectroscopy), 2-D JRES (Homonuclear J-Resolved Spectroscopy), Relaxation T1 and T2, Proton Pulse-Decoupled, DEPT (Distortionless Enhancement by Polarization Transfer), APT (Attached Proton Test): HETCOR (Heteronuclear Correlation Spectroscopy), HMBC (Heteronuclear Multiple Bond Correlation), HMQC (Heteronuclear Multiple-Quantum Correlation), HSQC (heteronuclear single quantum correlation) HSQC-ME (multiplicity-edited HSQC)	
14.Service required:	No cryogenic liquids required No compressed air required No water cooling required No gases required	
15.Operating temperature	20° C to 25° C	
16.Software	Most recent and advanced Software with permanent license should be offered along with system.	
17. Computer and Printer	The NMR Instrument should come with a PC with Factory loaded Software. Specifications of the PCs should be the following or better: Licensed Windows 10 operating system, Intel i5 CPU, 2.5 GHz or better, 8 GB RAM, 64bit Operating System, 1 TB SSD or better / higher. Intel Mother board, graphics card 2GB or higher, DVD RW, Latest LED monitor > 22 inch. 2 TB external hard drive, Colour Laser Printer.	
18.Consumables	Following consumables should be supplied along with the system: **1.** 200 NMR tubes 5 mm **2.** Two bottles of $CDCl_3$ 100 mL each.	
19.UPS System:	A suitable Branded UPS for back up complete system and accessories for uninterrupted data collection for minimum one hour back-up should be quoted.	
20.Manuals / Circuit-Diagrams and Instruction Sheets:	All the manuals and instruction sheets must be supplied in English for the purpose of service engineer's reference. The offered benchtop NMR system model should preferably comply with the latest machinery directive, for electrical equipment and electromagnetic compatibility	

	under fully CE compliant guidelines (or equivalent).	
21.Service Facility and Down-time Call Attendance:	Supplier should clearly mention about their service set up in India (preferably in Northern part of India for prompt service support. The manufacturer and/or their Indian representative must have at least three qualified and factory trained service engineer in India to be able to attend to service at Jiwaji University Gwalior within 48 hours on submitting a complaint. Training certificates from the manufacturer have to be provided with the tender. During the warranty period, only factory trained and certified engineers are acceptable to attend the service. In case the equipment/system remains non-operational for more than 5 days then warranty period will be extended for the equivalent period for which equipment/system remained non-operational. Warranty extension in such case shall be done without prejudice to any other term & condition of the contract. JU Gwalior would like to enter in service agreement through which JU Gwalior will receive replacement of defective spares/part (if any, that are not covered under warranty) immediately so as to minimize the down time. Order, if any, required to be placed for such spares/parts will be done by JU Gwalior in due course of time.	
22.Installation, Commissioning and Application Training:	Free of cost at site for 5 working days for a group of technical staff/students for operating the instrument to complete structure determination/solution. There will be minimum two basic pieces of training namely installation training and after few months advanced application training. Apart from these two, there will be application training every six months on mutually convenient dates. The application training must be provided by the application scientist having expertise in NMR Spectroscopy.	
23.Warranty:	The benchtop NMR spectrometer system and UPS quoted for it should be under on sitecomprehensive 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, anything which does not get consumed with sample preparation or running. Any repair work or replacement of spares needs	

	to be done on site, the manufacturer must confirm this in their quotation.	
24.Extended Warranty	After the completion of 3 years OEM warranty, two years extended CMC must be quoted without which the tender will be rejected **i.e. the system should be covered for comprehensive warranty for 5 years from the tenderer.**	
25.Installation in India	Detailed lists of users in India with contact details for the quoted equipment. Preferably, there should be at least one same quoted equipment installed/ordered in India in last 5 years. If required JU Gwaliorteam will visit the installation site.	
26.Performance	Satisfactory performance of instrument and after sales service from existing users will be considered by the committee in evaluating the technical bid.	
27.Validity of Quotation:	Minimum 3 months.	
28.Submission of Bids:	Tender should be submitted in two parts – technical and financial	

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

Signature of Tenderer

Name:

Designation:

Organization Name:

Contact No.:

3. Technical Specification for Scanning Electron Microscope-EDAX

Scanning Electron Microscope (SEM) having fully automated microscope setup with EDS and Sputter Coater - System should have specification similar or better than as given below. The quoted model must be globally available.

Sr.No.	Parameter	Details
1.	Electron Source	Tungsten Filament Enough numbers of filaments must be provided for three year of operation
2.	Image Resolution	3.0 nm at 30 kV (SE detector) 4.0 nm at 30 kV (BSE detector) 15nm or better at 1kV
3.	Accelerating voltage	Adjustable from 200 eV to 30 KeV or better
4.	Probe Current	1 pA to 2 µA or better
5.	Magnification	10x to 8,00,000x or better
6.	High Vacuum System	Vacuum level in the chamber and column should be equal to or higher than 10^{-3} Pa. Pumping time should be less than 5 minutes High vacuum to low vacuum changeover: There should not be any manual aperture insertion / part insertion to convert high vacuum mode to low vacuum mode and vice versa
7.	Low Vacuum or variable pressure	Vacuum range – 10 Pa – 400 Pa or better
8.	SEM Chamber	• Internal Dimension: 230 mm diameter • Sample height 50 mm or more • Sample diameter 100 mm or more/better • Chamber ports 6 or more with ports for future up-gradation of accessories
9.	Specimen Stage	5 axes fully motorized stage with following movements: • X = 80 mm or higher • Y = 55 mm or higher • Z = 45 mm or higher • Tilt from –10° to +70° or better • Rotation: 360 degree continuous • Multi sample holder for holding 7 or more sample stubs,
10.	Standard Detectors	• Chamber SE Detector Chamber BSE detector
11.	SEM Automated Operation	• Automatic WD (Focus) & Stigmator, • Contrast & Brightness • Scanning Speed (According to Signal – Noise Ratio) • Gun heating • Gun centering • Column Centering • Vacuum Control • Auto-diagnostics • Direct and continuous control of beam spot size. • Direct and continuous control of beam current
12.	SEM Computer	Intel Core i5 or higher, 16GB RAM, SSD 1TB, Windows 10 Pro 64-bit, touch screen

Sr.No.	Parameter	Details
13.	Image Acquisition and display	• 24-inch LCD/LED touch screen • Scanning Speed: From 50 ns to 10 ms per pixel adjustable in steps or continuously • Image Size: Selectable up to 8 k x 8 kpixels or better • Image Depth: Up to 16 bits per channel • Image Formats: BMP, TIFF, JPEG, GIF, PNG or PGM, PPM • Point & Line Scan, Image rotation, Image shift, Tilt compensation • Dynamic Focus – in plane or folded plane • Multi Detectors Display: Displaying of up to 4 live detector signals simultaneously in four frames side by side • Detector Mixing: Provision for mixing in user defined ratios& display of different live signals from same field of view. • Signal averaging using Frame Accumulation or Line Accumulation
14.	SEM Software	• Image Operations • Analysis & Measurement • Image Processing • Image Measurement • Remote control network software with internet TCP / IP open protocols. • Built-in self-diagnostics for system readiness check
15.	Sputter Coater	Sputter coater for Au/Pd coating should be quoted along with required accessories like rotary pump and necessary gas cylinders.
16.	EDS Detector	EDS X-Ray Micro Analysis System Liquid Nitrogen Free EDS detector Acquisition modes: Spectrum from region, point & ID, line scan and elemental mapping are included EDS detector chip/window size 30 mm2 EDS detector with Si3N4 window 129 eV resolution @ Mn Kα Number of pulse processing settings: 3 Maximum input count rate: up to 1,000,000 CPS Maximum output count rate: up to 300,000 CPS Quantification: standard less, ZAF corrected
17.	Consumables	Consumable (like apertures, Rotary pump oil, Rotary pump filter, necessary O rings) required to run instrument for three years to be quoted as standard supply. Following consumables must also be quoted along with the instrument: Carbon conductive adhesive tape – 3 no.s Specimen Stubs – 30 nos.
18.	Calibration sample	Standard sample calibration of SEM and EDS should be provided
19.	On-Line UPS	Suitable on-line UPS (6kVA) with minimum 30 hour back up
20.	Essential Accessories	• Track ball for imaging operations • IR Chamber scope: Chamber view camera (IR CCD) • Touch alarm safety detector for specimen stage and detectors. • TCP / IP Remote control Network interface &software for remote operations and on-line fault diagnostics. • All essential operating accessories like air compressor, water re-circulating chillers, gas cylinders, regulators, chillier, etc, if required have to be included in the offer.
21.	Warranty	The instrument including UPS (if any) 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

Sr.No.	Parameter	Details
		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. **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, i.e., the system should be covered for comprehensive warranty for 5 years from the tenderer. All parts including spares should be covered under the warranty and this fact should be clearly and explicitly specified in the tender document. The comprehensive Warranty should cover: (1) All parts including accessories, spares and labour on-site. (2) Free maintenance and service on-site or at factory (if needed) with no cost, and (3) Regular free up-gradation of software if any.
22.	Installation and Training	The installation of the instrument should be done by service engineers at free of charge. Operational training should be provided free of charge at the university premises
23.	Spare and consumables availability	Spares and consumables should be available up-to 10 years after installation and commissioning
24.	Price	Please quote CIP and FOR Price DSIR certificate will be provided for custom duty exemption Custom clearance and local transportation are the responsibility of the vendor
25.	Payment Terms	100% Letter of Credit (90% payment against shipping documents, 10% LC after installation and commissioning.

ANNEXURE-I

COMPLIANCE SHEET

TECHNICAL SPECIFICATION

Scanning Electron Microscope-EDAX Quantity: 1 no.

Sr.No.	Parameter	Details	Compliance (Yes/No)
26.	Electron Source	Tungsten Filament Enough numbers of filaments must be provided for three year of operation	
27.	Image Resolution	3.0 nm at 30 kV (SE detector) 4.0 nm at 30 kV (BSE detector) 15nm or better at 1kV	
28.	Accelerating voltage	Adjustable from 200 eV to 30 KeV or better	
29.	Probe Current	1 pA to 2 µA or better	
30.	Magnification	10x to 8,00,000x or better	
31.	High Vacuum System	Vacuum level in the chamber and column should be equal to or higher than 10^{-3} Pa. Pumping time should be less than 5 minutes High vacuum to low vacuum changeover: There should not be any manual aperture insertion / part insertion to convert high vacuum mode to low vacuum mode and vice versa	
32.	Low Vacuum or variable pressure	Vacuum range – 10 Pa – 400 Pa or better	
33.	SEM Chamber	• Internal Dimension: 230 mm diameter • Sample height 50 mm or more • Sample diameter 100 mm or more/better • Chamber ports 6 or more with ports for future up-gradation of accessories	
34.	Specimen Stage	5 axes fully motorized stage with following movements: • X = 80 mm or higher • Y = 55 mm or higher • Z = 45 mm or higher • Tilt from –10° to +70° or better • Rotation: 360 degree continuous • Multi sample holder for holding 7 or more sample stubs,	
35.	Standard Detectors	• Chamber SE Detector Chamber BSE detector	
36.	SEM Automated Operation	• Automatic WD (Focus) & Stigmator, • Contrast & Brightness • Scanning Speed (According to Signal – Noise Ratio) • Gun heating • Gun centering • Column Centering • Vacuum Control • Auto-diagnostics • Direct and continuous control of beam spot size. • Direct and continuous control of beam current	
37.	SEM Computer	Intel Core i5 or higher, 16GB RAM, SSD 1TB, Windows 10 Pro 64-bit, touch screen	

Sr.No.	Parameter	Details	Compliance (Yes/No)
38.	Image Acquisition and display	• 24-inch LCD/LED touch screen • Scanning Speed: From 50 ns to 10 ms per pixel adjustable in steps or continuously • Image Size: Selectable up to 8 k x 8 kpixels or better • Image Depth: Up to 16 bits per channel • Image Formats: BMP, TIFF, JPEG, GIF, PNG or PGM, PPM • Point & Line Scan, Image rotation, Image shift, Tilt compensation • Dynamic Focus – in plane or folded plane • Multi Detectors Display: Displaying of up to 4 live detector signals simultaneously in four frames side by side • Detector Mixing: Provision for mixing in user defined ratios& display of different live signals from same field of view. • Signal averaging using Frame Accumulation or Line Accumulation	
39.	SEM Software	• Image Operations • Analysis & Measurement • Image Processing • Image Measurement • Remote control network software with internet TCP / IP open protocols. • Built-in self-diagnostics for system readiness check	
40.	Sputter Coater	Sputter coater for Au/Pd coating should be quoted along with required accessories like rotary pump and necessary gas cylinders.	
41.	EDS Detector	EDS X-Ray Micro Analysis System Liquid Nitrogen Free EDS detector Acquisition modes: Spectrum from region, point & ID, line scan and elemental mapping are included EDS detector chip/window size 30 mm2 EDS detector with Si3N4 window 129 eV resolution @ Mn Kα Number of pulse processing settings: 3 Maximum input count rate: up to 1,000,000 CPS Maximum output count rate: up to 300,000 CPS Quantification: standard less, ZAF corrected	
42.	Consumables	Consumable (like apertures, Rotary pump oil, Rotary pump filter, necessary O rings) required to run instrument for three years to be quoted as standard supply. Following consumables must also be quoted along with the instrument: Carbon conductive adhesive tape – 3 no.s Specimen Stubs – 30 nos.	
43.	Calibration sample	Standard sample calibration of SEM and EDS should be provided	
44.	On-Line UPS	Suitable on-line UPS (6kVA) with minimum 30 hour back up	
45.	Essential Accessories	• Track ball for imaging operations • IR Chamber scope: Chamber view camera (IR CCD) • Touch alarm safety detector for specimen stage and detectors. • TCP / IP Remote control Network interface &software for remote operations and on-line fault diagnostics. • All essential operating accessories like air compressor, water re-circulating chillers, gas cylinders, regulators, chillier, etc, if required have to be included in the offer.	
46.	Warranty	The instrument including UPS (if any) quoted for it should be under on-site Comprehensive warranty for three (3) years	

Sr.No.	Parameter	Details	Compliance (Yes/No)
		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. **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, i.e., the system should be covered for comprehensive warranty for 5 years from the tenderer. All parts including spares should be covered under the warranty and this fact should be clearly and explicitly specified in the tender document. The comprehensive Warranty should cover: (1) All parts including accessories, spares and labour on-site. (2) Free maintenance and service on-site or at factory (if needed) with no cost, and (3) Regular free up-gradation of software if any.	
47.	Installation and Training	The installation of the instrument should be done by service engineers at free of charge. Operational training should be provided free of charge at the university premises	
48.	Spare and consumables availability	Spares and consumables should be available up-to 10 years after installation and commissioning	
49.	Price	Please quote CIP and FOR Price DSIR certificate will be provided for custom duty exemption Custom clearance and local transportation are the responsibility of the vendor	
50.	Payment Terms	100% Letter of Credit (90% payment against shipping documents, 10% LC after installation and commissioning.	

4. Technical Specification for Physical Parameter Measurement System

S.No.	Parameters	Desired Specifications
1.	Base-System	a) System should be fully liquid cryogen-free, i.e., no requirement of externally supplied liquid Helium and/or liquid Nitrogen at any point of time. Single 2-stage Pulse Tube cryocooler to cool both the superconducting magnet and the temperature control system, providing a low vibration environment for sample measurement. Small amount of helium gas for its fully automated startup and operation.
		b) Any Liquid Helium and/or cold Helium gas flow into sample chamber or to any other parts within the system, and all low temperature operations must be handled in fully automated way through electronic and computer controls. The system should NOT have any manual control in the entire operation of the system.
		c) A dedicated window for monitoring cryostat status.
		d) System should have fully automatic and precise Temperature Controller, External Gas Flow to control the temperature automatically through PC and Software without manual intervention.
		e) The system should be equipped with sufficient number of thermometers at different stages / locations and on cryocooler and magnet to monitor their temperatures through the main operating software.
		f) For Ease of operation Suitable Sample Chamber with 30mm or better Sample space to accommodate sample mounting that, 6should allow accessibility to samples having up to at least six different contacts (for each sample) with corresponding electrical feedthroughs. The vendor must supply a pad mask file (in GDSII/Auto CAD format) for the contacts on the sample that can be used by users to prepare their device samples.
		g) Suitable Electronics and controllers like Current, Voltmeter, Temperature Controllers, Lock in amplifiers etc. should be chosen from very Reputed Suppliers, and have the capacity for interfacing over IEEE488.2/ModBUS standard.
		h) The system must have a large temperature controlled region, or sample chamber 30mm or more, that can either be under vacuum or use various exchange gases. Material samples can be measured either with, or without, measurement probes giving users more flexibility in research design and scope.
		i) The capability of the system performance and specifications have to be supported with valid and certified documents and published works along with list of installations worldwide including the contact details (address, phones and emails) of the

		customers. Supplier should also provide the List of the 100% Cryogen Free High Field 9T or more Magnet systems min 3 installations in India
2.	Superconducting magnet	a) ±9 Tesla or Higher field strength (longitudinal field) b) Sweep rate: Up to 200 Oe/sec. c) Field Homogeneity: ± 0.01 % over 3 cm on axis (for standard measurements without compromising the Specifications ± 0.1% is also OK) d) Magnet has to be cooled by solid conduction without any liquid helium. e) Magnet ramping (9T Or Higher) should not affect the temperature stability f) Thermometer directly on the magnet. Automatic discharge of the magnet if the cryocooler system fails (For example, due to water chiller failure.). g) Magnet control software monitors the temperature of the magnet and cryostat at various locations to ensure proper operation of the magnet system from quenches. h) Bi-polar power supply with over voltage protection and indication. i) Various operating modes: Linear, Oscillating, No Overshoot must be given in details. There should be no overshoot in the field or the tolerable overshoot in "No Overshoot" mode should be specified for various field strengths. j) A built in magnetic shield to maintain 5 gauss line < 30 cm from the surface of the cryostat cabinet allowing the system to be installed closer to other sensitive instrument for better lab space utilization (provide data). k) Magnet should be protected from quenches. l) Ultra Low Field to reduce the remnant field in the range of 20 to 30 mT with step of 1microTesla (this point should be included especially for higher field magnets like 9T and above)
3.	Temperature Control	a) Cryostat assembly continuous low temperature operation. All the operations must be completely automatic without user intervention. b) The system should enable cooling of samples from highest temperature to the lowest at the highest specified cooling rate at any given magnetic field of up to ±9 T or Higher magnetic Field without affecting the system performance including the heating of magnet. The same procedures should be hold for heating of the samples as well. c) System should have sophisticated temperature control and provide seamless transition between high temperature (400 K) with minimal cooling power needs, intermediate temperature with rapid slewing and large cooling needs and stable operation near the base temperature (< 1.8K) with cooling provided by evaporation of liquid helium. d) System should have sophisticated temperature control and provide seamless transition between high temperature (400 K) with minimal cooling power needs, intermediate temperature with rapid slewing and large cooling needs and stable

		operation near the base temperature (< 1.8K) with cooling provided by evaporation of liquid helium e) The sample chamber has to be sealed for controllable sample environment. Suitable Gas Handling mechanism to control the Sample temperature precisely. f) Temperature range of 1.8 (or lower) to 400 K with milli-Kelvin stability and accuracy. g) Temperature stability should be at least ±0.5 % for T < 10 K and ±0.05 % for T > 10 K irrespective of the magnitude of applied magnetic field. h) Accuracy: ± 1% and sweeping rate 0.01 to 30 K/min (10 K/min Heating) irrespective of the magnitude of applied magnetic field. i) Fast Settle, No Overshoot, and Sweep mode. j) Temperature control should be fully automated. k) System should have fully automatic and precise low Temperature Controller for continuous low temperature operation to allow the measurements < 4.2K continuously for long time l) Various modes of Fast settle, No overshoot, and sweep mode must be given in details.
4.	Vacuum pumps and fittings	System should come with suitable Vacuum pumps and fittings along with vacuum gauges, meter, standard vacuum coupling essential for the uninterrupted functioning of the instrument and its various measurements options must be included.
5.	Data acquisition and analysis	a) Licensed windows based operating software and State- of- the- art computer control system compatible with the measurement options with all the necessary hardware interface with National instruments (Or equivalent) data acquisition card. b) The software should allow user to select the type of measurement to be made, to create, store and retrieve measurement sequences and customize the range of variables measured at each point of a sequence. A licensed copy of the LabVIEW should be provided, allowing customer the access Temperature Control & Magnet control and other electronics to set his own customized measurement c) Remote user access to the system via Internet. d) The software must allow the users to remotely control and monitor experiments over any internet connection. e) Any necessary analysis software commonly offered by the bidder must be included.
6.	Accessories, tools, and documentatio	A complete set of spare fuses, O-rings, Hoses for chiller unit, Helium gas regulators, tools needed for user tasks, and complete set of manuals / documentation exhibiting compliance must be provided. A service manual with complete circuit diagram and

	n	PCB layout for all equipment to be provided with the instruments.
7.	Essential measurements	**a) *Electrical transport*** i) Both ac and dc electrical transport measurements must be possible. ii) 4-wire & 2-wire resistivity and simultaneous Hall effect measurement, I-V characteristics. The software should be programmable for differential resistance measurement (dV/dI vs. I or dV/dI vs V). iii) Simultaneous measurements of at least two samples with independent source and measure options must be provided. iv) A high impedance measurement using 2-wire measurement method must be possible for samples with impedance up to 5 GΩ or higher. v) Current Source: DC & AC, 10nA (or less) to 8 mA (or more) for both DC as well as AC should be possible. Frequency range of 1 Hz to 200 Hz or wider for ac measurements should be possible. vi) For sample mounting, in addition to standard mounting, an option for 16 pins (or higher) lead less chip carrier (LCC) must be provided. vii) Automated option for Van der Pauw and Hall effect measurements must be possible. **b) *DC Magnetization*** i) Temperature Range: 1.8K (or lower)– 400K (or above). ii) Magnetic Field: ≥ ± 14 Tesla. iii) Top loading sample arrangement, sample mounting. iv) VSM measurements should be possible: VSM sample holders for powder, bulk (polycrystalline and single crystal samples) and thin- films. v) VSM Oscillation Frequency (calibrated): Range of 20 - 60 Hz or wider. vi) RMS Sensitivity at Field B: 5 x 10 -6 emu or better vii) Suitable sample holders for powder, pellets and thin films. Possibilities for measurements in parallel & perpendicular to applied magnetic Field must be provided. viii) Measurement Range: 10 -6 to 100 emu ix) Maximum amplitude should be 2mm or higher x) VSM must support software-based auto positioning of the sample xi) coil with suitable bore to adapt the sample of 5 mm or smaller xii) NIST based samples must be provided for calibration of magnetic moment at low and high magnetic fields/temperatures **c) *AC Susceptibility*** i) Temperature Range: 2 K – 350 K (or wider) ii) Magnetic Field: ≥ ± 14 Tesla.

		iii) Accuracy: 5% or better over entire temperature and field range. iv) Frequency Range: 10Hz – 10KHz or wider. v) Must have higher harmonic measurement option vi) Sensitivity should be 10 -7 emu OR better(for AC measurements) and 3×10 -5 emu (DC measurements). vii) Phase Setting accuracy (Real & Imaginary part) : 0.1 0 **d) Thermal Transport** *i*) Temperature range 1.8 K to 350K or higher, with a capability to measure thermal conductivity, Seebeck coefficient, thermoelectric figure of merit ii) Thermal conductance measurement accuracy: ± 5 % or better iii) Typical accuracy of the Seebeck coefficient: ± 5 % or better iv) Seebeck coefficient measurement range: 1 μV/K to 1 V/K or wider.
8.	***Water Chiller Unit***	Suitable closed cycle water chiller unit with the suitable capacity for trouble free continuous running of the main PPMS system.
9.	***Multi-Function Probe***	(a) Consistent with the optional specification 1, the multi-function probe should facilitate easy access to the axial ports and connectors which can be configured to route electrical and thermometer connectors to the sample space. Should have facility to mount the sample Parallel or Perpendicular to the Magnetic Field. Suitable Cernox Temperature sensor should be incorporated to precisely control the temp from 1.6K to 400K. (b) There should be direct axial electrical and other ports to sample stage provided to install any needed electrical and thermometer leads. (c) It must have at least 2 sets of 4 electrical leads on sample PCB interface for electrical transport experiments 12 Pin Fisher socket for sample electrical contacts and 6 pin Fisher sockets for Heater and thermometer wiring. (d) Sample stage should have integrated thermometer (e) Sufficient supporting information must be provided with the offer.
10.	***Installation requirements***	a) Bid should contain information about the requirement of helium gas replenishment. b) Pre-installation site preparation requirements to be included and specified along with the bid. c) The bid should also indicate what kind of service/maintenance is required for the system. Whether this service has to be carried out by a company engineer or can it be done by trained service personal within India.
11.	***Demonstration and standard***	Standard samples to be provided by the company for testing the instruments at the time of installation on site to the quoted accuracy in the given technical specifications for the demonstration of the performance of the equipment. Guaranteed specifications

	samples	to be demonstrated at the time of installation. Any necessary standard samples for that purpose should be brought by the service engineers.
12.	***Additional requirements***	a) In addition to the technical specifications listed in this table, the bidder must satisfy all terms listed under optional items table below for future upgradability. b) The offer must be supported with the measurement data and refereed literature. Mere statement of compliance will not be considered sufficient. Technical evaluation by the institute may include demonstration to verify functionalities and capabilities of the system quoted. Vendor must submit factory acceptance test procedures supported with relevant printed literature and certificates. c) **Installation in India:** List of similar equipments installed during last five years in institutes like IIT/NISER/IISER/NIT's/Universities/DAE Units/Defence units in India with Contact person name, address and phone number, email id must be specified. The vendor must have supplied and installed at least 3 to 4 similar equipment in the above institutes in last five years plus the track record of old cryogen free High magnetic field systems in past 10 years. d) No part shipment will be acceptable.
13.	***Warranty***	The instrument including UPS (if any) 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 parts. Any repair work or replacement of spares needs to be done on-site, the manufacturer must confirm this in their quotation. **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, i.e., the system should be covered for comprehensive warranty for 5 years from the tenderer. All parts including spares should be covered under the warranty and this fact should be clearly and explicitly specified in the tender document. The comprehensive Warranty should cover: (1) All parts including accessories, spares and labour on-site. (2) Free maintenance and service on-site or at factory (if needed) with no cost, and (3) Regular free up-gradation of software if any.
14.	***Power Supply***	Should meet Indian Power standards preferably without use of external converters.
15.	***System Consumable Parts***	Basic frequently required spares should be provided for the entire period of extended warranty and for an extended period of next 5-years. A list of these items should be attached with the quotation.
16.	***Installation and Commissioni***	i) Installation, complete interfacing of the system with its subsystems, and commissioning is 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.

	ng	ii) An estimated time schedule for installation, commissioning and training must be provided.
17.	***Training***	i) The manufacturer/supplier of Custom Physical Parameter Measurement System should provide at least seven days onsite training initially during installation. ii) The supplier or manufacturer should also provide dedicated five days advanced training subsequent to the above training installation. iii) Regular follow up training every six months during the period of extended warranty 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***	1. 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 Jiwaji University, Gwalior within 48 hours on submitting a complaint. Training certificates from the manufacturer have to be provided with the tender. 2. For warranty period only factory trained and certified engineers are acceptable to attend the service. 3. The response time with an engineer on site must be less than 48 hours from the notification of the failure. The company must provide evidence that it can fulfil this requirement. 4. In case the parts are required to be imported for repairs, the same should be made available within 2 weeks from the date of reporting of the issue. Any extension in this time will need to be compensated by the manufacturer by extending the comprehensive warranty by the excess period taken (i.e. period beyond 2 weeks) in completing the repairs. 5. A 10% performance guarantee will need to be maintained during the period of extended warranty.

l. No.	List of optional items
1	***Measurements***
	a) Optical and optoelectronic measurements
	The system should have 4 quartz windows connected to the cold space so that optical measurements like photoluminescence (using externally coupled light sources through an optical fiber, with external detectors using another set of optical fibers) and electroluminescence (using electrical feed through for stimulus, and optical fibers for out coupled light for optoelectronic measurements) can be carried out. All optical fibers (SMA905/FC1 only) should be external to the cold space and never undergo thermal cycling during use. This may be accomplished by providing a specially designed annular optical assembly that mounts externally in a unique way on to the 4 quartz windows and uses 45 degree mirrors to couple light signals in/out of 4 fixed (but user replaceable) optical fibers, which are thus never bent inside the system. The optical assembly should be thin enough to mount in the annular space between the cold space and the enclosing magnet so that optical and optoelectronic measurements can be made under the system magnetic field. The assembly should be easily user mountable in a unique and easily identifiable manner for quick mounting and removal for different experiments. The length of the optical fibers should be sufficient to connect to external equipment such as light sources, optical power meters, spectrometers, etc.
	b) Magneto Optical Measurements:
	i) Consistent with specification a) above, this option should allow a sample to be illuminated by an external light source while conducting magnetic measurements. Option should include all the necessary parts and components to generate light for a certain wavelength and couple it in a fiber optic to transfer the light to the sample during magnetic measurement.
	ii) This option must be provided with a high power Xenon lamp source with housing, Variable lamp power supply, multiple position filter wheel, set of bandpass filters, Dichroic mirror, Fiber coupling optics and SMA connector for the fiber delivery and safety components.
	iii) A high-resolution CCD cooled spectrometer, such as Acton PI, along with needed fiber optic coupling should be provided.
	iv) Temperature range 1.8 K to 400K
	c) FMR measurements:
	i) Frequency bandwidth: 2-8 GHz or wider
	ii) Temperature range: 5 K -350 K or wider
	iii) Magnetic field: up to 9 T or higher
	d) Electrical Transport measurements
	i) Possibility for two axes rotation of samples in magnetic field should be included.
2.	Additional accessories to enable use of He_3 as the working gas for refrigeration.

ANNEXURE-I

COMPLIANCE SHEET

TECHNICAL SPECIFICATION

Physical Parameter Measurement System **Quantity: 1 no.**

S.No.	Parameters	Desired Specifications	Compliance (Yes/No)
1.	Base-System	a) System should be fully liquid cryogen-free, i.e., no requirement of externally supplied liquid Helium and/or liquid Nitrogen at any point of time. Single 2-stage Pulse Tube cryocooler to cool both the superconducting magnet and the temperature control system, providing a low vibration environment for sample measurement. Small amount of helium gas for its fully automated startup and operation.	
		b) Any Liquid Helium and/or cold Helium gas flow into sample chamber or to any other parts within the system, and all low temperature operations must be handled in fully automated way through electronic and computer controls. The system should NOT have any manual control in the entire operation of the system.	
		c) A dedicated window for monitoring cryostat status.	
		d) System should have fully automatic and precise Temperature Controller, External Gas Flow to control the temperature automatically through PC and Software without manual intervention.	
		e) The system should be equipped with sufficient number of thermometers at different stages / locations and on cryocooler and magnet to monitor their temperatures through the main operating software.	
		f) For Ease of operation Suitable Sample Chamber with 30mm or better Sample space to accommodate sample mounting that, 6should allow accessibility to samples having up to at least six different contacts (for each sample) with corresponding electrical feedthroughs. The vendor must supply a pad mask file (in GDSII/Auto CAD format) for the contacts on the sample that can be used by users to prepare their device samples.	

		g) Suitable Electronics and controllers like Current, Voltmeter, Temperature Controllers, Lock in amplifiers etc. should be chosen from very Reputed Suppliers, and have the capacity for interfacing over IEEE488.2/ModBUS standard.	
		h) The system must have a large temperature controlled region, or sample chamber 30mm or more, that can either be under vacuum or use various exchange gases. Material samples can be measured either with, or without, measurement probes giving users more flexibility in research design and scope.	
		i) The capability of the system performance and specifications have to be supported with valid and certified documents and published works along with list of installations worldwide including the contact details (address, phones and emails) of the customers. Supplier should also provide the List of the 100% Cryogen Free High Field 9T or more Magnet systems min 3 installations in India	
2.	Superconducting magnet	a) ±9 Tesla or Higher field strength (longitudinal field) b) Sweep rate: Up to 200 Oe/sec. c) Field Homogeneity: ± 0.01 % over 3 cm on axis (for standard measurements without compromising the Specifications ± 0.1% is also OK) d) Magnet has to be cooled by solid conduction without any liquid helium. e) Magnet ramping (9T Or Higher) should not affect the temperature stability f) Thermometer directly on the magnet. Automatic discharge of the magnet if the cryocooler system fails (For example, due to water chiller failure.). g) Magnet control software monitors the temperature of the magnet and cryostat at various locations to ensure proper operation of the magnet system from quenches. h) Bi-polar power supply with over voltage protection and indication. i) Various operating modes: Linear, Oscillating, No Overshoot must be given in details. There should be no overshoot in the field or the tolerable overshoot in "No Overshoot" mode should be specified for various field strengths. j) A built in magnetic shield to maintain 5 gauss line < 30 cm from the surface of the cryostat cabinet allowing the system to be installed closer to other sensitive instrument for better lab space utilization (provide data).	

		k) Magnet should be protected from quenches. l) Ultra Low Field to reduce the remnant field in the range of 20 to 30 mT with step of 1microTesla (this point should be included especially for higher field magnets like 9T and above)	
3.	Temperature Control	a) Cryostat assembly continuous low temperature operation. All the operations must be completely automatic without user intervention. b) The system should enable cooling of samples from highest temperature to the lowest at the highest specified cooling rate at any given magnetic field of up to ±9 T or Higher magnetic Field without affecting the system performance including the heating of magnet. The same procedures should be hold for heating of the samples as well. c) System should have sophisticated temperature control and provide seamless transition between high temperature (400 K) with minimal cooling power needs, intermediate temperature with rapid slewing and large cooling needs and stable operation near the base temperature (< 1.8K) with cooling provided by evaporation of liquid helium. d) System should have sophisticated temperature control and provide seamless transition between high temperature (400 K) with minimal cooling power needs, intermediate temperature with rapid slewing and large cooling needs and stable operation near the base temperature (< 1.8K) with cooling provided by evaporation of liquid helium e) The sample chamber has to be sealed for controllable sample environment. Suitable Gas Handling mechanism to control the Sample temperature precisely. f) Temperature range of 1.8 (or lower) to 400 K with milli-Kelvin stability and accuracy. g) Temperature stability should be at least ±0.5 % for T < 10 K and ±0.05 % for T > 10 K irrespective of the magnitude of applied magnetic field. h) Accuracy: ± 1% and sweeping rate 0.01 to 30 K/min (10 K/min Heating) irrespective of the magnitude of applied magnetic field. i) Fast Settle, No Overshoot, and Sweep mode. j) Temperature control should be fully automated. k) System should have fully automatic and precise low Temperature Controller for continuous low temperature operation to allow the measurements < 4.2K continuously for long time l) Various modes of Fast settle, No overshoot, and sweep mode must be given in details.	
4.	Vacuum	System should come with suitable Vacuum pumps and fittings along	

	pumps and fittings	with vacuum gauges, meter, standard vacuum coupling essential for the uninterrupted functioning of the instrument and its various measurements options must be included.	
5.	Data acquisition and analysis	a) Licensed windows based operating software and State- of- the- art computer control system compatible with the measurement options with all the necessary hardware interface with National instruments (Or equivalent) data acquisition card. b) The software should allow user to select the type of measurement to be made, to create, store and retrieve measurement sequences and customize the range of variables measured at each point of a sequence. A licensed copy of the LabVIEW should be provided, allowing customer the access Temperature Control & Magnet control and other electronics to set his own customized measurement c) Remote user access to the system via Internet. d) The software must allow the users to remotely control and monitor experiments over any internet connection. e) Any necessary analysis software commonly offered by the bidder must be included.	
6.	Accessories, tools, and documentation	A complete set of spare fuses, O-rings, Hoses for chiller unit, Helium gas regulators, tools needed for user tasks, and complete set of manuals / documentation exhibiting compliance must be provided. A service manual with complete circuit diagram and PCB layout for all equipment to be provided with the instruments.	
7.	Essential measurements	**a)** ***Electrical transport*** i) Both ac and dc electrical transport measurements must be possible. ii) 4-wire & 2-wire resistivity and simultaneous Hall effect measurement, I-V characteristics. The software should be programmable for differential resistance measurement (dV/dI vs. I or dV/dI vs V). iii) Simultaneous measurements of at least two samples with independent source and measure options must be provided. iv) A high impedance measurement using 2-wire measurement method must be possible for samples with impedance up to 5 GΩ or higher. v) Current Source: DC & AC, 10nA (or less) to 8 mA (or more) for both DC as well as AC should be possible. Frequency range of 1 Hz to 200 Hz or wider for ac measurements should be possible. vi) For sample mounting, in addition to standard mounting, an option	

		for 16 pins (or higher) lead less chip carrier (LCC) must be provided. vii) Automated option for Van der Pauw and Hall effect measurements must be possible. **b) *DC Magnetization*** i) Temperature Range: 1.8K (or lower)– 400K (or above). ii) Magnetic Field: ≥ ± 14 Tesla. iii) Top loading sample arrangement, sample mounting. iv) VSM measurements should be possible: VSM sample holders for powder, bulk (polycrystalline and single crystal samples) and thin- films. v) VSM Oscillation Frequency (calibrated): Range of 20 - 60 Hz or wider. vi) RMS Sensitivity at Field B: 5 x 10 -6 emu or better vii) Suitable sample holders for powder, pellets and thin films. Possibilities for measurements in parallel & perpendicular to applied magnetic Field must be provided. viii) Measurement Range: 10 -6 to 100 emu ix) Maximum amplitude should be 2mm or higher x) VSM must support software-based auto positioning of the sample xi) coil with suitable bore to adapt the sample of 5 mm or smaller xii) NIST based samples must be provided for calibration of magnetic moment at low and high magnetic fields/temperatures **c) *AC Susceptibility*** i) Temperature Range: 2 K – 350 K (or wider) ii) Magnetic Field: ≥ ± 14 Tesla. iii) Accuracy: 5% or better over entire temperature and field range. iv) Frequency Range: 10Hz – 10KHz or wider. v) Must have higher harmonic measurement option vi) Sensitivity should be 10 -7 emu OR better(for AC measurements) and 3×10 -5 emu (DC measurements). vii) Phase Setting accuracy (Real & Imaginary part) : 0.1 0 **d) Thermal Transport** *i*) Temperature range 1.8 K to 350K or higher, with a capability to measure thermal conductivity, Seebeck coefficient, thermoelectric figure of merit ii) Thermal conductance measurement accuracy: ± 5 % or better	

		iii) Typical accuracy of the Seebeck coefficient: ± 5 % or better iv) Seebeck coefficient measurement range: 1 μV/K to 1 V/K or wider.	
8.	***Water Chiller Unit***	Suitable closed cycle water chiller unit with the suitable capacity for trouble free continuous running of the main PPMS system.	
9.	***Multi-Function Probe***	(a) Consistent with the optional specification 1, the multi-function probe should facilitate easy access to the axial ports and connectors which can be configured to route electrical and thermometer connectors to the sample space. Should have facility to mount the sample Parallel or Perpendicular to the Magnetic Field. Suitable Cernox Temperature sensor should be incorporated to precisely control the temp from 1.6K to 400K. (b) There should be direct axial electrical and other ports to sample stage provided to install any needed electrical and thermometer leads. (c) It must have at least 2 sets of 4 electrical leads on sample PCB interface for electrical transport experiments 12 Pin Fisher socket for sample electrical contacts and 6 pin Fisher sockets for Heater and thermometer wiring. (d) Sample stage should have integrated thermometer (e) Sufficient supporting information must be provided with the offer.	
10.	***Installation requirements***	a) Bid should contain information about the requirement of helium gas replenishment. b) Pre-installation site preparation requirements to be included and specified along with the bid. c) The bid should also indicate what kind of service/maintenance is required for the system. Whether this service has to be carried out by a company engineer or can it be done by trained service personal within India.	
11.	***Demonstration and standard samples***	Standard samples to be provided by the company for testing the instruments at the time of installation on site to the quoted accuracy in the given technical specifications for the demonstration of the performance of the equipment. Guaranteed specifications to be demonstrated at the time of installation. Any necessary standard samples for that purpose should be brought by the service engineers.	
12.	***Additional requirements***	a) In addition to the technical specifications listed in this table, the bidder must satisfy all terms listed under optional items table below for future upgradability.	

		b) The offer must be supported with the measurement data and refereed literature. Mere statement of compliance will not be considered sufficient. Technical evaluation by the institute may include demonstration to verify functionalities and capabilities of the system quoted. Vendor must submit factory acceptance test procedures supported with relevant printed literature and certificates. c) **Installation in India:** List of similar equipments installed during last five years in institutes like IIT/NISER/IISER/NIT's/Universities/DAE Units/Defence units in India with Contact person name, address and phone number, email id must be specified. The vendor must have supplied and installed at least 3 to 4 similar equipment in the above institutes in last five years plus the track record of old cryogen free High magnetic field systems in past 10 years. d) No part shipment will be acceptable.	
13.	***Warranty***	The instrument including UPS (if any) 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 parts. Any repair work or replacement of spares needs to be done on-site, the manufacturer must confirm this in their quotation. **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, i.e., the system should be covered for comprehensive warranty for 5 years from the tenderer. All parts including spares should be covered under the warranty and this fact should be clearly and explicitly specified in the tender document. The comprehensive Warranty should cover: (1) All parts including accessories, spares and labour on-site. (2) Free maintenance and service on-site or at factory (if needed) with no cost, and (3) Regular free up-gradation of software if any.	
14.	***Power Supply***	Should meet Indian Power standards preferably without use of external converters.	
15.	***System Consumable Parts***	Basic frequently required spares should be provided for the entire period of extended warranty and for an extended period of next 5-years. A list of these items should be attached with the quotation.	
16.	***Installation and Commissioni***	i) Installation, complete interfacing of the system with its subsystems, and commissioning is to be carried out by the vendor's factory-trained engineers, followed by a demonstration of the system's performance	

	ng	to the user's complete satisfaction. ii) An estimated time schedule for installation, commissioning and training must be provided.	
17.	***Training***	i) The manufacturer/supplier of Custom Physical Parameter Measurement System should provide at least seven days onsite training initially during installation. ii) The supplier or manufacturer should also provide dedicated five days advanced training subsequent to the above training installation. iii) Regular follow up training every six months during the period of extended warranty 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***	1. 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 Jiwaji University, Gwalior within 48 hours on submitting a complaint. Training certificates from the manufacturer have to be provided with the tender. 2. For warranty period only factory trained and certified engineers are acceptable to attend the service. 3. The response time with an engineer on site must be less than 48 hours from the notification of the failure. The company must provide evidence that it can fulfil this requirement. 4. In case the parts are required to be imported for repairs, the same should be made available within 2 weeks from the date of reporting of the issue. Any extension in this time will need to be compensated by the manufacturer by extending the comprehensive warranty by the excess period taken (i.e. period beyond 2 weeks) in completing the repairs. 5. A 10% performance guarantee will need to be maintained during the period of extended warranty.	

l. No.	**List of optional items**	Compliance (Yes/No)
1	***Measurements***	
	a) Optical and optoelectronic measurements	
	The system should have 4 quartz windows connected to the cold space so that optical measurements like photoluminescence (using externally coupled light sources through an optical fiber, with external detectors using another set of optical fibers) and electroluminescence (using electrical feed through for stimulus, and optical fibers for out coupled light for optoelectronic measurements) can be carried out. All optical fibers (SMA905/FC1 only) should be external to the cold space and never undergo thermal cycling during use. This may be accomplished by providing a specially designed annular optical assembly that mounts externally in a unique way on to the 4 quartz windows and uses 45 degree mirrors to couple light signals in/out of 4 fixed (but user replaceable) optical fibers, which are thus never bent inside the system. The optical assembly should be thin enough to mount in the annular space between the cold space and the enclosing magnet so that optical and optoelectronic measurements can be made under the system magnetic field. The assembly should be easily user mountable in a unique and easily identifiable manner for quick mounting and removal for different experiments. The length of the optical fibers should be sufficient to connect to external equipment such as light sources, optical power meters, spectrometers, etc.	
	b) Magneto Optical Measurements:	
	i) Consistent with specification a) above, this option should allow a sample to be illuminated by an external light source while conducting magnetic measurements. Option should include all the necessary parts and components to generate light for a certain wavelength and couple it in a fiber optic to transfer the light to the sample during magnetic measurement.	
	ii) This option must be provided with a high power Xenon lamp source with housing, Variable lamp power supply, multiple position filter wheel, set of bandpass filters, Dichroic mirror, Fiber coupling optics and SMA connector for the fiber delivery and safety components.	
	iii) A high-resolution CCD cooled spectrometer, such as Acton PI, along with needed fiber optic coupling should be provided.	
	iv) Temperature range 1.8 K to 400K	
	c) FMR measurements:	
	i) Frequency bandwidth: 2-8 GHz or wider	
	ii) Temperature range: 5 K -350 K or wider	
	iii) Magnetic field: up to 9 T or higher	
	d) Electrical Transport measurements	

	i) Possibility for two axes rotation of samples in magnetic field should be included.	
2.	Additional accessories to enable use of He_3 as the working gas for refrigeration.	

5. 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 6 minutes.
3.	It should be fully automated having facility of automated transfer of the sample.
4.	It should be auto sampler (Range 50-150 samples).
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 of the sample
9.	System should include Software which can store data and handle for statistical analysis and report generation.
10.	Measuring range: carbon from 0.02 mg to 3 mg or better.
11.	Measuring range: Hydrogen from 0.1 to 1 mg or better.
12.	Measuring range: Nitrogen: 0.04 to 50 mg.
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.	Installation Commissioning and Application training: Free of cost at site for a group of technical staff/ students for operating the instrument.
16.	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.
17.	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**.**
18.	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.
19.	Performance: Satisfactory performance of instrument and after sales service from existing users will be considered by the committee in evaluating the technical bid.
20.	Validity of Quotation: Minimum 3 months.
21.	Submission of Bids: Tender should be submitted in two parts- Technical and Financial.

ANNEXURE-I

COMPLIANCE SHEET

TECHNICAL SPECIFICATION

CHN Analyzer **Quantity: 1 no.**

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 6 minutes.	
3.	It should be fully automated having facility of automated transfer of the sample.	
4.	It should be auto sampler (Range 50-150 samples).	
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 of the sample	
9.	System should include Software which can store data and handle for statistical analysis and report generation.	
10.	Measuring range: carbon from 0.02 mg to 3 mg or better.	
11.	Measuring range: Hydrogen from 0.1 to 1 mg or better.	
12.	Measuring range: Nitrogen: 0.04 to 50 mg.	
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.	Installation Commissioning and Application training: Free of cost at site for a group of technical staff/ students for operating the instrument.	
16.	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.	
17.	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**.**	
18.	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.	
19.	Performance: Satisfactory performance of instrument and after sales service from existing users will be considered by the committee in evaluating the technical bid.	
20.	Validity of Quotation: Minimum 3 months.	
21.	Submission of Bids: Tender should be submitted in two parts- Technical and Financial.	

6. Technical Specification for Total Organic Carbon (TOC) Analyzer

Sr. No.	Specification and Description
1.	Limit of detection: 0.05 ppm
2.	Sample temperature range: 10-60°C
3.	Analysis Modes: TIC, NPOC, TC, TOC, (TC-TIC)
4.	Calibration stability: up to 6 months
5.	Result time should be less (Approx. 15-20 min.)
6.	Measuring Range should be up to 50, 000 ppm
7.	Maximum Relative Humidity: Up to 95%, non-condensing
8.	Drain: Gravity drain
9.	Pre-installation requirement: Necessary pre-installation advice should be sent immediately after the placement of the order.
10.	Installation Commissioning and Application training: Free of cost at site for a group of technical staff/ students for operating the instrument.
11.	Warranty: The instrument Total Organic Carbon(TOC) 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.
12.	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**.**
13.	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.
14.	Performance: Satisfactory performance of instrument and after sales service from existing users will be considered by the committee in evaluating the technical bid.
15.	Validity of Quotation: Minimum 3 months.
16.	Submission of Bids: Tender should be submitted in two parts- Technical and Financial.

ANNEXURE-I

COMPLIANCE SHEET

TECHNICAL SPECIFICATION

Total Organic Carbon (TOC) Analyzer **Quantity: 1 no.**

Sr. No.	Specification and Description	Compliance (Yes/No)
1.	Limit of detection: 0.05 ppm	
2.	Sample temperature range: 10-60°C	
3.	Analysis Modes: TIC, NPOC, TC, TOC, (TC-TIC)	
4.	Calibration stability: up to 6 months	
5.	Result time should be less (Approx. 15-20 min.)	
6.	Measuring Range should be up to 50, 000 ppm	
7.	Maximum Relative Humidity: Up to 95%, non-condensing	
8.	Drain: Gravity drain	
9.	Pre-installation requirement: Necessary pre-installation advice should be sent immediately after the placement of the order.	
10.	Installation Commissioning and Application training: Free of cost at site for a group of technical staff/ students for operating the instrument.	
11.	Warranty: The instrument Total Organic Carbon(TOC) 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.	
12.	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**.**	
13.	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.	
14.	Performance: Satisfactory performance of instrument and after sales service from existing users will be considered by the committee in evaluating the technical bid.	
15.	Validity of Quotation: Minimum 3 months.	
16.	Submission of Bids: Tender should be submitted in two parts- Technical and Financial.	

7. 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.	TFT 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
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
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.

ANNEXURE-I

COMPLIANCE SHEET

TECHNICAL SPECIFICATION

Aerosol Mass Monitor **Quantity: 1 no.**

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.	TFT 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	
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	
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.	

8. Technical Specifications for Microarray System

1. The system should be fully functional and preferably open system with high speed microarray system having high resolution technology and high dynamic range, compatible programmable hybridization and latest version of software to support all functions. The latest version of the system should be quoted.

2. System Specification

a. System that supports rapid, sensitive, and accurate solution for exceptional genetic analysis results.

b. The system should handle RNA and DNA assay with high sensitivity and suited for various applications like: transcriptome/expression profiling, micro-RNA profiling, DNA methylation, Copy Number variation splice variants, SNP genotyping, or digital microarray, etc.

c. The system must offer high sensitivity and high specificity, while increasing resolution to map copy number aberration breakpoints, identify smaller gains and losses, and provide more comprehensive whole genome coverage

d. System must be with confocal/non-confocal/digital optic technology system should have in-built autoloader for walk away loading which can of microarray slides/beads/array or capable to do direct counting.

e. Should accept standard Glass microarray slides or Bead arrays or Quartz chip arrays or in-solution hybridization technology.

f. System should be compatible with various flourophores

g. It should provide latest version of powerful, integrated software which is widely recognized and accepted as international and industry standard.

h. Data workstations with latest features and fully compatible with the Instrument software must be provided along with the system.

i. The system must support catalog and custom assay designs that help in application such as – discovery of new pathways, disease associated marker identification, elucidation of drug targets and mechanism of its action, detection of the disease, study of disease prognosis and its classification and toxicological studies.

3. Sample Preparation and Quality Check

a. High throughput Instrument with Scalable sample throughput must be provided along with Scanner. The system should be microfluidics-based chip electrophoresis and be able to run and analyse 96 samples in a single run.

b. All required licensed software's must be provided along with the Instrument.

c. Reagents for at least 300 samples for both DNA & RNA must be provided.

d. System should also include Qubit for quantitation.

e. Essential Accessory Instruments for Microarray validation (QPCR & PCR) should be provided with a 96-sample format, able to do at least 3 color multiplexing and a table-top refrigerated microcentrifuge with rotors devoted to the system only.

f. The vendor should also quote nano-volume spectrophotometer for quantifying nucleic acids, proteins and cells with easy-application and user-friendly software.

4. Hybridizer system

a. The hybridization system must be compatible with the microarray scanner quoted by the bidder.

b. Fully programmable hybridization system to minimize handling of microarray slides/chips during all steps of hybridization.

c. System should support advanced features, including variable and adjustable temperatures and speed.

d. Should possess wide operating temperature range

e. Should be supplied with compatible microarray chambers/cassettes to handle at least 12 or more microarray slides and suited for batch processing.

5. Assays:

a. Assay for at least 24 samples for Gene Expression, along with 5-6 different custom designs, 16-20 or more arrays of each of these 5 designs, must be provided along with the system. The design for custom arrays can be provided at a later stage.

b. The manufacturer should preferably be the manufacturer of the catalogue and custom arrays and reagents to provide complete support.

c. Trained manpower needs to be provided for 3 years to run the array facility.

6. Software for Cyto & Expression Assays

a. Should be able to offer streamlined workflow that is automation enabled for data upload and analysis. Contains optimized algorithms for accurate detection of copy-number changes and SNP.

b. The software must be able to suppress, classify, edit and annotate aberrations and report generation.

c. Software for Gene expression (Both m-RNA & mi-RNA) with Pathway analysis must be provided along with the machine.

d. The provided software should be installable in at least three computers for an ease of simultaneous analysis of larger data size.

7. Warranty & Maintenance

a. Warranty: The instrument (name) 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. Rates for spares accessories and other units be distinctly mentioned and not as "inclusive of all" to enable making decision/choice of procurement.

b. 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

8. Installation & Service Support:

a. Bidder should clearly specify the after-sale service & application support capabilities.

b. The bidder should provide list of all pre-installation requirements. Warranty certificate needs to be on Principal's Letter Head.

c. A compatible 5KVA on-line UPS with at least two-hour battery backup on full load to support whole microarray setup.

d. Bidder should provide at least two onsite trainings per year during the warranty/CMC period to demonstrate all the specified applications.

e. Bidder should also provide detailed list of users of the quoted system in India with contact details and users satisfaction from at least 3 Indian users (reputed institutions) in the last 3-4 years.

f. All the bidders must quote the complete system in the main offer as per specifications. Bidders quoting for an item asked in main specifications as optional are liable to face disqualification.

g. Required/customized furniture to place/ house the complete system with no vibration/ free from outside disturbance should also be supplied along with.

ANNEXURE – 06

'INSTRUCTIONS TO BIDDERS'

Downloading of Tender Documents : : 15-09-2021 (05:00 PM)

e-Bid Submission Closing Date : : 18-09-2021 (05:00 PM)

Date of Opening of Technical Bids : : 21-09-2021 (3:00 noon)

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", .

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 –

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 (LC will be opened in case of imported equipments if quoted in foreign exchange) and after furnishing of Bank Guarantee / FDR for 10% 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.

3. **Price Basis** :

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

(a) Transit Insurance :

(b) All Taxes, Duties and Levies.

Note :- Company should attach a letter stating in which currency they have quoted the price in price bid form. In case of imported equipment price has to be quoted in the currency of country of origil tailing which tender will be rejected.

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 120 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. In case of imported equipments LC will be opened.**

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 (10% 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 10% 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.

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 these actions 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.

2.8.4 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 :- Suplply 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. 100/-(Rs. One Hundred)

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_____2021'

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.

Notwithstanding any thing 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 or no (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 representative of equipment or other respective products/items	
3	IT returns for the last three financial years., 2017-2018 , 2018-2019, 2019-2020.	
4	Technical Specifications of Annexure- 05 (Complied or Not-Complied report) along with supporting documents of the items bided (items 1 to 21), 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 ....., 2021 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 reference no. _____ 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	
			Price in Rs. $, €, ¥ Foreign Exchange Equivalent (Inclusive of All Taxes)	
			In Figure	In words
1.	Supply & Installation of Single Crystal X-ray Diffractometer	01		

(SIGNATURE OF THE BIDDER WITH NAME & SEAL)

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	
			Price in Rs. $, €, ¥ Foreign Exchange Equivalent (Inclusive of All Taxes)	
			In Figure	In words
1.	Supply & Installation of Benchtop NMR Spectrometer	01		

(SIGNATURE OF THE BIDDER WITH NAME & SEAL)

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	
			Price in Rs. $, €, ¥ Foreign Exchange Equivalent (Inclusive of All Taxes)	
			In Figure	In words
1.	Supply & Installation of SEM-EDAX	01		

(SIGNATURE OF THE BIDDER WITH NAME & SEAL)

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	
			Price in Rs. $, €, ¥ Foreign Exchange Equivalent (Inclusive of All Taxes)	
			In Figure	In words
1.	Supply & Installation of PPMS	01		

(SIGNATURE OF THE BIDDER WITH NAME & SEAL)

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	
			Price in Rs. $, €, ¥ Foreign Exchange Equivalent (Inclusive of All Taxes)	
			In Figure	In words
1.	Supply & Installation of CHN Analyser	01		

(SIGNATURE OF THE BIDDER WITH NAME & SEAL)

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	
			Price in Rs. $, €, ¥ Foreign Exchange Equivalent (Inclusive of All Taxes)	
			In Figure	In words
1.	Supply & Installation of Total Organic Carbon System	01		

(SIGNATURE OF THE BIDDER WITH NAME & SEAL)

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	
			Price in Rs. $, €, ¥ Foreign Exchange Equivalent (Inclusive of All Taxes)	
			In Figure	In words
1.	Supply & Installation of Aerosol Mass monitor	01		

(SIGNATURE OF THE BIDDER WITH NAME & SEAL)

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	
			Price in Rs. $, €, ¥ Foreign Exchange Equivalent (Inclusive of All Taxes)	
			In Figure	In words
1.	Supply & Installation of Microarray System	01		

(SIGNATURE OF THE BIDDER WITH NAME & SEAL)