

Pt. Ravishankar Shukla University, Raipur (C.G.)

No. 42/Dev./2020

Date 31/01/2020

OPEN TENDER NOTICE

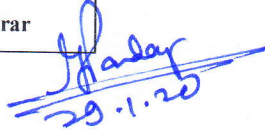
FIRST CALL

Bid from OEM or their authorized agents invited for Lab Equipments, smart classes solutions, HPC and other equipments. Details and tender documents can be downloaded from the university website [www.prsu.ac.in](http://www.prsu.ac.in).

Last date for submission of tender document is ~~30-03-2020~~

Bid Opening date ~~23-02-2020~~ at 11:00 am.

Registrar

  
29.1.20



**TENDER DOCUMENT**

TENDER FOR SUPPLY & INSTALLATION OF

**LAB EQUIPMENTS**

UNDER

TWO BID SYSTEM

# Pt. Ravishankar Shukla University

**Amanaka, G.E.Road, Raipur (C.G.) 492010**

Phone: 0771-2262540 , email registrarprsu@gmail.com

**Dated: 1/02/2020**

## **Notice Inviting Tender No. : 42/Dev/2020**

Sealed tender invited on behalf of the Pt.Ravishankar Shukla University, Raipur from the Original Equipment Manufacturer or their authorized dealers for the **Supply & Installation of Lab Equipments** in two-bid format for the laboratory of the institute as per the specifications in **Annexure-I** in two bid system. The tender document can be downloaded from the Institute website at URL Link: <http://www.prsu.ac.in>

### 1. Schedule

Date of Issue/Publishing	01-02-2020
Last Date and Time for submission of Bids	20-02-2020
Date and Time of Opening of Technical Bids	22-02-2020 at 11:00 AM
Tender Fee	Rs. 1000/- (For Tender Fee)
EMD	As specified in the Technical Specification
No. of Covers	01
Cover heading	The cover containing the quotation should be subscribed as Bid for <b>Supply &amp; Installation of Lab Equipments.</b>
Bid validity days	90 days (From last date of opening of tender)
Address for communication	Registrar,Pt. Ravishankar Shukla University, Raipur (C.G.) Ph : 0771-2262540,Fax 0771-2262818 Email: registrarprsu@gmail.com

### 2. Tender Fees and EMD:

- Tender Fees & EMD to be submitted in shape of DD from any commercial bank drawn in favour of the Registrar, Pt. Ravishankar Shukla University, Raipur (C.G.) as mentioned against the equipment together with the technical bid, in the absence of which the price bid, if any, will not be opened under any circumstances.
- No interest on EMD and security will be paid by the institute to the Bidder.
- The EMD shall be refunded to the unsuccessful bidders after finalisation of the quotation. In case of successful bidder it will be return against performance bank guarantee.

### 3. Two Bid System:

- Technical bid consisting of all technical details alongwith commercial terms and conditions and EMD; and
- Financial bid indicating item-wise price for the items mentioned in the technical bid.

iii. Technical bid and financial bid should be sealed in separate covers duly superscribed and both these sealed covers are to be put in a bigger cover which should also be sealed and duly superscribed as "**Technical Bid for the supply of installation of Lab Equipments**" due on **20/02/2020**. Technical bids shall be opened at the first instance and evaluated by technical committee. At the second stage financial bids of the only technically qualified bidders shall be opened for financial evaluation and ranking before awarding the contract. Mixing price bid with technical bid will disqualify your bid for further evaluation.

#### **4. Submission of tender:**

Offers addressed to the Registrar, Pt. Ravishankar Shukla University, Raipur (C.G.)' and valid for 90 days (From last date of opening of tender) should reach the office of Pt. Ravishankar Shukla University, Raipur (C.G.)', **20/02/2020** on or before the last date and time. Tenders received late shall not be considered.

#### **5. Bidding:**

- i. Either the Authorized Indian agent on behalf of the OEM or OEM itself can bid.
- ii. If an agent submits bid on behalf of an OEM, the same agent shall not submit a bid on behalf of another OEM in the same tender for the same item/product.
- iii. All offers other than those from the OEM should be supported by an authority letter from the manufacturer authorizing the supplier to tender on their behalf. In case of manufacturer a certificate or a copy thereof to the effect that the bidder is a manufacturer of the equipment must be accompanied with the technical bid prepared as per '*Annexure – II*'.

#### **6. Opening of Bids:**

Technical bids will be opened as per the schedule in the presence of bidders or their authorized representatives whosoever may wish to attend. In case the due date of receipt/opening of the quotation/s (technical/price) is declared a holiday in the Institute, then, the due date of receipt/opening of the quotations shall be the next working day at the same time.

#### **7. Rejection of Bids:**

Canvassing by the Bidder in any form, unsolicited letter and post-tender correction may invoke summary rejection with forfeiture of EMD. Conditional tenders will be rejected. Non-compliance of applicable General Information as well as compliance of Technical Specification in *Annexure-I* and Compliance Sheet in *Annexure-VI* will disqualify your Bid.

**8.** Bids of debarred/blacklisted firms will not be considered for evaluation. The firms must submit the declaration in format in *Annexure-V*.

#### **9. Price Bid:**

Price bid should be prepared as per '*Annexure – IV*'.

#### **10. Rates Comparison:**

Bidders are requested to send their rates (inclusive of transportation, loading, unloading, GST etc, nothing extra will be paid and free delivery and installation) on FOR, Pt. Ravishankar Shukla University, Raipur (C.G.). Rates comparison will be made on Net Price (Including Freight/Insurance/Installation/Taxes/Duties etc.).

AMC/CMC charges will not be included for the evaluation of the commercial bids.

### 11. Spares:

The spare parts/wear & tear consumables, if any, required for trouble free operation of equipment to be quoted separately giving the full nomenclature, rate, quantity and shelf life of each item.

### 12. Parts of Equipments:

Where the equipment is composed of several subunits/components, the rate should be quoted for each subunit/component. The Institute reserves the right to increase or decrease the number of subunits/ components and number of equipment according to its requirements. The rates in ambiguous terms will render the quotation liable to rejection. The words “Not quoting” should be clearly written against any item of equipment for which the tenderer is not quoting. EMD mentioned above should be enclosed for individual quoted item.

### 13. Award of Contract:

Only the shortlisted bids from technical evaluation shall be considered for financial comparison. The committee may call multiple tendered for live demo at university premises before the financial bid opening. After due evaluation of the financial bid(s), the Institute will award the order to the lowest evaluated responsive tenderer/bidder (hereinafter referred to as the “Supplier”). Since all the equipments are to be used in research work on international parameters, irrespective of lowest rate the decision of committee in regard of selection of bidder shall be final and binding

### 14. Performance Security:

After the award of work, the supplier shall be required to submit the performance security in the form of irrevocable bank guarantee in the prescribed format (*Annexure-III*) issued by any Nationalised or Scheduled Bank for an amount equal to the 10% of order value, within 60 days of issue of Purchase Order and **it will be kept valid for a period of 60 days beyond the date of completion of warranty period. Warranty Period will be commenced from the date of the satisfactory installation of the supplied item. Hence, be careful at the time of calculation of the validity date of Performance Bank Guarantee.**

### 15. Payment Terms:

Payment will be made to the supplier through following modes.

**i. Indigenous goods:** NEFT/Cheque/Demand Draft: 100% payment will be made within 30 days from satisfactory installation of the equipment at Pt.Ravishankar Shukla University, Raipur(C.G.) and on the submission of performance bank guarantee valid for warranty period + 2 months .

**ii. Imported goods:** Letter of credit/Telegraphic Transfer 90% payment will be made through LC/TT/SD and balance 10% after satisfactory installation of the equipment and submission of performance bank guarantee for 10% of order value, either by the principal company or by their Indian agent valid for warranty period + 2 months. Bank charges occurred outside India will be borne by the beneficiary.

### 16. Delivery & Installation:

i. All the goods ordered shall be delivered and installed at Permanent Campus of Pt. Ravishankar Shukla University, Raipur (C.G.), within 6 weeks from the date of issue of

the purchase order. All the aspects of safe delivery and commissioning shall be the exclusive responsibility of the supplier. If the supplier fails to deliver and commissioning of the equipments on or before the stipulated date, then a penalty at the rate of 2% of the total order value shall be levied subject to one time extension of the stipulated time for maximum 2 weeks on genuine grounds. The equipments are to be supplied within this stipulated period, failing which the supply order is liable to be cancelled and EMD will be forfeited.

ii. **Satisfactory Installation:** Satisfactory installation / commissioning and handing over of the equipment mean the faultless functioning of the equipment for a minimum period of 30 days after satisfactory installation.

**17. Training of Personnel:**

The supplier shall provide the technical training to the personnel involved in the use of the equipment at the Institute premises, immediately after completing the installation of the equipment at the company cost.

**18. Site Preparation:**

The supplier shall inform to the Institute about the site preparation, if any, needed for the installation of equipment, immediately after the receipt of the purchase order. The supplier must provide complete details regarding space and all the other infrastructural requirements needed for the equipment, which the Institute should arrange before the arrival of the equipment to ensure its timely installation and smooth operation thereafter.

The supplier shall visit the Institute and see the site whether the equipment is to be installed and may offer his advice and render assistance to the Institute in the preparation of the site and other pre-installation requirements.

**19. Merger / Acquisition of Foreign Principal:**

In case of merger of Foreign Principal with another Firm or acquisition of Foreign Principal by another firm, it shall be obligatory for the New Entity so formed after the merger of the Acquiring Firm, as the case may be, to take over all the duties and obligations / liabilities of the Foreign Principal and the New Entity / Acquiring Firm would *ipso facto* become liable for all acts of commission or omission on the part of original Foreign Principal as well as Indian Agent.

**20. Change of Indian Agent:**

In case the Foreign Principal changes in Indian Agent then it shall be obligatory for Foreign Principal to automatically transfers all the duties and obligations to the New Indian Agent, failing which the Foreign Principal would *ipso facto* become liable for all acts of commission or omission on the part of New Indian Agent.

**21. Service Manual/Circuit Diagram**

It is specifically required that the bidders will supply all the operating & service manuals and circuit diagrams alongwith the equipment.

**22. Guarantee / Warranty:**

i. Five year warranty has to be provided by the firm from the date of the satisfactory installation / commissioning of equipment against the defect of any manufacturing, workmanship and poor quality of components. In case, there is any

variation in the warranty as per the specification of the item equipment, the warranty as specified in the specifications shall be final.

ii. In case, supplier fails to repair / or rectify the equipment during the warranty / guarantee period, Institute may employ or pay other person/company for repairing the equipment, and all such damages, loss and expenses shall be recovered from the supplier. Annual Maintenance Contract charges for 5 years after the expiry of warranty period should be quoted.

**23. Country of origin:**

Country of origin of the quoted item should be mentioned in the offer in case of imported item.

**24. Taxes & duties:**

i. **General** – As per applicable Government rules for GST.

ii. **Customs Duty:**

- The successful bidder would be issued a Customs Duty Exemption Certificate (CDEC) under the notification 51/96 (direct import) at the time of import clearance for the goods being imported against the Contract. Bidder would be required to submit a copy of their order to principal along with principal's acceptance, proforma invoice and Air Waybill copy of the Consignment as soon as it generated from the suppliers end and sent to the office of Stores & Purchase through email at registrarprsu@gmail.com for issuance of CDEC.
- Subsequent to Ministry of Finance notification no. 14/2016 dated 1stMar 2016, the custom duty will be leviable in case of 3rd party import. Hence, **no Custom duty exemption certificate will be provided for 3rd party import.** Therefore, the vendor is requested to indicate separately the approximate amount of customs duty for stores being imported. Custom duty will be paid at actual against proof of payment and bill of entry.
- Institute is registered with DSIR, Govt. of India (Custom Duty Notification No. 51/96- Custom dt: 23 July, 1996 and Central Excise Duty Notification No. 10/97- Central Excise dt: 1 March, 1997) and is therefore; exempted from Excise Duty and partial exempted from Custom Duty Exemption Certificate of the same shall be issued. After GST Notification 2017 benefit of 51/96-Cus has been covered under 43/2017- Custom (Tariff) and the treatment of such imports is the same as earlier.

**25. Service Facility:**

Bidder should mention about the service set up in India and how capable they are to provide after sales services.

**26. Banker's details:**

Name and address of the banker of your company should be mentioned.

**27. Reference of supply:**

Name and contact details of the premier educational Institutes where the quoted equipment has been installed in India (only on NIT, IIT or Govt Universities within last 5years) should

be enclosed. Copies of at least two purchase orders may be attached Pt. Ravishankar Shukla University, Raipur (C.G.) reserves the right to inspect the equipment for its actual performance in any of the listed Institute.

**28. Undertaking from the Bidders:**

An undertaking will be submitted by the Bidder/firm/company/vendor that in the past they have never been banned/debarred for doing business dealings with Ministry of Defence/Govt. of India/ any other Govt. organisation and that there is no enquiry going on by CBI/ED/any other Govt. agency against them.

**29. Repeat Order Clause:**

The Contract will have a Repeat Order Clause, wherein the Buyer can order up to 25% quantity of the original contracted quantity (rounded up to the next whole number) under the Contract within six months from the date of completion of supply under the original Contract/ PO. The Repeat Order will have rates on not exceeding basis while the terms and conditions will remain unchanged. It will be entirely the discretion of the Buyer to exercise the Repeat order or not.

**30 Acceptance of Terms & Conditions:**

Bidders must confirm the acceptance of all the terms and conditions of this NIQ. Any non-acceptance or deviations from the terms and conditions must be clearly mentioned. However, tenderers must note carefully that any conditional offer or any deviation from the terms and conditions of this NIQ may render the quotation liable for rejection. PRSU Raipur does not bind itself to accept the lowest of any tender and reserves the right to reject any or all tenders without assigning any reason. Beside all these above terms and conditions, other conditions given below the specification of each lab equipments has to be complied with respective equipments quoted.

**Note:** The Registrar, Pt. Ravishankar Shukla University, Raipur (C.G.) reserves the right to accept/reject any or all tenders without assigning any reasons thereof and also to reject.

**31. Price should be quoted item wise and EMD should be enclosed respectively.** Supplier should provide model and make of all accessories along with price and must supply at the time of installation. User training and technical support should be provided. Supplier should provide user's list along with manual.

**32. Arbitration and Laws:**

In case of any dispute or difference arising out of or in connection with the tender conditions / order and Contract, the Institute and the Supplier will address the dispute / difference for a mutual resolution and failing which, the matter shall be referred for arbitration to a sole Arbitrator to be appointed by the Institute. The Arbitration shall be held in accordance with the provisions of the Arbitration and Conciliation Act, 1996 and the venue of arbitration shall be at Raipur only. The resolution of the Arbitrator shall be final and binding on both the parties.

**33 Jurisdiction:**

The courts at Raipur alone will have the jurisdiction to try any matter, dispute or reference between parties arising out of this tender / contract. It is specifically agreed that no court outside and other than Raipur court shall have jurisdiction in the matter.



<b>INDEX</b>		
<b>S.No.</b>	<b>Name Of Instrument</b>	<b>Page No</b>
1	Gel Documentation System	10
2	Trinocular Microscope With Camera And Software	14
3	Water Purification System	16
4	Real Time PCR System,	19
5	Micro Volume Spectrophotometer,	22
6	Orbital Incubator Shaker	25
7	Manual Rotary Microtome	28
8	UV Visible Spectrophotometer	30
9	An Expandable Multichannel Potentiostat	33
10	Fluorescence Spectrometer,	39
11	Rotary Evaporator System With Vacuum Pump	42
12	Electronic Balance A	45
13	Polarimeter	47
14	GM Counter, Radiation Counter	49
15	Determination Of The Horizontal And Vertical Components Of Earth's Magnetic Field	53
16	Millikan Oil Drop Apparatus	55
17	Stern Gerlach Experiment Kit	58
18	Electron Diffraction Experiment	60
19	Dielectric Constant Kit	62
20	Diode Laser Diffraction Experiment Kit	66
21	Study Of Hall Effect In Semiconductors	69
22	Study Of Zeeman Effect Using Fabry- Perot Interferometer	72

23	Determination Of Plank's Constant	75
24	Gyroscope (Experiment Kit) With PC Interface	77
25	Electron Spin Resonance And Nuclear Magnetic Resonance	79
26	GAMMA Spectroscopy And Compton Effect Experiment Kit	83
27	Thompson Tube	86
28	Determination Of Impedance Of Capacitor As A Function Of Capacitance And Frequency	89
29	Superconductivity Experiment Kit	91
30	Study Of B-H Curve	94
31	Elastic And Plastic Deformation Experiment Kit	97
32	Van De Graaff Generator	99
33	Boyle's And Charle's Law Experiment Kit	101
34	Moment Of Inertia Experiment Kit	103
35	Precision Dynamometer	105
36	Centripital Force Apparatus	107
37	Recording The Line Spectra Of Hydrogen Atom	109
38	High Performance Computing Lab	112
39	Geology Lab Equipments	126
40	Binocular Microscope	140
41	Inverted Phase Contrast Microscope With Screen And Camera	142
42	Smart Class Room Solution	144

## Annexure – I

## TECHNICAL SPECIFICATION COMPLIANCE

Note: Supplier MUST provide the model number of their product in the cover letter which complies with the tender specifications and an original printed manual of the same shall be submitted with the bid. Bidders should highlight the features in the printed manual using color text liner/manually mark which complies with the tendered specifications. Vendors are strongly advised not to submit any other manual in their bid. The following compliance sheet to be filled-up correctly and completely. Otherwise, it may lead to cancellation of their bid without any communication from Pt. Ravishankar Shukla university, Raipur.

**List of Equipments With Specifications:**

Biology lab of Center for Basic Sciences requires gel documentation system, Trinocular Microscope with camera and software, water purification system, Real Time PCR System, Micro Volume Spectrophotometer, Orbital Incubator Shaker and Manual Rotary Microtome. Technical specifications are given as follows:

**1. Center for Basic Sciences: Biology Lab Equipment****1.1 Gel Documentation System**

<b>EMD of Rupees to be submitted 25,000</b>			
<b>S.No.</b>	<b>(A) Technical specification for Gel Documentation System , Qty- 1Nos.</b>	<b>Technical Compliance (Yes/No)</b>	<b>Remarks</b>
1	Applications :In Gel Fluorescence, Densitometry with both fluorescent, stain free and colorimetric stains etc., Western blotting, 2-D, 1-D, Dot Blotting, Nucleic acid detection, Protein Gel detection		
2	Detector :CCD camera, Image resolution: Greater than 4 megapixel, Pixel size:4.65 x 4.65 µm or more, Filter holder:3 or more, Dynamic range: More than 3 orders of magnitude		
3	Sample size and nature: Large trans-illuminator size capable of taking sample of size upto 28X 36 cm. It should be compatible for both Acrylamide and Agarose type gels		
5	Light sources:Trans-UV, trans-white, stain-free and should have option of trans-blue light (for SYBR safe DNA application)		
5	Autofocus :Image acquisition with automatic focus and iris adjustments at all zoom levels for all compatible applications		
6	Reproducibility:Dynamic flat fielding for higher reproducibility		

S.No.	(A) Technical specification for Gel Documentation System , Qty- 1Nos.	Technical Compliance (Yes/No)	Remarks
7	<p>Other features:Should have motorized zoom lens with f/1.2, 12-75mm with a fixed position of sample tray .</p> <p>It should be capable of optimizing, saving, and quickly recalling the imaging acquisition settings. Reproducibly position or center the sample on the image plate by using gel alignment templates .</p> <p>Instrument should have an in-built UV transilluminator which can be used as a stand-alone transilluminator for visualizing and cutting bands from gels</p>		
8	USB connectivity:It should have USB connectivity for fast data transfer		
9	Upgradation:It should have universal dark hood & should be upgradeable to chemiluminescence		
10	<p>Software:1 D analysis software with following features:Automatic generation of customizable reports,Snapshot tool to copy images, lane profiles, and graphs,</p> <p>Complete flexibility with automatic and manual detection of lanes and bands, using several algorithms, Easy copy/paste functionality, crop, zoom, 3D viewer, and colors,</p> <p>Publishing resolution (dpi) and publishing dimension can be specified with a one-click image export for publication. Provides functionality to produce image at user-defined dpi and dimension,</p> <p>No requirement for license registration. Mac and PC compatible software.16-bit and 8-bit tiff images with a one-click export option,one-click export option.</p> <p>Should have single software for image acquisition and analysis with no license registration and capability to install in unlimited computers with full functionality.</p>		
11	<p>PC:Branded desktop computer with minimum i5 processor or higher, &gt;4 GB RAM, 1TBHDD or higher, with licensed version of Windows 8 OS /higher, should be compatible with the software provided, DVD RW facility, at least &gt;18-19. “TFT monitor, keyboard, mouse, UPS, laser printer.</p> <p>Branded RT/RH regulator: Equipment with 2 ton compressor to regulate room temperature (RT:16-25°C) and relative humidity (RH).</p>		
17	Online UPS:Must be supplied with suitable online UPS 2KVA with minimum 30 minutes backup.Accessories:UV protection shield to protect end user from unintentional exposure to UV light during band		

	excision, White Sample Tray for gels and blots stained with Coomassie Blue, Copper, Silver or Zinc Stains and Suitable sample tray for stain free gels, blots, and Suitable sample tray for gels stained with Ethidium Bromide		
--	--	--	--

Bidder must have a turnover of Rs 2500000 or more per year for last three financial years and copy should be enclosed.

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 25000 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 2500000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that “We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery”		

## 1.2. Trinocular Microscope with camera and software

S.No.	(B) Technical specification for Trinocular Microscope with camera and software, Qty- 1Nos.	Technical Compliance (Yes/No)	Remarks
<b>EMD of Rupees to be submitted 8,000</b>			
1	<b>Stand:</b> Right Hand Stage Stand with Koehler Illumination, Add on Lens for condenser, 4 Position Nosepiece or more, Universal Power Supply, Mechanical stage, LED illumination, Dust Cover		
2	<b>Tube:</b> 45 degree Trinocular Tube with locking mechanism for eyepieces		
3	<b>Optical System:</b> Infinity Corrected optical system		
4	<b>Eyepieces:</b> 10X with 20 mm. field of view or better; with eye-guard and eyepiece eye cup		
5	<b>Contrasting technique:</b> Transmitted light bright field, dark field, phase contrast		
6	<b>Observation technique:</b> Bright field, Phase contrast		
7	<b>Objectives:</b> Plan Achromat Objective set: 4x or 5x/0.12 , 20X/0.40, 10x/0.25 PH1, 40x/0.65 PH2, 100x/1.25 OIL PH3. The above objective should be used for bright field, dark field, phase contrast as well as LED Fluorescence.		
8	<b>Condenser:</b> Condenser Suitable for phase contrast, Bright field		
9	<b>Stage:</b> Mechanical stage with minimum 170 mm X 140mm dimensions with specimen holder		
10	<b>Upgradation:</b> Microscope should have the provision to upgrade to fluorescence application . <b>Digital camera with adapter and software:</b> Colour digital microscope camera, scientific (dedicated for microscopy use), Resolution 8 MP or more, still resolution with 2560 X 1920 pixels ; Live video 2 MP 1920 X 1080 with minimum 30 frames per second (fps)		
11	<b>Camera Software:</b> Licensed imaging software for image analysis, Live cell imaging, Multichannel & multipoint image capturing, Intensity measurements, Line profile, spatial measurements such as length, width, area, etc. The microscope, digital camera & software should have compatibility and ease of after sales support. <b>Data Processing Unit:</b> Branded PC with minimum i5 processor or higher, minimum 4 GB RAM, 1TB HDD or higher, licensed version of Windows 8 OS / higher compatible with the software, high end 2 GB Video Card, DVD RW, at >18-19 "TFT monitor, keyboard, mouse, UPS, laser printer		
14	<b>Stabilizer:</b> System should be supplied with suitable SERVO stabilizer for smooth operation. <b>Warranty: Warranty for Five years minimum</b>		
Bidder must have a turnover of Rs 800000 or more per year for last three financial years			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars		
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 8000 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 800000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that “We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery”		



### 1.3 Water Purification System

S.No.	(c) Technical specification for Water Purification System, Qty-1Nos.	Technical Compliance (Yes/No)	Remarks
<b>EMD of Rupees to be submitted 16,000</b>  <b>System should have combination of Reverse Osmosis (Type 3) and Ultrapure water (Type1)</b>			
1	Product Water Quality :with Suitable Tap-Water Feed:Reverse Osmosis (Type 3) Production Rate:3 L/hr @ 25°C or more (temperature dependent) ,Ultrapure Water (Type 1) Flow Rate (L/min): .....0.5 or more ,Ultrapure Water Resistivity (MΩ·cm at 25°C): ....18.2 ,Microorganisms (cfu/mL): .....< 1 ,Particulates < 0.22 μm ( / mL):..... < 1,Pyrogen Levels (EU/mL):..... <0.001,Nucleases Level (ng/mL): .....< 0.01 ,TOC (ppb): .....< 10		
2	Technology used Combined single cartridge that contains Reverse osmosis, ion-exchange and activated carbon technologies and polishing device in single water purification unit ,The water purification system should produce at a minimum, two qualities of purified water: Ultrapure and Pure from a single device. And In addition to polishing, the RO product water should also be available for use by withdrawing water from the storage tank.		
3	Life of UV lamp:The ultrapure water system should have a minimum 2 years life time built-in UV lamp with emission at 185 and 254 nm wavelength.		
4	Storage: The water purification system should have a built-in reservoir with volume > 5L for type 3 water storage with the option of using a larger (50L) storage reservoir, and have available means of dispensing the pure water. The ultrapure water system dispensing source should be designed so that regular 1L lab containers, such as cylinders and flasks, can be filled without the need to hold them. The system should also incorporate a volumetric dispensing function capable of automatically dispensing of ultrapure water from 0.25 L up to 5 L in 0.25 L increments.To prevent deterioration of water quality during periods of non-use, the ultrapure water system should be able to recirculate water to maintain high water quality. Built -in booster pump:The water system will have a built-in booster pump for optimum reverse osmosis (RO) operation,The water system will have a built-in delivery pump for optimum ultrapure water delivery.		
5	LCD display : The ultrapure water system should incorporate a fully comprehensive, graphic color LCD display to provide information 1) on system status and performance parameters, 2) on routine maintenance needs, and 3) on alarms for troubleshooting in the event of system malfunction. Graphic icons and operating control values must also be available as standard.		
7	Reference Guide:The water system should incorporate a built-in Quick Reference Guide for immediate understanding of the main operations.		

S.No.	(c) Technical specification for Water Purification System, Qty- 1Nos.	Technical Compliance (Yes/No)	Remarks
8	Other features: The internal pumps should be low voltage DC pumps for virtually silent operation. The system should have point-of-use final filters including a 0.22 micron final filter, a point-of-use ultrafilter, and an FDA-registered medical device, to meet individual needs.		
9	Accessories: <ul style="list-style-type: none"> <li>• A suitable water softener,</li> <li>• pre-filter and</li> <li>• a set of extra cartridge should be provided with the system.</li> </ul>		
10	Stabilizer: Branded compatible Servo Stabilizer should be provided with the instrument		
11	Warranty: Warranty for Five years minimum		
Bidder must have a turnover of Rs 1600000 or more per year for last three financial years and copy should be enclosed.			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 17000 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 1700000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that "We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery"		

## 1.4 Real Time PCR System

S.No.	(D) Technical specification for Real Time PCR System, Qty- 1Nos.	Technical Compliance (Yes/No)	Remarks
<b>EMD of Rupees to be submitted 45,000</b>			
1	<p><b><u>Applications</u></b></p> <ul style="list-style-type: none"> <li>• An automated system for both real-time PCR and post-PCR (end-point) analysis using in-built Peltier based block with full license for PCR process.</li> <li>• The system should be capable of applications such as Absolute quantitation, Simultaneous analysis of data for relative quantitation for 10 number of plates of 96 wells each, Allelic discrimination (SNP), miRNA profiling, Dissociation curve analysis, Copy number variation, Pathogen detection, or Similar technology.</li> </ul>		
2	<p><b><u>Hardware</u></b></p> <p>I Sample Capacity: A Peltier based 96x 0.1 wells or 96x 0.2 wells thermal block which can accommodate standard tube strips or 96 well plate or individual tubes.</p>		
II	Temperature range: Temperature range of 4 °C-100 °C or better.		
III	Ramp rate: Maximum Block ramp rate of 5- 9 Deg C/Sec.		
3	Excitation- Emission range: Excitation range between 450nm-680nm and Emission range between 500-730nm or 450-730nm.		
4	Reaction volume: Reaction volume 10-30 µL.		
5	Mode and run time: System should support both the standard and Fast mode with run time of less than 30 minutes for 40 cycles in Fast Mode.		
6	Multiplexing :Multiplex PCR with 5 or 6 targets during a single run		
7	Dynamic range: Dynamic range up to 10 orders of Magnitude.		
8	Gradient :6 or more independent Peltier Block to provide six independent temperature zones to run six different assays with varying annealing temperature at the same time.		
9	Excitation source:White LED light source with a > 5 years lifespan and detection by sCMOS /CCD/photodiode.		
10	Dye Compatibility :System should be capable for detection of dyes like FAM/SYBR Green, VIC/JOE, TAMRA/Cy3, Texas Red, Cy5 etc. up to 12 dyes or more and should be able to be further calibrated for any dye that falls in the excitation –emission range of the instrument.The normalization of reaction due to non-PCR related fluctuations such as pipetting variations should be possible by using any calibrated dye.		

S.No.	<b>(D) Technical specification for Real Time PCR System, Qty- 1Nos.</b>	Technical Compliance (Yes/No)	Remarks
14	System configuration: System should have option like Stand-alone, PC connected, or direct connection to Cloud via LAN or Wi-Fi.		
15	Compliance :The instrument should be UL/CE/C-TICK/WEEE/MIQE/should have features to assist 21 CFR part 11 compliance.		
16	<p>Software :</p> <ul style="list-style-type: none"> <li>• Suitable data analysis software to serve the mentioned applications should be provided with the system.</li> <li>• Software should be license free or else 5 license copies of the same should be provided.</li> <li>• Software should perform data acquisition and analysis without need of connecting to internet or any cloud-based server</li> <li>• Software must be capable of automatically generating publication ready graphics (bar charts, box and whisker graphs, clustergrams and volcano plots) jpg, png, or bmp format</li> <li>• Software should be capable of working with Windows or Macintosh based systems.</li> </ul>		
17	<u>Supporting Chemistries:</u> System should be an open platform enabling use of various chemistries without hardware change. It should be standardized for Probe, Molecular Beacon, SYBR green based Chemistries.		
18	Accessories :2 KVA online UPS with 60 mins back up should be provided with the system,2 sets of Recognized reagent Starter Kits and Compatible plates should be provided ,Multichannel micropipette (range 1-10 µL) should be provided with the instrument.		
19	Instrument Training and Demonstration should be provided free of cost		
20	Warranty: Warranty for 5 years (minimum).		
Bidder must have a turnover of Rs 4500000 or more per year for last three financial years and copy should be enclosed.			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 45000 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 4500000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that "We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery"		

## 1.5 Micro Volume Spectrophotometer

.No.	(E) Technical specification for Micro Volume Spectrophotometer, Qty- 1Nos.	Technical Compliance (Yes/No)	Remarks
<b>EMD of Rupees to be submitted 23,000</b>			
1	Applications :System should have both pedestal and cuvette mode of measurement. It should support Nucleic Acid A260, A260/A280, A260/A230 and Labeled Nucleic Acids; Protein A280 and A205, Protein Pierce 660, Protein Bradford, Protein BCA, Protein Lowry, Labeled Proteins, OD600, Kinetics, UV-Vis, and Custom Methods.		
2	Minimum sample volume 1 $\mu$ L or less.		
3	Light Source:Xenon flash lamp		
4	Detector Type :CCD or CMOS linear image sensor		
5	Wavelength Range :190-850 nm		
6	Wavelength Accuracy +/- 1 nm.		
7	Path length 0.030 to1mm auto-ranging		
8	Absorbance Accuracy $\pm$ 3% (at 0.97 absorbance at 302 nm)		
9	Spectral Resolution<1.8 nm (FWHM @Hg 254 nm)		
10	Detection Limit Pedestal: dsDNA 2 ng/ $\mu$ L or better BSA (IgG): 0.06 mg/mL		
11	Maximum Concentration 27,500 ng/ $\mu$ L (dsDNA) Connectivity USB ports, Bluetooth and Wi-Fi		
12	Contamination detection System should have specific dyes selective for ds DNA, RNA or protein to minimize the effects of contaminants in the sample.Instrument should indicate samples that are in the extended range or out of range in the graph, as well as in the sample output screen. Included Software should have feature to identify the contaminants like protein and phenols in samples and reports corrected analyte concentration.		
13	Internal storage: There must be an internal storage system which can store results of the samples		
14	Display:The system should come with a Touch Screen with high-definition colour display, android based or any other Quad Core Processor, Multipoint capacitive touch, Gesture Recognition: Single point, single point hold, swipe and pinch, Compatible with lab gloves and Built-in speaker.		

.No.	<b>(E) Technical specification for Micro Volume Spectrophotometer, Qty- 1Nos.</b>	<b>Technical Compliance (Yes/No)</b>	<b>Remarks</b>
16	Training:User training and technical support should be provided.		
17	The system should be provided with suitable SERVO Stabilizer for smooth operation.		
18	PC: Must be supplied with a branded computer system compatible with the above instrument with minimum i5 processor or higher, >8GB RAM, 1TB HDD or higher, with license windows OS 8, >18-19' TFT, Keyboard, mouse, UPS and laser printer Stabilizer		
19	Accessories:All accessories should be provided with the system. <ul style="list-style-type: none"> <li>• <i>0.2–2.0 µL pipette</i></li> <li>• <i>02–10.0 µL pipette</i></li> <li>• <i>Set of quartz cuvette</i></li> </ul>		
20	Warranty: Warranty for 5 years (minimum).		
Bidder must have a turnover of Rs 2300000 or more per year for last three financial years.			



## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 23000 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 2300000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that “We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery”		

## 1.6 Orbital Incubator Shaker

S.No.	(F) Technical specification for Orbital Incubator Shaker  , Qty- 1Nos.	Technical Compliance  (Yes/No)	Remarks
<b>EMD of Rupees to be submitted 8000</b>			
1	Internal volume 200L or more		
2	Temp. Control range+ 4/+5°C to + 60°C		
3	Interior Material :The Interior should be made of Stainless steel		
4	Exterior Material: The Exterior should be Epoxy Powder Coated Steel		
5	Shaking motion: Orbital mode alone or Orbital/Reciprocal mode in same machine		
6	Shaking speed <ul style="list-style-type: none"> <li>• 20 to 300 rpm or more.</li> <li>• Automatic shaking speed adjustment in case of excessive workload such as unbalanced load placement, unusual vibrations caused from unstable floor or external shock.</li> </ul>		
7	Shaking Accuracy: $\pm 1\%$ of set rpm Approx.		
8	Shaking amplitude: Around 19-25mm		
9	Timer: 1 minute – 999 minutes (Auto-reset, digital indication)		
10	Platform size :40 cm x 40 cm approx or better.		
11	Temperature control accuracy : 0.2°C -0.5°C.		
12	Control/Settings: Microprocessor based PID to control and display set & actual temperature RPM, Temp etc.		
13	Safety: The Equipment and user in case of fault in sensor, over current or overloading etc the equipment should either indicate through audio visual alarm or to stop the equipment power supply immediately.		
14	Heaters: 550W or better		
15	Refrigeration unit :CFC Free Refrigerants		
16	Programs: Auto-start/stop in the event of interruption in supply to the equipment		

S.No.	<b>(F) Technical specification for Orbital Incubator Shaker</b>  <b>, Qty- 1Nos.</b>	Technical Compliance  (Yes/No)	Remarks
17	Shelf :Steel Rust Proof shelves Min 2 nos		
18	Inner door :The instrument should have inner transparent door with latches for easy display of materials kept inside.		
19	Accessories  <ul style="list-style-type: none"> <li>• Stainless steel clamps for conical flask for 100 ml- 36 nos., 250 ml- 25 nos., 500 ml- 16 nos., 1000 ml- 09 nos.</li> <li>• Test tube Holder for 30 tubes of 16mm Diameter or better should also be provided.</li> </ul>		
20	Noise operation  <ul style="list-style-type: none"> <li>• The Instrument should have smooth, stable and low noise operation.</li> </ul>		
21	Drain condensate  <ul style="list-style-type: none"> <li>• The Instrument should have facility of drain condensate outlet at bottom of the chamber.</li> </ul>		
22	USB port : Built-in for external control and data collection Chambers should be stackable in future min up to two levels.		
23	Anti- vibration grip :The Instrument should have anti- vibration grip at the bottom to prevent walking of the instrument.		
24	Retractable foot caster:Retractable foot caster for easy mobility during installation or relocation		
25	Certification:Should be certified by International/Global standards.		
26	Stabilizer and MCB  <ul style="list-style-type: none"> <li>• Branded compatible Servo Stabiliser</li> <li>• The instrument should be with a MCB for better electrical safety</li> </ul>		
27	Warranty :Warranty for 5 years		
Bidder must have a turnover of Rs 800000 or more per year for last three financial years.			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 8000 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 800000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that "We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery"		

## 1.7 Manual Rotary Microtome

S.No.	(G) Technical specification Manual Rotary Microtome  , Qty- 1Nos.	Technical Compliance  (Yes/No)	Remarks
<b>EMD of Rupees 20,000</b>			
1	<b>Coarse feed Wheel movements</b> <ul style="list-style-type: none"> <li>• Manual Rotary microtome with simultaneous clock wise and anti clock wise <b>Coarse Feed Wheel</b> movement as per the choice of end user.</li> <li>• Extremely smooth-running hand wheel.</li> <li>• Safety locking mechanism on the hand wheel should be provided.</li> </ul>		
2	<b>Blade and Knife Holders</b> <ul style="list-style-type: none"> <li>• Precise blade/ knife holder with lateral adjustments and locking lever facility.</li> </ul>		
3	<b>Specimen clamp/holders</b> <ul style="list-style-type: none"> <li>• Standard specimen clamp with adapter should be provided.</li> <li>• Specimen retraction mechanism should be provided.</li> </ul>		
4	<b>Section thickness:</b> Section thickness settings should range from 0.5 $\mu\text{m}$ to 50 $\mu\text{m}$ or more with sectioning thickness increments ranging from 2 - 10 $\mu\text{m}$ in 1 $\mu\text{m}$ increments, 10 - 20 $\mu\text{m}$ in 2 $\mu\text{m}$ increments and 20 - 60 $\mu\text{m}$ in 5 $\mu\text{m}$ increments.		
5	<b>Vertical Stroke Length</b> <ul style="list-style-type: none"> <li>• Vertical stroke length should be 59mm or more.</li> </ul>		
6	<b>Specimen orientation</b> <ul style="list-style-type: none"> <li>• Specimen orientation facility must be available for 8° (through X, Y axis)</li> </ul>		
7	<b>Accessories:-</b> System should come with high profile disposable blade system or with high quality knife.System should come with 2 packs of high profile disposable blade (atleast 50pcs/pack),Facility to use cassette clamps should be available.Atleast 1 No. of Cassette Clamp to be supplied along with the machine.Dust cover, Oil and Manual should be provided.		
8	<b>Installation and demonstration:</b> Installation and demonstration should be arranged by the supplier. It should have registration with CE,IEC US-FDA and CSA		
9	<b>Warranty:</b> Warranty for 5 years		
Bidder must have a turnover of Rs 2000000 or more per year for last three financial years.			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 20000 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 2000000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that "We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery"		

Chemistry Lab of Center For Basic Sciences Requires Double Beam UV Visible Spectrophotometer, An Expandable Multichannel Potentiostat/Galvanostat For Advanced Research, Fluorescence Spectrometer, Rotary Evaporator System With Vacuum Pump, Controller And Circulating Chiller, Electronic Balance and Polarimeter. Technical Specification is as follows:-

## 2. Center for Basic Sciences: Chemistry Lab Equipment

### 2.1 Double Beam UV-Visible Spectrophotometer

<b>EMD of Rupees to be submitted 25,000</b>			
S.No.	(A) Technical Specifications for Double Beam UV-Visible Spectrophotometer, Qty- 1Nos.	Technical Compliance (Yes/No)	Remarks
1	<b>Lamp Source:</b> Tungsten / Deuterium Lamp or xenon flash lamp with 3-year lifetime guaranteed; 7 years typical lifetime		
2	<b>Monochromator:</b> Blazed holographic grating with 1200 lines per mm, Czerny- Turner with 0.2m focal length or better technology		
3	<b>Wavelength Range:</b> 190-1100 nm		
4	<b>Spectral Bandwidth:</b> 1, 2, 3 nm variable or better		
5	<b>Wavelength Accuracy:</b> $\pm 0.2$ nm or better 541.9, 546.1 nm mercury lines		
6	<b>Photometric Range:</b> $\pm 3A$ or better		
7	<b>Wavelength Reproducibility:</b> $\pm 0.1$ nm or better		
8	<b>Detector:</b> Silicon Photodiode		
9	<b>Photometric Repeatability:</b> $\pm 0.001$ Abs or better		
10	<b>Accuracy: Instrument:</b> 1 A: $\pm 0.004$ A; 2 A: $\pm 0.004$ A; 3 A: $\pm 0.006$ A, Measured at /440546 nm using neutral density filters traceable to NIST/NPL		
11	<b>Stray light:</b> $\leq 0.04$ %T or 0.05 %T (198 nm KCl) or better $\leq 0.02\%$ T (220 nm NaI) or better, $\leq 0.02$ % T (340 nm NaNO <sub>2</sub> ) or better		
12	<b>Photometric Noise:</b> $< 0.00008$ Abs or better		
13	<b>Photometric drift:</b> $< 0.0005$ Abs/h or better		
14	<b>Baseline flatness:</b> $\pm 0.0006$ A		
15	<b>Scan speed :</b> Variable 1 to 5000 nm/min		

S.No.	<b>(A) Technical Specifications for Double Beam UV-Visible Spectrophotometer, Qty- 1Nos.</b>	Technical Compliance (Yes/No)	Remarks
16	Two pairs of quartz cell of 3.5 mL volume & 10 mm path-length		
17	<b>Software:</b> Software capable of analyzing sample in a wavelength and multi-wavelength mode, Scanning mode, Kinetics mode and Quantification mode with single a wavelength, two wavelengths and equation as 'Y' coordinates. Must have a single cell data collection rate for kinetics up to 50 data points/second The system should be supplied with life time licensed control and analysis software.		
18	<b>PC &amp; UPS:</b> Branded desktop computer with latest and licensed version of Windows OS with life time validity and compatible with instruments software for all operations of the spectrophotometer with intel core i4 or higher processor, DVD-RW drive facility, >500GBHDD, >4GB DDR RAM, >24"LCD Monitor, Minimum 4 USB ports, with branded laser Printer. 1.5 KVA Online UPS with 30 min. back up		
19	<b>Required Accessories: Peltier Temperature controller solid sample holder(optional)</b>		
19	<b>Warranty : Five Years</b>		
Bidder must have a turnover of Rs 2500000 or more per year for last three financial years.			



## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 22000 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 2200000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that “We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery”		

## 2.2 Multichannel Potentiostat/Galvanostat

S.No.	<b>(B) Technical Specifications for An Expandable Multichannel Potentiostat/Galvanostat For Advanced Research</b>	Technical Compliance (Yes/No)	Remarks
<b>EMD of Rupees to be submitted 60000</b>			
1	The system must provide at least three individual workstation each with dedicated computers as well as tools / accessories for research & education in following fields:		
2	<ol style="list-style-type: none"> <li>1. <b>Sensors: Required Now:</b> The system must be supplied with all the necessary tools, accessories and platforms to be used for advanced sensor research in the following fields:               <ol style="list-style-type: none"> <li>a. Agro &amp; food applications: <b>Pesticide detection</b>, milk quality detection etc.</li> <li>b. Clinical and pharmaceutical applications: Breast cancer bio-markers, glucose/ cholesterol testing etc.</li> <li>c. Environmental applications: Heavy metal detection such as Arsenic, mercury, uranium in drinking water, etc</li> <li>d. Forensic applications: Gun-shot residue, narcotic drug detection etc.</li> </ol> </li> <li>2. <b>Corrosion: Required Now:</b> The system must be supplied with protocols and set-up for ASTM based electrochemical corrosion analysis of metal coupons. The research areas include green inhibitor development, critical pitting evaluation study for next generation alloys and basic corrosion evaluation tests conducted in most corrosion testing facilities.</li> <li>3. <b>Batteries &amp; Super-capacitors: Future Expansion:</b> The system must be equipped with all the modern battery/capacitor test protocols for research as well as education. It must also include all the set-ups and accessories required for research and development of novel electrolytes (solid-state, gel and liquids), electrode materials and separators (electrode-electrolyte interfacial study) for energy storage applications in the field of lithium ion batteries as well as super- capacitors.</li> <li>4. <b>Solar Cells:Future Expansion:</b> The system must be equipped with built-in protocols to test small &amp; large Solar Cell. Dedicated accessories must allow the research and development of novel DSSC and Perovskite based solar cells. The solar simulators provided must be equipped with modern photo-electrochemical cell to conduct research on development of novel electro-catalysts for Hydrogen generation via photo based water-splitting. Apart from research, the set-up should allow the education of solar cell principles in a 'hands-on' manner.</li> <li>5. <b>Fuel Cells:Future Expansion:</b> The system must be supplied with a dedicated PEM Fuel Cell Station and protocols. The CIF facility will be used for research as well as education of chemical engineering concepts such as mass-transfer &amp; membrane conduction while also developing novel materials</li> </ol>		

	<p>for optimizing the overall efficiency.</p> <p>6. <b>Electro-catalysis: Future Expansion:</b> The system must have dedicated protocols, accessories and tools for research &amp; education in:</p> <ol style="list-style-type: none"> <li>Novel non-platinum based electro-catalysts for improving Oxygen reduction reaction kinetics on fuel cell cathodes</li> <li>Perovskite based and non-perovskite based catalysts for photo-electrochemical water splitting reaction to generate hydrogen and oxygen</li> <li>Next generation graphene based catalysts for improving carbon dioxide reduction to organics</li> </ol> <p>7. <b>Hybrid Techniques: Spectro-electrochemistry: Future Expansion:</b> A set-up combining in-situ electrochemistry based UV-Vis Spectroscopy is a critical tool in each of the application area mentioned above. While UV – Vis allows the study of intermediates with milliseconds half-life time, the electrochemistry allows the research for kinetics and mass transfer of the same reaction. Some examples include: Developing novel graphene based structures for capacitor applications, Research and development of novel dyes for DSSC solar cell applications, Research of novel conducting polymers such as PANI, PPy, etc. Microscopic evaluation of a catalyst efficiency for photo based HER and OER water splitting, Novel sensing platforms for applications such as dopamine oxidation, Development of electrochromic / smart windows / photovoltaics research</p>		
3	<b>Specifications</b>		
4	<p><b>Potentiostat Galvanostat: A MULTICHANNEL WORKSTATION WITH EIS AND BIPOTENTIOSTAT CAPABILITY</b></p> <p>A Multichannel System with possibility to accommodate upto a total 12 potentiostat-galvanostat or more in single or multiple chassis. Vendor should be able to provide proof for providing sophisticated high-precision potentiostat/galvanostat systems for past 15 Years or more with a standard quality certification (ISO 9001) &amp; 10+ past installations of similar systems in India in past two years.</p>		
5	<b>Technical Specifications: No of Channels: 2</b> (Possibility to upgrade to upto at least 8 or more channels in future)		
6	<p>○ <b>Independent EIS Configuration: Qt. 1: Supplier should provide an officially published contour plot of FRA when connected with similar potentiostat/galvanostat from the same supplier.</b> Applied Frequency Resolution: 0.005%</p> <p>○ At 1 Hz frequency, impedance of 0.01 <math>\Omega</math> must be determined with 0.3° Phase accuracy &amp; at least 0.3 % measured impedance accuracy. i.e – Measured impedance = 0.01 <math>\pm</math> 0.00003 <math>\Omega</math>. Frequency Range with PSTAT/GSTAT: 10 <math>\mu</math>Hz to 1 MHz at a maximum current of <math>\pm</math>400 mA, Built-in EIS Simulation Software Required – Real time fit-simulation, live Lissajous plots, live 3D plotting, real-time view of 10+ plots is required.</p>		
7	<b>Output Voltage Range:</b> $\pm$ 10 V or better; Maximum Output Current: $\pm$ 400 mA or better at $\pm$ 20 V		
8	<b>Compliance voltage:</b> $\pm$ 20 V or better at complete $\pm$ 400 mA current range – Adjustable compliance voltage configurations will not be considered. Compliance voltage add-ons or modules have to be quoted separately.		

S.No.	<b>(B) Technical Specifications for An Expandable Multichannel Potentiostat/Galvanostat For Advanced Research</b>	Technical Compliance (Yes/No)	Remarks
9	<b>Input bias current of electrometer:</b> < 1 pA; <b>Input impedance of electrometer:</b> > 100 GOhm // 8 pF		
10	<b>Measured current resolution:</b> 0.0003% at entire current range (30fA default at 10 nA range). Must be a default hardware configuration without any additional amplification		
11	<b>Measured Potential Resolution:</b> 3µV or better		
12	<b>Potentiostat Rise/fall Time:</b> < 300 ns or lower		
14	<b>Interface:</b> USB interface for connection with PC or better; A single Master USB control for all channels; additional 3 USBs – Control of 4 channels / each		
15	<b>Required</b>		
16	<b>Bi-potentiostat Configuration in One of the channels: Qt. 1:</b> Any one of the two channels must be equipped with an ‘internal’ dual mode bi-potentiostat option such that the remaining (second) channel can still be used independently for EIS measurement on a separate cell. Configurations combining two separate channels will not be allowed, Parallel measurements should be possible on two working electrodes sharing the same counter and reference electrode. In the first mode, a fixed potential is required to be applied to the second Working Electrode while applying a potential step or a sweep to the first Working Electrode. In the second mode, a potential offset with respect to the first working electrode is required to be applied to the second working electrode.		
17	<b>High Current ± 10A Booster Option: Immediate future Option</b> A ± 10A current booster option with compliance voltage of ± 20V or better is required in very near future.		
18	<b>Basic EC Cell Set-up with following accessories: Package 1</b> Electrochemical Cell Set-up 50 milliliter volume of aqueous or non-aqueous electrolyte: Qt.2, Glassy carbon disc 3mm Working Electrode – Qt. 2, Metal Wire Auxillary Electrode - Platinum (99.9%) –Qt. 2, Aqueous Ag/AgCl Reference Electrode – Qt. 2, Non-aqueous Ag/AgCl Reference Electrode – Qt. 2, 2mm dia. Au working electrode- Qt.1, 2mm dia. Pt working electrode-Qt. 2, Calomel Ref. electrode- Qt. 2 Electrode polishing Kit- Qt. 1, Cell Stand		
19	<b>Accessory (A): Screen Printed Electrodes – Mix packs – Advanced Sensor Development Research: Package 2</b>		
	Mix of carbon, gold and platinum screen-printed electrodes (25 units/model), Mix of Screen-printed gold electrodes (25 units/model) annealed at various temperatures so that they can be used for electrodeposition or direct sensor studies as per requirements, Screen-printed carbon electrodes modified with carbon nanotubes (75 units/pack) Cables & Cells to Use Screen Printed Electrodes in ‘Drop’ based or ‘Dip’ based analysis: Qt.1 Several types of connector cables and cell set-ups are required for various kinds of sensor platforms		

S.No.	<b>(B) Technical Specifications for An Expandable Multichannel Potentiostat/Galvanostat For Advanced Research</b>	Technical Compliance  (Yes/No)	Remarks
	<b>Accessory (A2) Options for Fully Automated High Precision Amperometric Detection: Future Option Required: Qt. 1.</b>		
	Fully automated amperometric detection analysis is required that could significant reduce overall analysis time while also providing accurate results for batch-injection as well as flow-based sensor analysis in a single hands-free operation.		
	<b>Accessory (A3): Electrochemical ELISA Measurements Set-up: Future Option Required: Qt. 1</b>		
	A specific connector that acts as an interface between the Screen-Printed Electrodes 96x format and a multichannel system is required. Up to eight wells of the same column are needed to be measured at the same time. Also, independent analysis of any well should be possible. The ELISA system should possess upto two manual rotating selectors to allow user to select the row letter (from A to H) and the column number (from 1 to 12) identifiers of the wells to be analyzed.		
	<b>Accessory (B): Advanced Corrosion Research and Studies: Acrylic (or similar) Corrosion Cell for Flat Samples: Qt. 1</b>		
	A multi-port 250 mL corrosion cell is required that is made following guidelines of ASTM standards. The cell material must be made of material to withstand acid electrolytes with proper sealing. Sample exposed Area 1 cm <sup>2</sup> , Sample size 16 * 16mm ~ 65*65mm, thickness 0.5~6mm, At minimum, the cell should have: Calomel reference electrode, Graphite counter 6mm diameter, Acrylic side support, Following tests are targeted: Linear polarization tests – with auto-regression feature for polarization resistance, Potentiodynamic resistance tests with Tafel Evaluation, Critical pitting Tests, EIS based inhibitor tests, Electrochemical Noise		
	<b>Future Expandability Options: Chassis should have expandability for upto a minimum of 8 more channels or (4 channels + 4 Modules) for applications listed below.</b>		
	Vendor should be capable of providing necessary tools and accessories for the applications listed below: <b>Advanced Spectro-electrochemistry Set-up with SPEC cell:</b> A fully integrated & synchronized ‘complete solution’ spectro-electrochemical system that can be used independently as a Spectrometer or as a Potentiostat/Galvanostat. The package should include all cables, cell set-up, electrodes and accessories for fully integrated one click spectro-electrochemistry data generation using single software window. <b>Battery / Supercapacitor Research and Analysis Set-up for Gels, Liquids, Thin films and Coin Cells:</b> EIS based proton conductivity and electron diffusion analysis for electrolytes in gel, solid and liquid phase, Novel anode / separator material performance testing with galvanostatic charge-discharge protocols, MOFs and Graphene based supercapacitor testing for pseudo-capacitance <b>Solar Cell Applications:</b> DSSC Analysis for I-V, IMPS, IMVS, EIS using LED Optical Bench, Perovskite Analysis using		

	advanced Solar Simulator <b>Electro-Kinetics Applications:</b> oxygen Reduction Reaction Studies using RRDE + BA Set-up, Photo-electrochemical Water Splitting using a PEC cell and Solar Simulator		
	<b>Computer Station:</b>		
	A suitable branded Computer like Dell or Compaq or equivalent for system control & data acquisition should be offered with the system. It should have following minimum specs: CPU Intel Core i5, RAM 8 GB RAM, HDD 500 GB, GPU DirectX 9.0c compliant display adapter with 1GB RAM, TFT Monitor 21 inch, 101 Keys Keyboard, Optical Mouse, 3 USB Ports.		
	<b>Software:</b>		
	<p>The system software must have capability for hybrid measurements such as Spectro-electrochemistry, E-SPR, SECM, IMPS-IMVS, EQCM, etc. It should have TTL triggering, ADC, DAC based communication ports. The Software must be able to be downloaded to unlimited computers &amp; fully windows based. Software should be capable of supporting a wide variety of electrochemical techniques for advanced sensor research(50+ modern electroanalytical techniques).</p> <ul style="list-style-type: none"> <li>• <b>3D Based Live Plotting:</b> Powerful graphic engine with useful features such as individual Axis scaling, overlays, multiple Y-axes, plot addition, 3D zooming and rotation. Each plot should be saved as a vector image file to use directly in paper or presentation. Minimum 10+ plot could be plotted simultaneously.</li> <li>• <b>Electro-catalysis:</b> ORR analysis using RDE/RRDE at varying rotation speeds and built-in Kotecky-levich plot generation, HER and OER analysis for water splitting, Carbon dioxide reduction analysis, default technique for spectro-electrochemistry based LSV, CV and Chrono evaluation.</li> <li>• <b>Corrosion:</b> Linear polarization with Tafel Slope Analysis, Polarization resistance evaluation, Electrochemical Noise analysis, critical pitting technique, electrochemical frequency modulation, hydrogen permeation analysis etc.</li> <li>• <b>Battery &amp; Supercapacitor Analysis:</b> Rectangular CV analysis at varying scan rates for pseudocapacitor analysis, complete charge and discharge with built in integration and 'linkable' cut-offs, Galvanostatic charge discharge with cycle number vs specific capacitance plot, Voltage measurement on counter electrode, etc. <b>Solar Cell Characterization:</b> I-V plotting with automatic determination for max power point &amp; fill factor, IMPS-IMVS evaluation, EQE / IPCE Analysis, Charge extraction, Photo-current response, Mott-Schottky plots for single frequency scan, etc.</li> </ul>		
	<b>Branded RT/RH regulator:</b> Equipment with 2 ton compressor to regulate room temperature (RT:16-25Deg C) and relative humidity (RH).		
	<b>Warranty:</b> Five Years		
Bidder must have a turnover of Rs 6000000 or more per year for last three financial years.			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 60000 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 6000000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that “We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery”		

## 2.3 Fluorescence Spectrometer

S.No.	( C ) Technical Specifications for Fluorescence_ spectrometer	Technical Compliance (Yes/No)	Remarks
<b>EMD of Rupees to be submitted 50000</b>			
1	<b>Wavelength Range:</b> Excitation: 200-900nm , Emission: 200-900 nm		
2	<b>Light source:</b> Xenon Lamp		
3	<b>Wavelength accuracy:</b> 0.5 nm or lower		
4	<b>Spectral bandwidth:</b> Excitation: 1, 2.5, 5,10 nm and 20 nm or better. Emission: 1, 2.5, 5, 10 nm and 20 nm or better		
5	<b>Standard Excitation filters:</b> 3 Excitation Filters included (290,370,530nm)		
6	<b>Standard Emission Filters:</b> 3 Emission Filters included (320,430,515nm)		
7	<b>Resolution:</b> 1 nm or less		
8	<b>Mode:</b> Fully Computerized Mode		
9	<b>Noise level (S/N Ratio):</b> 750:1 (RMS) or Better		
10	<b>Wavelength scan rate:</b> 21000 nm/min or higher		
11	<b>Power :</b> 230 V/ 50 Hz		
12	<b>Detector :</b> Photo Multiplier Tube (PMT)		
13	<b>Monochromator:</b> 1200 groves/mm or higher		
14	<b>Wavelength Reproducibility:</b> 0.2 nm or better		
15	<b>Polarizer:</b> Polarizer is required for the measurement of anisotropy.		
16	<b>Software requirement:</b> The standard features provided by the software include A spectrum mode, 3D-spectrum mode, photometric mode, quantification mode, and Quenching, and quantum yield (relative and absolute), pre-scan mode, time-course mode & Validation software is also included. CAT mode scanning, Signal to noise mode scanning, Single wavelength measurements, Kinetics applications, lifetime as well as concentration application including data collection, time resolution, calibration curve for standard/sample averaging and data collection.		
17	Two pairs of Quartz cuvettes (3 mL)		
18	<b>Phosphorescence:</b> Availability of phosphorescence measurements of samples is must		
19	<b>PC &amp; UPS (s items) :</b> Branded desktop computer with latest and licensed version of Windows OS with life time validity and with		



	compatible with instruments software for all operations of the spectrophotometer with intel core i4 or higher processor, DVD-RW drive facility, >500GBHDD, >4GB DDR RAM, >24" LCD Monitor, Minimum 4 USB ports, with branded laser Printer. 2 KVA Online UPS with 30 min. back up with frequency monitoring facility and software (50 Hz. +/- 0.01)		
20	<b>Branded RT/RH regulator:</b> Equipment with 2 ton compressor to regulate room temperature (RT:16-25°C) and relative humidity (RH)		
21	<b>Accessories :</b> <ul style="list-style-type: none"> <li>• One pair of Quartz cuvette (1mL) ,</li> <li>• Single cell peltier system for temperature controlled analysis from 0°C to 100°C</li> <li>• <b>Solid Sample Holder:</b> Solid sample holder is required for powders and thin films</li> </ul> (Price of above items should be quoted separately)		
22	<b>Warranty:</b> Five years minimum		
Bidder must have a turnover of Rs 5000000 or more per year for last three financial years copy must be enclosed.			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 50000 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs5000000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that “We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery”		

## 2.4 Rotary Evaporator System With Vacuum Pump, Controller And Circulating Chiller

S.No.	<b>(D) Technical Specifications For Rotary Evaporator System With Vacuum Pump, Controller And Circulating Chiller</b>	Technical Compliance  (Yes/No)	Remarks
<b>EMD of Rupees to be submitted 16000</b>			
	<b><u>Rotary Evaporator</u></b>		
	<b>Speed Range</b> : 20 to 280rpm		
	<b>Timer</b> : 1-999 min		
	<b>Protection Class:</b> IP20		
	<b>Cooling surface</b> : 1,500 cm <sup>2</sup>		
	<b>USB Interface</b> : Yes		
	<b>Motor type:</b> Brushless DC motor		
	<b>Display</b> : LCD(speed, temperature, time)		
	<b>Water Bath</b> : 5lit		
	<b>Heating Temperature Range</b> : Room Temperature upto +/-180 Deg.C or better		
	<b>Control Accuracy</b> : +/-1 Deg.C, <b>Stroke Displacement</b> : automatic 150 mm. <b>Reversible Direction of Rotation:</b> Yes		
	<ul style="list-style-type: none"> <li><b>Flasks/Condenser/Motor lift:</b> Vertical Condenser and Glassware included Evaporating flask 1L &amp; receiving flask IL (2 in numbers each) Motor lift automatic release</li> </ul>		
	<b>Vacuum Pump and controller</b> : Should be supplied with following specifications-Maximum Vacuum:13mbar ,Work Mode: In Successions ,Nozzle Size:8mm, Power: 95W ,Motor speed:1450rpm, Controller : Suitable for the vacuum diaphragm vacuum pump controller,Pressure stability: ± 0.1 Torr/0.133mbar ,Sensor material: stainless steel,Vacuum pump Should be supplied with silencer		
	<ul style="list-style-type: none"> <li><b>Other essential Requirements:</b> All glass components should be made of Borosilicate glass.Automatic over heat cut-off protection A separate pair of vacuum gasket should be provided</li> </ul>		

S.No.	<b>(D) Technical Specifications For Rotary Evaporator System With Vacuum Pump, Controller And Circulating Chiller</b>	Technical Compliance (Yes/No)	Remarks
	<b><u>Chiller</u></b>		
	<b>Working temperature range:</b> -10° to 40° C,		
	<b>Temperature stability:</b> ±0.5° C		
	<b>Setting / display resolution:</b> 0.1° C		
	<b>Pump capacity flow rate:</b> 1.5 to 2.5 lit/min		
	<b>Coolant:</b> CFC Free		
	<b>Warranty:</b> Five years minimum		
Bidder must have a turnover of Rs 1600000 or more per year for last three financial years and copy should be enclosed.			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 16000 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 1600000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that "We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery"		

## 2.5 Electronic Balance

S.No.	(E) Technical Specifications for Electronic Balance (Range 0.1mg)	Technical Compliance (Yes/No)	Remarks
<b>EMD of Rupees to be submitted 3000</b>			
1	<b>Capability:</b> 220gm		
2	<b>Readability :</b> 0.1mg		
3	<b>Repeatability :</b> 0.1mg		
4	<b>Linearity :</b> $\pm 0.2$ mg		
5	<b>Pan Size :</b> 85-90 mm		
6	<b>Tare Range:</b> Full		
7	<b>Response Time:</b> 3seconds		
8	<b>Display :</b> LCD Display with LED backlit		
9	<b>Calibration :</b> Internal automatic calibration; Under weighing hook for below balance weighing; Built-in application program		
10	<b>UPS:</b> 0.5 – 1.0 KVA Online UPS with 30 min. back up, <b>Warranty:</b> Five years minimum		
Bidder must have a turnover of Rs 300000 or more per year for last three financial years and copy should be enclosed.			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 3000 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 300000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that "We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery"		

## 2.6 Polarimeter

S.No.	(F) Technical Specifications for Polarimeter	Technical Compliance (Yes/No)	Remarks
<b>EMD of Rupees to be submitted 22,000</b>			
1	<b>Technical Specification: Measuring Scales and mode:</b> Optical Rotation, Specific Rotation, %Concentration (g/ml, g/100ml, g/L), Sugar Scale ,		
2	<b>Optical wavelength :</b> 589nm or better <b>Light Source:</b> Sodium LED or Tungsten halogen lamp, <b>Measuring range:</b> $\pm 85.0^\circ$ or better <b>Accuracy:</b> $\pm 0.01^\circ$ for complete range or better <b>Resolution:</b> $0.001^\circ$ for complete range <b>Reproducibility:</b> $\pm 0.002^\circ$		
3	<b>Sensitivity:</b> A light intensity control 0.01%; optical density 4.0		
4	<ul style="list-style-type: none"> <li>• <b>Temperature:</b> Peltier system for automatic temperature control should be in built from the company or Inbuilt Temp. probe Range <math>10^\circ</math> to <math>100^\circ</math> C</li> <li>• Temperature sensor : Built-in PT 100</li> <li>• Temp. Resolution : <math>0.1^\circ</math> C</li> </ul> Temp. accuracy : $\pm 0.2^\circ$ C		
5	<b>Sample Cell:</b> Up to 100mm <b>Display:</b> TFT Touch Screen <b>Calibration:</b> Automatic Calibration via touch screen Sample cells having pyrex glass with stopper of volumes 2.0ml		
6	<ul style="list-style-type: none"> <li>• <b>Interface:</b> 3-4 USB, RS232, Ethernet, VGA, CAN bus. Should be easily connected to Keyboard, Mouse, Printer, Bar code and network compatibility</li> </ul>		
7	<b>Date Storage:</b> >20 GB in the instrument and PC must be supplied with suitable software.		
8	<b>PC &amp; UPS:</b> Branded desktop computer with latest and licensed version of Windows OS with life time validity and compatible with instruments software for all operations of the spectrophotometer with intel core i4 or higher processor, DVD-RW drive facility, >500GBHDD, >4GB DDR RAM, >24"LCD Monitor, Minimum 4 USB ports, with branded laser Printer. 1.5 KVA Online UPS with 30 min. back up		
9	<b>Required Accessories: Sample cells having pyrex glass with stopper of volumes 1.5 ml</b> <b>Spare lamp should also be provided</b>		
10	<b>Warranty :</b> Five Years		
Bidder must have a turnover of Rs 2200000 or more per year for last three financial years (copy enclosed).			



## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 22000 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 2200000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that "We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery"		

### 3. Center for Basic Sciences: Physics Lab Equipment

#### 3.1 GM Counter, Radiation Counter Experiment kit

S. No.	(A) Technical specification of GM Counter, Radiation Counter Experiment kit ,Qty -1	Technical Compliance (Yes/No)	Remark
<b>EMD Price-9,000 INR</b>			
	<b>Required features</b>		
1	Preset Time		
2	Digital Ratemeter		
3	Preset Audio Alarm		
4	Adjustable High Voltage		
5	Volume Control		
6	Operate both manual and software mode.		
	<b>Radiation Counter</b>		
1	Inputs : BNC connector - Accepts standard Geiger tubes, MHV connector - Accepts scintillation detectors.		
2	High voltage : 0 to +1200 volts @ 0.5mA		
3	Display : 6-decade LED, 1 in. numerals; 5-segment bargraph LEDs		
4	Modes : Counts; Elapsed Time; Preset Time; Count Rate (counts per second); High		
5	Audio : Includes an audio indication of radiation events and a programmable audio alarm.		
6	Interface : USB and RS-232 serial ports for both PC and Macintosh		
7	Power : 9 volt DC, at 500mA		
8	Dimensions : 10 inches W, x 7 inches D, x 4.5 inches H		

S. No.	(A) Technical specification of GM Counter, Radiation Counter Experiment kit ,Qty -1	Technical Compliance (Yes/No)	Remark
9	Software : Windows and Macintosh versions		
	<b>GM-35 Tube with Stand:</b>		
1	GM35 GM Probe : 35mm end window with BNC connector.		
2	Plateau : 2 mg/cm <sup>2</sup> , 150V		
3	Deadtime : 200 microsecond		
4	Dimension : 35 mm OD, x 223 mm L		
5	Stand : 10 position stand with sample tray		
6	BNC cable : 3-ft.		
1.	<b><u>Set of at least 20 Absorbers:</u></b> The set of 20 calibrated radiation absorbers should cover the range from 4.5 to 7400 mg/cm <sup>2</sup> and consists of aluminum, plastic and lead plates. The absorber 2.75"x2.75" (approximate) should be designed to fit all Spectrum Techniques detector stand assemblies.		
	<b><u>Set of Five Radioactive Sources:</u></b>		
1	Isotopes-Cs137, Activity-5uCi 30, Half life-1yrs, Emissions-Gamma, Beta, Energies (keV) $\gamma$ 32, $\gamma$ 661.6, $\beta$ 511.6, $\beta$ 1173.2		
2	Po210, 0.1uCi, 0.1uCi, Alpha, $\gamma$ 5407.5		
3	Sr90S,0.1uCi, 28.8yrs, Beta, $\beta$ 546		
4	Co60,1uCi, 5.27yrs, Gamma, Beta, $\gamma$ 1173.2, $\gamma$ 1332.5, $\beta$ 317.9,		
5	T1204S1,1uCi, 3.78yrs, Beta, $\beta$ 763.7		
1	<b><u>Lead Shield:</u></b> Wall thickness : 0.5"		
2	Capacity : Holds up to 20 1" discs.		
3	Outside Dimensions : 3.6" x 2.25" (Lx $\phi$ ) Approximate		

S. No.	(A) Technical specification of GM Counter, Radiation Counter Experiment kit ,Qty -1	Technical Compliance (Yes/No)	Remark
4	Interior Dimensions : 2.65" X 1.25" (Lx ø). Approximate		
5	Wall thickness : 0.5" Wight : Approximately 4.6 lbs, Lead shield container should be suitable for higher activity gamma ources.		
	<b>Specification of Computer: Processor-</b> Intel Core i7- 9700 Processor (3.00GHz, 12MB) or better, <b>OS-</b> DOS, <b>Memory:</b> at least 16.0 GB PC4- 22400 DDR4 UDIMM 2666 MHz, <b>Hard Drive :</b> at least 1TB 7200, <b>Monitor :</b> At least 23.8 inch, at least 250 cd/m <sup>2</sup> Brightness and 1000:1 static; 5000000:1 dynamic Contrast, <b>UPS :</b> Power Rating 600-1000 VA, Voltage 230 Vac, Frequency 50 Hz		
Bidder must have a turnover of Rs 900000 or more per year for last three financial years and copy should be enclosed.			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 9000 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 900000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that "We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery"		

### 3.2 Determination of the horizontal and vertical components of earth's magnetic field

S. No.	(B) Technical specification For Determination of the horizontal and vertical components of earth's magnetic field ,Qty 1	Technical Compliance (Yes/No)	Remark
<b>EMD Price-4,000 INR</b>			
1	Helmholtz Coils 300 mm-1,		
2	DC Power Supply 0 – 20 V, 0 - 5 A (230 V, 50/60 Hz),		
3	Digital Multimeter,		
4	Rheostat 100 $\Omega$ ,		
5	Set of 15 Safety Experiment Leads, 75 cm		
6	Inclination and Declination Instrument,		
Bidder must have a turnover of Rs 400000 or more per year for last three financial years and copy should be enclosed.			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 4000 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 400000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that “We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery”		

### 3.3 Millikan Oil drop Apparatus

S. No.	(C) Technical Specification for Millikan Oil drop Apparatus ,Qty 1	Technical Compliance (Yes/No)	Remark
<b>EMD Price-2000 INR</b>			
1	<b>Input voltage : AC 220V, 50Hz</b>		
2	Output power : 5W.		
3	Plate voltage : 0~500V DC		
4	Change over switch : Between +ve, -ve and 0 field		
5	Plate distance : $5 \pm 0.2$ mm.		
6	Total Magnification : 30X		
7	Linear field of vision : $\geq 3$ mm.		
8	Scale division : $2 \pm 0.01$ mm.		
9	Objective lens : 100 lines/mm.		
<b>DIGITAL STOP WATCH</b>			
1	<b>Display : 6 Digit</b>		
2	Accuracy : 0.01sec		
3	Digit size : 5mm (at least)		
4	Mode : Start, Stop & Reset		
5	Necklace length : 2 feet		
1	<b>USB CAMERA Sensor : 1.2 MP (at least), Eyepiece : 10X with adapter ring,</b>		
2	Connectivity : USB, <b>Compatible with System</b>		
3	O.S : Windows (Linux preferred) RAM : 1GB or above		



S. No.	(C) Technical Specification for Millikan Oil drop Apparatus ,Qty 1	Technical Compliance (Yes/No)	Remark
	<b>Specification of Computer:</b>		
1	<b>Processor-</b> Intel Core i7- 9700 Processor (3.00GHz, 12MB) or better,		
2	OS- DOS, <b>Memory:</b> at least 16.0 GB PC4- 22400 DDR4 UDIMM 2666 MHz,		
3	<b>Hard Drive</b> : at least 1TB 7200,		
4	<b>Monitor</b> : At least 23.8 inch, at least 250 cd/m <sup>2</sup> Brightness and 1000:1 static; 5000000:1 dynamic Contrast,		
5	<b>UPS</b> :Power Rating 600-1000 VA, Voltage 230 Vac, Frequency 50 Hz, <b>Memory:</b> at least 16.0 GB PC4- 22400 DDR4 UDIMM 2666 MHz,		
Bidder must have a turnover of Rs 400000 or more per year for last three financial years and copy should be enclosed.			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 4000 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 400000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that "We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery"		

### 3.4 Stern Gerlach Experiment kit

S. No.	(D) Technical Specification for Stern Gerlach Experiment kit,Qty 1	Technical Compliance (Yes/No)	Remark
<b>EMD Price-5000 INR</b>			
1	High vacuum pump assembly,		
2	Electromagnet w/o pole shoes,		
3	DC measuring amplifier,		
4	Matching transformer,		
5	Potassium ampoules (set of 6),		
6	Variable Power supply 15 VAC/ 12 VDC/ 5 A,		
7	Steel cylinder (nitrogen,10l),		
8	Two-tier platform support,		
9	Power supply 0-12 V DC/ 6 V, 12 V AC, 230 V		
10	Ammeter 1mA...3 A (2 Meter, 10/30 mV, 200 deg.C 1;		
11	Pole piece, plane 2;		
12	Voltmeter, 0.3-300VDC,10-300VAC / 2;		
13	Gas-cylinder Trolley for 10 L. 1;		
14	Reducing valve for nitrogen 1;		
15	Commutator switch 1;		
16	Cristallizing dish, 2000ml 1;		
17	Isopropyl alcohol, 1000 ml 1;		
18	Storage tray 413x240x100mm (approx) 1; Rubber tubing,vacuum; Connecting cords,		
Bidder must have a turnover of Rs 500000 or more per year for last three financial years and copy should be enclosed.			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 5000 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 500000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that “We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery”		

### 3.5 Electron Diffraction experiment (Unit 1)

S. No.	(E) Technical Specification for Electron Diffraction experiment (Unit 1)	Technical Compliance (Yes/No)	Remark
<b>EMD Price-8000 INR</b>			
1	<b>POWER SUPPLY</b>		
2	High voltage output : 0-5000 V DC, max. 2 mA, max. 5 W;		
3	Heater voltage output : 6.3 V AC, max. 3 A;		
4	Overload protection : Primary: fuse;		
5	Secondary : current-limiting resistors;		
6	Connections : 4 mm safety sockets;		
7	High-voltage display : Analogue;		
8	Dimensions : 235x130x155 mm <sup>3</sup> approx.;		
9	Weight : 3.5 kg approx.;		
10	High voltage resistant up to 6 kV		
<b>SAFETY EXPERIMENT LEADS</b>			
1	Wire cross-section : 2.5 mm <sup>2</sup> ;		
2	Continuous current : max. 32 A;		
3	Plug and jack : 4 mm (nickel-plated);		
4	Connection cords : <b>TUBE HOLDER</b> : Terminals : 4 mm safety sockets,, Dimensions : approx. 130x190x250 mm <sup>3</sup> , Weight : approx. 570 g		
<b>ELECTRON DIFFRACTION TUBE:</b>			
1	Max. filament voltage : 6.3 V AC; Max. anode voltage : 5 kV; Anode current: approx. 0.1 mA at 4 kV; Lattice constant of graphite: d <sub>10</sub> = 0.213 nm; d <sub>11</sub> = 0.123 nm		
Bidder must have a turnover of Rs 500000 or more per year for last three financial years and copy should be enclosed			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 8000 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 800000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that “We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery”		

### 3.6 Dielectric Constant Kit (Unit 2)

S. No.	(F) Technical Specification for Dielectric Constant Kit (Unit 2)	Technical Compliance (Yes/No)	Remark
<b>EMD Price-2000 INR</b>			
1	<b>Required Features:</b>		
2	Charge measurement by electrometer amplifier;		
3	All electrical connections are made using safety sockets;		
4	Capacitors plates are attached to insulated riders;		
5	Electrical safety tested.		
<b>HIGH VOLTAGE POWER SUPPLY:</b>			
1	Input Voltage : 220V, $\pm 5\%$ , 50Hz AC;		
2	Output Voltage : 0-600V DC;		
3	Voltage Resolution : 10V;		
4	Voltage Display : Analog;		
5	Short Circuit Current : 100 $\mu$ Amp		
<b>POWER SUPPLY 2-12V AC/DC:</b>			
7	Input Voltage : 220V, $\pm 5\%$ , 50Hz AC;		
8	Output Voltage : 2,3,4,5,6,8,10 and 12 V AC full wave;		
9	rectified, unsmoothed and unregulated D.C.;		
10	Overload protection : Resettable thermal trip		
<b>DIELECTRIC CONSTANT KIT:</b>			
1	Metal Rail : Metal sheet, L=350mm approx.; Capacitor plate : Aluminium, 28cm x 28cm (LxW); Glass sheet : 21cm x 21cm (LxW); Capacitor plate : Aluminium, 20cm x 20cm (LxW);		

S. No.	(F) Technical Specification for Dielectric Constant Kit (Unit 2)	Technical Compliance (Yes/No)	Remark
5	Polystyrene sheet : 21cm x 21cm (LxW);		
6	Two way switch : 4mm socket, 3 nos.;		
7	Capacitor : 0.01 $\mu$ F & 0.001 $\mu$ F;		
8	Spacer : PVC (1,2,3,4,6 mm);		
9	Switch : Push switch		
	<b>ELECTROMETER AMPLIFIER:</b>		
1	Supply Voltage : 12 V AC;		
2	Input Impedance : >1013 ohm;		
3	Input Current : < 0.5pA;		
4	Output Voltage : up to +10V;		
5	Output Current : 5mA (Short Circuit Protected); Output impedance : <1 ohm		
	<b>RESISTANCE MODULE:</b>		
1	Resistance : 4.7MW; Body cover : Acrylic Socket : 4mm banana type		
	<b>DIGITAL MULTIMETER:</b>		
1	Digital Display : 3999(maximum);		
2	Model : MECO 801 Auto;		
3	Direct Current and Voltage measurement;		
4	AC Current and Voltage measurement;		
5	Resistance measurement;		
6	Frequency measurement;		
7	Capacitance measurement;		



S. No.	(F) Technical Specification for Dielectric Constant Kit (Unit 2)	Technical Compliance (Yes/No)	Remark
8	Temperature measurement;		
9	Continuity mode;		
10	Diode measurement mode; Auto range mode		
Bidder must have a turnover of Rs 200000 or more per year for last three financial years and copy should be enclosed			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 2000 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 200000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that “We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery”		

### 3.7 Diode laser diffraction experiment kit (Unit 2)

S. No.	(G) Technical Specification for Diode laser diffraction experiment kit (Unit 2)	Technical Compliance (Yes/No)	Remark
<b>EMD Price-2100 INR</b>			
	<b>Required features :</b>		
1	4Class II diode laser;		
2	4Silicon detector		
3	<b>Optical Bench:</b>		
4	Scale : 0-100cm;		
5	Least count : 1mm;		
6	Optical bench should be rigid, heavy, stable and long lasting having leveling screws and flexible feets		
	<b>Set of (at least) 13 Objects:</b>		
1	It consists of 13 Objects : Single slit, double slit, multiple slit 3, multiple slit 4,multiple slit 5,single tapered slit, fine grating, 4 holes, circular opaque spots gray filter, mesh, coarse grating & grid pattern, Frame Size : 50mm x 50mm		
	<b>Pin Hole Photo Detector:</b>		
1	Detector : Silicon photocell;		
2	Terminals : 4mm safety socket;		
3	Aperture : 1 mm;		
4	Rod : 10 mm diameter		
	<b>Diode Laser:</b>		
1	Peak wavelength : 635nm;		
2	Operating voltage : 5V DC;		
3	Operating current : 250mA;		
4	Optical power : 0.4-0.8mW;		

5	Laser product : Class II;		
6	Operating temp. : 0 - 40°C;		
7	Storage temp. : -10 to 50°C		
	<b>Digital Multimeter:</b>		
1	Resistance :200W, 2000W, 20k, 200k & 2000k W;		
2	D.C.Voltage : 200 & 2000 mV: 20, 200 & 600V;		
3	A.C.Voltage : 200 & 600V;		
4	D.C.Current : 200 & 2000mA: 20 & 200mA: 10 A;		
5	Testing : Diode & transistor;		
6	Battery : 9V		
Bidder must have a turnover of Rs 210000 or more per year for last three financial years and copy should be enclosed			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 2100 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 210000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that "We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery"		

### 3.8 Study of Hall Effect in semiconductors (Unit 1)

S. No.	(H) Technical Specification for Study of Hall Effect in semiconductors (Unit 1)	Technical Compliance (Yes/No)	Remark
<b>EMD Price-2000 INR</b>			
	<b>CONSTANT CURRENT SOURCE:</b>		
1	Current Display : 0-20 mA DC;		
2	Voltage Display : <a href="#">0+200mV@0.1mV</a> ;		
3	Resolution : 10 micro ampere;		
4	Current Adjust : 10-turns potential meter;		
5	Power : 220V $\pm$ 10%, 50 Hz AC;		
6	Display : 3½ digit LED;		
7	Weight : 3 Kg approx.		
	<b>POWER SUPPLY:</b>		
1	Voltage : 0-20V DC continuously variable & stabilized;		
2	Voltage display : 3½ digit LED; Ripple : Less than 25mV;		
3	Overload : Current limiting protection;		
4	Current : 5 A continuously variable, 10% to full rating;		
5	Current display : 3½ digit LED; Working voltage : 230V AC, 50 Hz single phase		
6	Current display : 3½ digit LED;		
7	Working voltage : 230V AC, 50 Hz single phase		
	<b>HALL EFFECT APPARATUS:</b>		
1	Coils : 500 turns. Coil Current : 8.5Amp (Max.);		
2	Connection : 4mm safety socket; I Core : Length=150mm, 40x40mm <sup>2</sup> cross section; U Core : 150x130mm <sup>2</sup> (LxH), 40x40mm <sup>2</sup> cross section;		

S. No.	(H) Technical Specification for Study of Hall Effect in semiconductors (Unit 1)	Technical Compliance (Yes/No)	Remark
5	Core material : Ferromagnetic;		
6	Base dimension : 360x180x33mm <sup>3</sup> ;		
7	Weight : 8.8kg (Approx.)		
	<b>DIGITAL GAUSS METER:</b>		
1	Range : 200 Gauss & 2 k Gauss; Resolution : 0.1Gauss at 0 - 200 Gauss;		
2	Offset : By Potentiometer to set ZERO; Display : 3½ Digit LED;		
3	Input Voltage : 220 V, ± 5 %, 50 Hz AC;		
4	Axial Hall Probe : InAs		
	<b>GE CRYSTAL PCB:</b>		
1	Crystal : Ge Wafer, P type;		
2	Crystal Size : 6x7 x 0.5mm <sup>3</sup> (LxWxThickness);		
3	Resistivity : 1~ 10 ohm-cm;		
4	Orientation : <100>;		
5	Offset pot : Trim pot;		
6	Connection : 4mm safety socket		
Bidder must have a turnover of Rs 200000 or more per year for last three financial years and copy should be enclosed			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 2000 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 200000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that "We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery"		



### 3.9 Study of Zeeman effect using Fabry- Perot Interferometer

S. No.	(I) Technical Specification for Study of Zeeman effect using Fabry- Perot Interferometer (Unit 1)	Technical Compliance (Yes/No)	Remark
<b>EMD Price-10000 INR</b>			
1	Fabry-Perot interferometer 1;		
2	Cadmium lamp for Zeeman effect 1;		
3	Electromagnet without pole shoes 1;		
4	Pole pieces, drilled, conical 1;		
5	Rotating table for heavy loads 1;		
6	Power supply for spectral lamps 1;		
7	Variable transformer, 25 V AC/20 V DC, 12 A 1;		
8	Capacitor, electrolytic, 22000 $\mu$ F 1;		
9	Digital multimeter 1;		
10	Optical profile-bench, length(at least) = 1000 mm 1;		
11	Base for opt. profile-bench, adjust. 2;		
12	Slide mount for opt. profile-bench, h = 30 mm 5;		
13	Slide mount for opt. profile-bench, h = 80 mm* 2;		
14	Lens holder 4;		
15	Lens, mounted, f = +50 mm 2;		
16	Lens, mounted, f = +300 mm 1;		
17	Iris diaphragm 1;		
18	Polarising filter, on stem 1; Connecting cords ; Polarization specimen, mica 1;		
19	CCD/CMOS-Camera for PC including measurement software 1;		
20	With USB interface, O.S : Windows (Linux preferred); (Compatible with the instrument setup);		

S. No.	<b>(I) Technical Specification for Study of Zeeman effect using Fabry- Perot Interferometer (Unit 1)</b>	<b>Technical Compliance (Yes/No)</b>	<b>Remark</b>
23	two slide mounts, h = 80 mm for performing Zeeman effect experiment without CCD/CMOS-Camera (classical version of the Zeeman Effect)		
24	; Slide mounts for optical profile-bench, 1;		
25	Sliding device, horizontal 1		
	<b><u>Specification of Computer:</u></b>		
1	<b>Processor-</b> Intel Core i7- 9700 Processor (3.00GHz, 12MB) or better, <b>OS-</b> DOS, <b>Memory:</b> at least 16.0 GB PC4- 22400 DDR4 UDIMM 2666 MHz;		
2	<b>Hard Drive</b> : at least 1TB 7200 ;		
3	<b>Monitor</b> : At least 23.8 inch, at least 250 cd/m <sup>2</sup> Brightness and 1000:1 static; 5000000:1 dynamic Contrast;		
4	<b>UPS</b> :Power Rating 600-1000 VA, Voltage 230 Vac, Frequency 50 Hz		
Bidder must have a turnover of Rs 1000000 or more per year for last three financial years and copy should be enclosed			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 10000 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 1000000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that “We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery”		

### 3.10 Determination of Planck's constant experiment kit (Unit 1)

S. No.	(J) Technical Specification for Determination of Planck's constant experiment kit (Unit 1)	Technical Compliance (Yes/No)	Remark
<b>EMD Price-1,500 INR</b>			
	<b>Salient Features:</b>		
1	Inbuilt power supply & photocell;		
2	Different types of filters and LED; Different types of wave length of filters and LED		
	<b>Planck's Constant Apparatus</b>		
1	Light source : Tungsten-halogen 12V / 35W;		
2	Scale : Length 400mm;		
3	Photocell : Cs Vacuum Phototube;		
4	Dark-current : < 0.003 $\mu$ A;		
5	Display mode switch : Displays current (m A) or voltage (V);		
6	Current multiplier : X1, X0.1, X0.01 & X0.001;		
7	Accelerate Voltage : -15V to 0V & 0 to 15V, < $\pm$ 2%;		
8	Power supply : 220V / 50Hz;		
9	Measuring error : < $\pm$ 15% compared with the recognized value (h=6.62619x 10 <sup>-34</sup> J.S)		
	<b>Set Of Color Filters:</b>		
1	Red : 635nm;		
2	Orange : 570nm;		
3	Yellow : 540nm;		
4	Green : 500nm;		
5	Blue : 460nm		
Bidder must have a turnover of Rs 150000 or more per year for last three financial years and copy should be enclosed			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 1500 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 150000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that "We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery"		

### 3.11 Gyroscope (experiment kit) With PC interface

S. No.	(K) Technical Specification for Gyroscope (experiment kit) With PC interface, Qty 1	Technical Compliance (Yes/No)	Remark
<b>EMD Price-9000 INR</b>			
1	Equipment Gyroscope with 3 axes 1;		
2	Light barrier with Counter 1;		
3	Power supply 5 V DC/0.3 A 1 ;		
4	Additional gyro-disc w. counter-weight 1;		
5	Stopwatch, digital, 1/100 sec. 1;		
6	Barrel base 1; Slotted weight,10 g, 4		
	<b>Specification of Computer:</b> Processor- Intel Core i7- 9700 Processor (3.00GHz, 12MB) or better, OS- DOS;, <b>Memory:</b> at least 16.0 GB PC4- 22400 DDR4 UDIMM 2666 MHz; <b>Hard Drive :</b> at least 1TB 7200; <b>Monitor :</b> At least 23.8 inch, at least 250 cd/m <sup>2</sup> Brightness and 1000:1 static; 5000000:1 dynamic Contrast; <b>UPS :</b> Power Rating 600-1000 VA, Voltage 230 Vac, Frequency 50 Hz		
Bidder must have a turnover of Rs 900000 or more per year for last three financial years and copy should be enclosed			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 9000 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 900000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that “We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery”		

### 3.12 Electron Spin resonance and nuclear magnetic resonance (ESR-NMR)

S. No.	(L) Technical Specification for Electron Spin resonance and nuclear magnetic resonance (ESR-NMR) experiment kit (Unit 1)	Technical Compliance (Yes/No)	Remark
<b>EMD Price-15000 INR</b>			
	<b>Salient features:</b>		
1	Modular set for ESR/NMR;		
2	Table top experiment;		
3	Easy to setup;		
4	Glycerin, Teflon, and polystyrene sample for NMR;		
5	DPPH sample for ESR		
6	<b>ESR/NMR BASIC SET</b>		
	<b>Basic unit:</b>		
1	Dimensions : 165x105x135 mm <sup>3</sup> approx; Weight : 1.25 kg approx.		
3	<b>Magnetic coils:</b> Windings : 500 each;		
4	Magnetic field : 0 – 3.37 mT;		
5	Connectors : Coaxial power connectors;		
6	Dimensions : 20 mm x 74 mm diam. approx.;		
7	Weight : 0.2 kg approx.		
8	<b>Control console:</b> Probe input : 4-pin Lemo socket;		
9	Coil connectors : Sawtooth current source, 0–250mA, 50ms, pair of co-axial connectors;		
10	Magnetic output : Proportional to coil current, 0-1 V, BNC;		
11	Signal output : Resonance signal, 0-1 V, BNC socket;		
12	Frequency range : 45 to 75 MHz approx.(ESR) 10 to 15 MHz approx. (NMR);		



S. No.	<b>(L) Technical Specification for Electron Spin resonance and nuclear magnetic resonance (ESR-NMR) experiment kit (Unit 1)</b>	<b>Technical Compliance (Yes/No)</b>	<b>Remark</b>
13	Dimensions : 170x105x45 mm <sup>3</sup> approx.;		
14	Weight : 0.5 kg approx.; panel & Plug-in power supply, 12 V AC.		
15	ESR/NMR Basic Set includes a basic unit, pair of coils, control;		
	<b>ESR SUPPLEMENTARY:</b>		
1	<b>A</b> ESR probe-head with radio frequency coil;		
2	<b>B</b> A sample of DPPH (2,2-diphenyl-1 picrylhydrazyl);		
3	<b>C</b> An empty control sample tube for comparison;		
4	<b>D</b> Two mounting rings;		
5	<b>E</b> Two mounting cylinders.		
	<b>NMR SUPPLEMENTARY SET:</b>		
1	Connections : Four-pin lemo plug;		
2	Magnetic Field : approx. 300 mT;		
3	<b>A</b> NMR probe-head with radio frequency coil;		
4	<b>B</b> A permanent magnet giving a highly uniform field.		
5	<b>C.</b> A sample of glycerine; <b>D</b> A sample of polystyrene; <b>E</b> A sample of Teflon; <b>F</b> An empty control sample tube for comparison <b>G</b> Two mounting discs		
	<b>HF PATCH CORD:</b>		
1	Impedance : 50 Ohm;		
2	Connector : BNC to BNC;		
3	Length : 1m;		

S. No.	<b>(L) Technical Specification for Electron Spin resonance and nuclear magnetic resonance (ESR-NMR) experiment kit (Unit 1)</b>	<b>Technical Compliance (Yes/No)</b>	<b>Remark</b>
4	Shielded patch cords for low-loss, low-capacitance transmission;		
5	of high-frequency signals;		
6	equipped at either end with a BNC plug.		
	<b>OSCILLOSCOPE U11175 (OPTIONAL):</b>		
1	<b>Operation mode : CH1, CH2, -CH1, ALT, CHOP, ADD, XY;</b>		
2	Band width : 35MHz;		
3	Rise time : < 11.7ns;		
4	Deflection coefficient : 5mV/div, -20V/div, 12 steps;		
5	Input Impedance : 1M ohm/25pF;		
6	Time coefficient : 50ns/div, -200ms/div, 21 steps;		
7	Operation mode : Auto, Normal, TV;		
8	Trigger source : CH1, CH2, ALT, LINE, EXT;		
9	Trigger coupling : DC, AC, LFR, HFR, TVV, TVH;		
10	Screen size : 80mm x 100mm;		
11	Supply voltage : 230V, 50Hz		
Bidder must have a turnover of Rs 1500000 or more per year for last three financial years and copy should be enclosed			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 15000 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 1500000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that "We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery"		

### 3.13 GAMMA spectroscopy and Compton effect experiment kit (Unit 1)

S. No.	(M) Technical Specification for GAMMA spectroscopy and Compton effect experiment kit (Unit 1)	Technical Compliance (Yes/No)	Remark
<b>EMD Price-20000 INR</b>			
	<b>UNIVERSAL SPECTROMETER</b>		
1	<b>Physical</b> :Pulse height analysis and Multichannel Scaling modes, up to 4096-channels depending on model.		
2	<b>Data Input</b> :BNC connector multi-function input. On-board relays select internal preamplifier, shaping amplifier or direct to ADC when using external signal processing.		
3	<b>Gate Input</b> :BNC, open gate. TTL low closes gate to ADC.		
4	<b>HV Output</b> :MHV connectors. Positive output, (switched positive or negative outputs with HV option). (SHV connectors optional), 0-2048 volts, 1mA maximum current at 1000 volts.		
5	<b>MCS Input</b> :BNC connector bypasses internal preamp/ amplifier. Accepts positive TTL signal >150nsec., 5MHz maximum rate.		
6	<b>ROI Output</b> :BNC, generates pulse each time an event occurs in set region of interest.		
7	<b>MSB Output</b> :TTL output of dwell counter most-significant-bit for synchronizing Mossbauer drive.		
8	<b>USB</b> :USB type "A" connector.		
9	<b>Preamplifier</b> :Charge sensitive preamplifier for use with scintillation detectors and PMTs. Amplifier :Bipolar shaping amplifier with selectable peaking times of 1, 2, 4 and 8μsec. Coarse and fine gain from x1 to x160.		
10	<b>Ext. Preamp</b> :DB-9F connector supplies ±12 volts.		
11	<b>ADC</b> :Fixed conversion 10μsec. Conversion gain from 256 to 4096 channels depending on model. Direct input accepts pulse peaking times of 0.5μsec. To 10μsec.		
12	<b>LLD &amp; ULD</b> :Independently computer controlled discriminators over entire input range.		

S. No.	<b>(M) Technical Specification for GAMMA spectroscopy and Compton effect experiment kit (Unit 1)</b>	<b>Technical Compliance (Yes/No)</b>	<b>Remark</b>
13	<b>Modes</b> :MCA for pulse height analysis, MCS for half-life decay or other time related studies and Mossbauer mode.		
14	<b>Timers</b> :Real-time1sec. increments for PHA, or dwell times from 10-60 msec. per channel in MCS mode. In Mossbauer mode, 100-500usec.		
15	<b>Memory</b> :Up to 4096 channels x 3 Bytes for data, plus region-of-interest flag.		
16	<b>Dead time</b> :System dead time is computed.		
	<b>Scintillation Probe With Stand</b>		
1	Scintillation detector : 38x38mm <sup>2</sup> NaI(Tl) crystal with with voltage divider; Resolution : 7% @ 662 keV; Stand : 10 position stand with sample tray; BNC cable : BNC6 and MHV6 cable.		
2	Isotope-Ba133, Activity-1uCi, half life-10.7yrs Emissions-Gamma, Energies (keV)-81.0, 276.3, 303.7, 355.9, 383.7		
3	Cd109,1uCi, 453days, Gamma, 88.0		
4	Co57, 1uCi, 270days, Gamma, 122.1, 136.4		
5	Co60, 1uCi, 5.27yrs, Gamma, $\beta$ , 1173.2, 1332.5, $\beta$ 1173.2		
6	Cs137, 1uCi, 30.1yrs, Gamma, $\beta$ , 32, 661.6, $\beta$ 511.6, $\beta$ 1173.2		
7	Mn54, 1uCi, <b>312days, Gamma, <math>\beta</math>, 834.8, <math>\beta</math>542.2</b>		
8	Na22, 1uCi, 2.6yrs, Gamma, 1274.5, 511		
9	Cs/Zn, 1uCi, Mixed, Unknown, 32, 661.6, 1115.5		
10	<b>Specification of Computer:</b> Processor- Intel Core i7- 9700 Processor (3.00GHz, 12MB) or better, OS- DOS; <b>Memory:</b> at least 16.0 GB PC4- 22400 DDR4 UDIMM 2666 MHz; <b>Hard Drive</b> : at least 1TB 7200; <b>Monitor</b> : At least 23.8 inch, at least 250 cd/m <sup>2</sup> Brightness and 1000:1 static; 5000000:1 dynamic Contrast; <b>UPS</b> :Power Rating 600-1000 VA, Voltage 230 Vac, Frequency 50 Hz.		
Bidder must have a turnover of Rs 1500000 or more per year for last three financial years and copy should be enclosed			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 1500 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 150000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that "We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery"		

### 3.14 Thompson tube (Unit 1)

S. No.	(N) Technical Specification for Thompson tube (Unit 1)	Technical Compliance (Yes/No)	Remark
<b>EMD Price- 10000 INR</b>			
	<b>Required Features:</b>		
1	Thompson Tube with built-in capacitor and fluorescent screen;		
2	Helmholtz Coil for production of magnetic field.		
3	<b>TELTRON THOMPSON TUBE:</b>		
4	Max. filament voltage : 6.3 V AC;		
5	Max. anode voltage : 5 kV;		
6	Max. capacitor voltage : 500 V;		
7	Anode current : approx. 0.1 mA at 4 kV (anode), tick marks on screen		
	<b>HELMHOLTZ COIL PAIR:</b>		
1	Number of turns : 320;		
2	Coil diameter : 138 mm; Load rating : 1.0 A (Continuous operation);		
3	1.5 A (Short-term operation);		
4	Effective Impedance : approx. 6.5 $\Omega$ ;		
5	Terminals : 4 mm safety sockets; Max. field strength : approx. 9 mT		
1	<b>POWER SUPPLY:</b> 500 V output : Voltage: 0 – 500 V DC, max. 50 mA;		
2	Stability at full load : $\leq 0.01\% \pm 100$ mV;		
3	Residual ripple : $\leq 20$ mV;		
4	50 V output : Voltage: 0 – 50 V DC, max. 50 mA;		
5	Stability at full load : $\leq 0.1\% \pm 30$ mV; Residual ripple : $\leq 50$ mV;		

S. No.	(N) Technical Specification for Thompson tube (Unit 1)	Technical Compliance (Yes/No)	Remark
7	12 V output : Voltage: 0 – -12 V DC, max. 4 A;		
8	Stability at full load : $\leq 0.1\% \pm 30$ mV;		
9	8 V output : Voltage: 0 – 8 V DC, max. 3 A;		
10	Stability at full load : $\leq 0.1\% \pm 30$ mV;		
11	Displays : Analogue, class 2;		
12	Connections : 4 mm safety sockets;		
13	Power consumption : 50 VA		
	<b>TUBE HOLDER:</b>		
1	Terminals : 4 mm safety sockets;		
2	Dimensions : approx. 130x190x250 mm <sup>3</sup> ;		
3	Weight : approx. 570 g		
Bidder must have a turnover of Rs 1000000 or more per year for last three financial years and copy should be enclosed			



## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 10000 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 1000000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that “We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery”		

### 3.15 Determination of impedance of capacitor as a function of capacitance and frequency (Unit 1)

S. No.	(O) Technical Specification for Determination of impedance of capacitor as a function of capacitance and frequency (Unit 1)	Technical Compliance (Yes/No)	Remark
<b>EMD Price-3,500 INR</b>			
1	Plug-in Board for Components (Features 4-mm sockets on the front and rear, each internally connected to a square of 9 sockets plus two continuous serial layouts each with 12 sockets);		
2	PC Oscilloscope 2x25 MHz;		
3	Function Generator;		
4	Signals: Frequency range: 0.001 Hz to 100 kHz;		
5	Signal forms: Sine, square, triangular;		
6	Offset: 0 to $\pm 5$ V, adjustable in 0.1 V steps;		
7	Output: Output amplitude: 0 to 10 V, continuously adjustable; Power output: 10 W, permanent;		
8	Output current: 1 A, permanent, 2 A max.;		
9	Sweep: Sweep modes: External, continuous internal, individual internal;		
10	Frequency range: 1 Hz to 100 kHz;		
11	Stop/start frequency ratio: Max. 1000:1, e.g. 2 Hz to 2 kHz max.;		
12	Time range: 0.04 s to 1000 s;		
13 14	External sweep: Start via trigger pulse or application of 0 to 5 V control voltage; Max. modulation frequency: 200 Hz; Internal sweep: Start and stop via Start/Stop button; One trigger output per cycle plus proportional voltage;		
15	Power supply: Plug-in power supply, 12 V AC, 2 A; Dimensions: 170x105x40 mm; Additional features: Fold-out feet; and Other Accessories		
Bidder must have a turnover of Rs 350000 or more per year for last three financial years and copy should be enclosed			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 3500 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 350000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that "We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery"		

### 3.16 SUPERCONDUCTIVITY EXPERIMENT KIT (Unit 1)

S. No.	(P) Technical Specification for Superconductivity Experiment Kit (Unit 1)	Technical Compliance (Yes/No)	Remark
<b>EMD Price-4,500 INR</b>			
	<b>SUPERCONDUCTIVITY PROBE:</b>		
1	Sample : BSCCO or YBCO;		
2	Contact : Four point probe devices;		
3	Thermocouple : Type 'T' (Copper-Constantan);		
4	Sample Placing : Rugged Brass Casings;		
5	Hosing : Acrylic; Connection : 4mm plug		
	<b>SUPERCONDUCTIVITY UNIT:</b>		
1	Input Voltage : 220V, 50Hz AC;		
2	Constant Current Source : 150mA, 4mm Socket;		
3	Voltage Input terminal for Superconductor : 4mm Socket;		
4	Voltage Output terminal for superconductor : 4mm Socket with gain & offset pot;		
5	Temperature Input terminal for Superconductor : 4mm Socket;		
6	Temperature Output;		
7	Voltage terminal : 4mm Socket, Calibrated on room temperature.		
	<b>DATA LOGGER:</b>		
1	Computer connection : Micro USB & Bluetooth;		
2	Maximum sampling rate : 100,000 samples per second;		
3	Inputs channels : 4;		
4	Power : Micro USB; Memory : Up to 250k samples;		

5	Resolution sampling : 12 bits; External sensors : +65		
	<b>VOLTAGE SENSOR:</b>		
1	<b>Input voltage range : <math>\pm 25V</math>;</b>		
2	Input Voltage : AC or DC;		
3	Accuracy : $\pm 3$ % over entire range;		
4	Resolution : 12-bit,12.5 mV;		
5	Input Resistance : 250 k $\Omega$ ;		
6	Maximum Sample Rate: 20,000 samples per second		
	<b>PROBE CHAMBER:</b>		
1	Dimension : 150mm x 100mm;		
2	Inner material : Thermocol;		
3	Outer material : Wooden;		
4	This chamber is designed for liquid nitrogen.		
	<b>MEISSNER EFFECT SAMPLE</b>		
1	<b>Disks : 1" diameter;</b>		
2	Material : YBCO or BSCCO;		
3	Magnet : Rare earth;		
4	Tweezers : Non-magnetic		
	<b><u>Specification of Computer:</u></b>		
1	<b>Processor-</b> Intel Core i7- 9700 Processor (3.00GHz, 12MB) or better, OS- DOS; <b>Memory:</b> at least 16.0 GB PC4- 22400 DDR4 UDIMM 2666 MHz;		
2	<b>Hard Drive</b> : at least 1TB 7200; <b>Monitor</b> : At least 23.8 inch, at least 250 cd/m <sup>2</sup> Brightness and 1000:1 static; 5000000:1 dynamic Contrast; <b>UPS</b> :Power Rating 600-1000 VA, Voltage 230 Vac, Frequency 50 Hz;		
Bidder must have a turnover of Rs 450000 or more per year for last three financial years and copy should be enclosed			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 4500 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 150000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that "We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery"		

### 3.17 Study of B-H curve (Unit 2)

S. No.	(Q) Technical Specification for Study of B-H curve (Unit 2)	Technical Compliance (Yes/No)	Remark
<b>EMD Price-3000 INR</b>			
	<b>Required Features:</b>		
1	Auto identification of sensors;		
2	High speed data transfer;		
3	Programmable delay in data acquisition;		
4	Programmable sampling frequency;		
5	Graphical Analysis;		
6	Automatic & manual mode of demagnetization		
	<b>Datalogger &amp; Power Unit</b>		
	<b>Data Logger: Specifications:</b>		
1	Input channels : 4, 6PIN BT (British Telecom);		
2	Input channels resolution : 12 bit ADC @ 100 ksps; Analog input : 0-5 V;		
3	Output channels : 12 bit DAC;		
4	Analog output : $\pm 12$ V max 10 mA;		
5	Current booster : Upto 1 A;		
6	Power Connector : 3PIN DIN;		
7	Communication : USB		
	<b>Power Unit:</b> Power Supply Input Voltage : 220V, 50Hz AC; Power Supply output Voltage : $\pm 12$ V, 3PIN DIN		
	<b>Electromagnet:</b> Coils : 300 turns; Wire : 19SWG, Cu;		

S. No.	(Q) Technical Specification for Study of B-H curve (Unit 2)	Technical Compliance (Yes/No)	Remark
3	Connection : 4mm safety socket;		
4	U Core : 150x130mm <sup>2</sup> (LxH), 40x40mm <sup>2</sup> cross section;		
5	I Core : 150mm(L), 40x40mm <sup>2</sup> cross section;		
6	Point Pin : Length=90mm; Core material : Ferromagnetic		
	<b>Voltage Sensor:</b>		
1	Voltage Sensor : $\pm 1V$ ; Connection out : 4mm safety socket;		
2	Connection in : 6PIN BT		
	<b>Current Sensor</b>		
1	Current Sensor : $\pm 1A$ ; Connection out : 4mm safety socket; Connection in : 6PIN BT		
Bidder must have a turnover of Rs 300000 or more per year for last three financial years and copy should be enclosed			



## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 3000 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 300000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that “We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery”		

### 3.18 Elastic and Plastic deformation experiment kit

S. No.	(R) Technical Specification for Elastic and Plastic deformation experiment kit (Unit 2)	Technical Compliance (Yes/No)	Remark
<b>EMD Price-600 INR</b>			
1	DOUBLE HOOK MASS: Material : Brass, Chrome Plated. Type : Fixed double hook. Capacity : 50g.(at least)		
2	CLAMP BLOCK Dimension :30x30x30mm (approx)		
3	PULLEY Material : Acrylic Diameter :50mm		
4	ACRYLIC SCALE SCREEN Material : Acrylic Scale :1 div=0.25mm		
5	BASE Mount : Support rod upto 8-14mm. Length : 200mm		
Bidder must have a turnover of Rs 60000 or more per year for last three financial years and copy should be enclosed			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 600 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 60000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that “We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery”		

### 3.19 Van de Graaff Generator ( 200 KV, 400 KV)

S. No.	(S) Technical Specification for Van de Graaff Generator ( 200 KV, 400 KV) (Unit 2)	Technical Compliance (Yes/No)	Remark
<b>EMD Price - 500 INR</b>			
	Required features:		
1	Adjustment of belt;		
2	Spark length 50-80mm under favorable ambient condition;		
3	Van-De-Graff Generator;		
4	Pointed wheel;		
5	Needle on 4mm plug;		
6	Perspex jar with pith ball;		
7	Thread brush;		
8	Point discharge;		
9	Perspex pillar;		
10	Nylon thread;		
11	Faraday's pail;		
12	Neon lamp;		
13	Electric Chimes;		
14	Electric tester;		
15	Flexible Lead Pair;		
16	Plastic Stool		
Bidder must have a turnover of Rs 50000 or more per year for last three financial years and copy should be enclosed			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 500 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 50000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that “We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery”		

### 3.20 Boyle's and Charle's law experiment kit

S. No.	(T) Technical Specification for Boyle's and Charle's law experiment kit (Unit 3)	Technical Compliance (Yes/No)	Remark
<b>EMD Price-300 INR</b>			
1	Arrangements for performing experiments listed in section II including beaker;		
2	Burret Clamp ;		
3	Ring stand;		
4	Syringe;		
5	Weights;		
6	Hot plate;		
7	Thermometer		
Bidder must have a turnover of Rs 30000 or more per year for last three financial years and copy should be enclosed			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 300 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 30000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that “We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery”		

### 3.21 Moment of Inertia experiment kit

S. No.	(U) Technical Specification for Moment of Inertia experiment kit (Unit 2)	Technical Compliance (Yes/No)	Remark
<b>EMD Price-200INR</b>			
1	Torsion Axle 1;		
2	Photo Gate 1;		
3	Digital Counter 1;		
4	Barrel Foo (heavy), 1000 g (at least) 1;		
5	Tripod Stand (with leveling screw system) 1;		
6	Precision Dynamometer 1 N (Precision: < 1% of total measuring range);		
7	Dumbbell bar with weights;		
8	Set of Test Bodies for Torsion Axle : Disc, sphere, mounting plate, Solid cylinder, hollow cylinder		
Bidder must have a turnover of Rs 20000 or more per year for last three financial years and copy should be enclosed			



## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 2000 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 20000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that “We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery”		

### 3.22 Precision Dynamometer (Unit 2)

S. No.	(V) Technical Specification for Precision Dynamometer (Unit 2)	Technical Compliance (Yes/No)	Remark
<b>EMD Price-200 INR</b>			
1	0.1 N, 0.2N, 1N, 5N, 10N, 100N);		
2	easy-to-read scale, protection against over-extension of the spring zero-point calibration capability. Precision: < 1% of total measuring range; Scale division: 1% of total measuring range.		
Bidder must have a turnover of Rs 20000 or more per year for last three financial years and copy should be enclosed			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 200 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 20000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that “We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery”		

### 3.23 Centripetal Force apparatus (Unit 1)

S. No.	(W) Technical Specification for Centripetal Force apparatus (Unit 1)	Technical Compliance (Yes/No)	Remark
<b>EMD Price-1200 INR</b>			
	<b>CENTRIPETAL FORCE BASE UNIT:</b>		
1	Base dimension : 150 x 410mm (length x width);		
2	Vertical shaft : 450mm, mounted in ball bearing;		
3	Threaded Rod : 340mm (length) with four wing nut		
	<b>DIGITAL TIMER &amp; PHOTOGATE:</b>		
1	Display : 2 line LCD; Type : Micro controller based; Time resolution : 0.1 milli second; Mode : Time, Speed & Acceleration; Photogate : 2 Nos. Interface : USB;		
2	Operating voltage : 5V DC; Photogate detector : Infra-Red		
3	<b>ACCESSORIES:</b> Weight : 500gm, 60 x 40 mm dimension; Counter weight : 500gm, 50 x 40mm dimension; Rod with thread : 340mm (length)		
4	<b>BOSS HEAD:</b> Object type : Square & round shape; Object size : Up-to 13mm dia; Material : Aluminium alloy; Object can be held both vertically and horizontally.		
5	<b>SLOTTED MASS SET:</b> Material : Brass; Total weight : 1000gm; Accuracy : $\pm 1.0$ gm; Weight : 10gm $\times$ 5, 50gm $\times$ 1, 100gm $\times$ 2, 200gm $\times$ 1, 500gm $\times$ 1, hanger 100gm $\times$ 1		
Bidder must have a turnover of Rs 120000 or more per year for last three financial years and copy should be enclosed			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 1200 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 120000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that "We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery"		

### 3.24 Recording the line spectra of Hydrogen atom (experiment kit)

S. No.	(X) Technical Specification for Recording the line spectra of Hydrogen atom (experiment kit) (Unit 1)	Technical Compliance (Yes/No)	Remark
<b>EMD Price-8000 INR</b>			
	<b>Digital Spectrometer :</b>		
1	Spectral range: 350 – 900 nm (or wider),		
2	Spectral resolution: at least 1 nm (for resolution of sodium doublet),		
3	Accuracy: atleast 1 pixel per 0.18 nm,		
4	CCD/CMOS detector: at least 3600 pixels, Resolution: at least 16 bit, Integration time: 0.1 ms to 60 s or more		
5	High voltage supply unit with digital display DC: 0..±10kV, 2mA 1;		
6	Object holder, 5x5cm(approx) 1;		
7	Spectrum tube: hydrogen 1;		
8	Spectrum tube: mercury 1;		
9	Diffraction grating: 600 lines/mm 1;		
10	Tripod base 1;		
11	Insulating support 2;		
12	Barrel base 1;		
13	Cover tube for spectral tubes 1;		
14	Stand tube 1; Meter scale, demo. l=1000mm 1;		
16	HOLDERS for spectral tubes, 1pair; Connecting cords 30 kV 1000mm 2; Right angle clamp 3; Cursors, 1 pair;		
19	Support rods; Measuring tape		

S. No.	<b>(X) Technical Specification for Recording the line spectra of Hydrogen atom (experiment kit) (Unit 1)</b>	<b>Technical Compliance (Yes/No)</b>	<b>Remark</b>
1	<b>Specification of Computer</b> <b>Processor-</b> Intel Core i7- 9700 Processor (3.00GHz, 12MB) or better, OS- DOS,		
2	<b>Memory:</b> at least 16.0 GB PC4- 22400 DDR4 UDIMM 2666 MHz;		
3	<b>Hard Drive :</b> at least 1TB 7200;		
4	<b>Monitor :</b> At least 23.8 inch, at least 250 cd/m <sup>2</sup> Brightness and 1000:1 static; 5000000:1 dynamic Contrast;		
5	<b>UPS :</b> Power Rating 600-1000 VA, Voltage 230 Vac, Frequency 50 Hz		
Bidder must have a turnover of Rs 800000 or more per year for last three financial years and copy should be enclosed			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 8000 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 800000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that "We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery"		



#### 4. Center For Basic Sciences : High Performance Computing Lab

HPC Requires Log in node, CPU-CPU enabled node GPU enabled node PFS storage system, IO node ,Management and other S/W Stack, Communication,cooling solution and power back solution for Management and other S/W Stack.Technical Specification is as follows:-

##### 4.1: Log In Node

S.No.	(A) Technical specification for Log In Node, Qty- 1Nos.	Technical Compliance (Yes/No)	Remarks
<b>EMD of Rupees 660000</b>			
1	Processor:2 × Latest Generation Intel® Xeon® Processor Scalable Series or better Number of cores = 12; Number of Threads = 24; Processor Base Frequency=2.2GHz; Cache = 16MB L3; Memory Type= DDR4-2400; Maximum Memory Speed= 2400MHz; (Linpack theoretical performance of each processor must be 420 GFs or more)		
2	Memory: RAM: 128GB ECC DDR4-2400Mhz or better RAM. At least 16 DIMMs on motherboard		
3	Hard Disk Drives/Solid State Drives :8TB SAS×4 Numbers; SPEED = 7.2K rpm; TYPE = SAS, 2 x 480GB SATA Enterprise Grade SSD Endurance rating – 3DWPD		
4	HDD bays :HDD bays supporting 8 or more SAS/SATA Hard drives and Solid State Drives. On board NVMe controller and at least 2 dedicated NVMe drive bays or more out of total bays available .		
5	I/O slots ( <i>Peripheral Component Interconnect Express,PCIe</i> ) :Minimum 2 × PCIe 3.0 slots must be vacant after populating Interconnect and RAID AOC.		
6	RAID Level support :RAID 0,1,5,6; populated with 12Gbps SAS RAID controller with equal to or more 2GB cache with single controller. With array configuration and management utilities, Independent of port auto-negotiation, optional battery back up unit for future upgrade.		
7	Graphics controller :Integrated Graphics with on board controller.		
8	Network interface :At least 2 number of Gigabit ports on board.		
9	Ethernet ports:2 × 1 Gbps Ethernet Standard LAN ports, 2 x 10G LAN Ports .1 x 1 Gbps Ethernet LAN port with Preboot Execution Environment (PXE) boot capability (including 2 x CAT6 cable for connecting to switches)		
10	Ports :Minimum 2 USB2.0 or higher and 1 graphics port		

S.No.	<b>(A) Technical specification for Log In Node, Qty- 1Nos.</b>	Technical Compliance (Yes/No)	Remarks
11	Cluster Interconnect :100 Gbps (or higher) Infiniband or Intel OPA with cable (same make as the IB/OPA switch).		
12	Server management:(Intelligent Platform Management, Interface, <b>IPMI</b> )  ❖ <b>IPMI 2.0 Support with KVM and Media over LAN features. Must include any licenses, if required for using these features.</b> ❖ It should be able to automate mgmt. tasks and automated firmware updates.		
13	Power supplies :Redundant (N+N) 80 Plus Platinum rated efficient power supply.		
14	Cooling :Optimum numbers of Cooling fans.		
15	Operating System :Should support latest version of 64-bit CentOS.  System must be Microsoft Windows and RHEL Certified		
16	Warranty: <b>5 years onsite warranty .</b>  ❖ <b>Physical on-site (Pt.Ravi Shankar Shukla University) visit by technical experts of Bidder for maintenance and technical support whenever needed on NBD Basis</b>		
17	Software Suites (Applications):Open source/Commercial software suites to be loaded as part of installation process by bidder.List will be provided by users		
18	Form Factor: Rack Mount up to 2U or lesser.		

## 4.2: CPU-CPU enabled Node

S.No.	<b>(B) Technical specification for (CPU-CPU enabled Node)- TYPE -I, Qty- 12Nos.</b>	Technical Compliance (Yes/No)	Remarks
1.	Processor :2 × Latest Generation Intel® Xeon® Processor Scalable Series or better; Number of cores = 20; Number of Threads = 40; Processor Base Frequency=2.4GHz; Cache = 27MB L3; Memory Type= DDR4-2666; Maximum Memory Speed= 2666 MHz; (Linpack theoretical performance of each processor must be 1530 GFs or more)		
2.	Memory:RAM: 128GBECC DDR4-2666Mhz or better RAM. At least 16 DIMMs on motherboard		
3.	Hard Disk Drives and SSDs:1 x 480GB SATA Enterprise GRADE SSD (3 DWPD Endurance)		
4.	HDD bays:3 HDD bays supporting HDDs or SSDs.		
5.	GPU Accelerator Support None		
6.	I/O slots ( <i>Peripheral Component Interconnect Express, PCIe</i> ) :Minimum 1 × PCIe 3.0 slots vacant after populating Interconnect AOCs.		
7.	RAID Level support:RAID 0,1,10 level supported with RAID controller with equal to or more than 2GB cache in single controller		
8.	<b>Graphics controller:Integrated Graphics Controller</b>		
9.	Network interface:At least 2 number of Gigabit ports on board.		
10.	Ethernet ports:2 × 1 Gbps Ethernet ports with Preboot Execution Environment ( <b>PXE</b> ) boot capability (including CAT6 cable for connecting to switch)		
11.	Ports :Minimum 2 USB 3.0 or higher and one port for graphics.		
12.	Cluster Interconnect :100 Gbps (or higher) Infiniband or Intel OPA with cable (same make as the IB/OPA switch).		
13.	Chipset :Intel C621 or better		

S.No.	<b>(B) Technical specification for (CPU-CPU enabled Node)- TYPE -I, Qty- 12Nos.</b>	Technical Compliance (Yes/No)	Remarks
14.	Server management:(Intelligent Platform Management, Interface, IPMI)IPMI 2.0 or equivalent Support with KVM and Media over LAN features. Must include any licenses, if required for using these features.  ❖ It should be able to automate mgmt. tasks and automated firmware updates.		
15.	Power supplies :Redundant N+1or better 80 Plus platinum rated efficient power supplies. In case of Multi Node Sharing architecture shared power supplies is permitted redundancy at the level of Chassis/Cabinet is acceptable.		
16.	Cooling :Optimum no. of Cooling fans.		
17.	Operating System :Should support latest version of 64-bit CentOS		
18.	<b>Warranty:5 years onsite warranty.Physical on-site (Pt.Ravi Shankar University) visit by technical experts of Bidder for maintenance and technical support whenever needed.</b>		
19.	Software Suites (Applications):Open source/Commercial software suites to be loaded as part of installation process by bidder. List will be provided by users		
20.	Form Factor:1U Rack Mount or lesser. In case of Multi Node Sharing; architecture shared chassis/cabinet is permitted but with hot swap; nodes which are independently serviceable.		
21.	All required cables		

**Note:** Count of nodes may be increased or Decreased by the University depending on the total budget.

### 4.3 GPU enabled Node

S.No.	<b>(C) Technical specification for (GPU enabled Node, Qty- 3Nos.</b>	Technical Compliance (Yes/No)	Remarks
1.	Processor :2 × Latest Generation Intel® Xeon® Processor Scalable Series or better; Number of cores = 20; Number of Threads = 40; Processor Base Frequency=2.4GHz; Cache = 27MB L3; Memory Type= DDR4-2666; Maximum Memory Speed= 2666 MHz; (Linpack theoretical performance of each processor must be 1530 GFs or more)		
2.	Memory:RAM: 128GBECC DDR4-2666Mhz or better RAM.		
3.	Hard Disk Drives/ Solid State Drives 1 x 960GB SATA Enterprise GRADE SSD (3 DWPD Endurance)		
4.	HDD bays:2Hot Swap HDD bays supporting SAS/SATA HDDs or SSDs.		
5.	GPU Accelerator:For high performance parallel programming and computations::1 x NVIDIA Tesla V100 GPU (32GB) cards. System must support at least 3 Tesla V100 (32GB)GPUs		
6.	I/O slots ( <i>Peripheral Component Interconnect Express, PCIe</i> ) :Minimum 1 × PCIe 3.0 slots available for populating Interconnect HCA after populating all 4 x GPUs .		
7.	RAID Level support :RAID 0,1,10 level supported with offered RAID controller equal to more than 2GB cache with single controller.		
8.	<b>Graphics controller:Integrated Graphics Controller</b>		
9.	Network interface:At least 2 number of Gigabit ports on board.		
10.	Ethernet ports:2 × 1 Gbps Ethernet Standard LAN ports . 1 x 1 Gbps Ethernet LAN port x with Preboot Execution Environment ( <b>PXE</b> ) boot capability (including 2 x CAT6 cable for connecting to switches)		
11.	Ports : Minimum 2 USB 2.0 or higher and one port for graphics.		
12.	Cluster Interconnect :100 Gbps (or higher) Infinibandor Intel OPA with cable		

S.No.	<b>(C) Technical specification for (GPU enabled Node, Qty- 3Nos.</b>	Technical Compliance (Yes/No)	Remarks
13.	Server management:(Intelligent Platform Management, Interface, <b>IPMI):IPMI 2.0 or equivalent Support with KVM and Media over LAN features. Must include any licenses, if required for using these features.:</b> It should be able to automate mgmt. tasks and automated firmware updates.		
14.	Power supplies :Redundant N+N 80 Plus platinum rated efficient power supplies.		
15.	Cooling :Optimum no. of Cooling fans.		
16.	Operating System :Should support latest version of 64-bit CentOS.  System must be Microsoft Windows and RHEL Certified		
17.	<b>Warranty:5 years onsite warranty</b>  <b>❖ Physical on-site (Pt.Ravi Shankar shukla University) visit by technical experts of Bidder for maintenance and technical support whenever needed on NBD Basis</b>		
18.	Software Suites:Open source/Commercial software suites to be loaded as part of installation process by bidder. List will be provided by users		
19.	Form Factor - 1U Rack Mount or lesser.		

**Note:** Count of nodes may be increased or Decreased by the University depending on the total budget.

#### 4.4 PFS Storage System

S.No.	(D) Technical specification for PFS Storage System-, Qty- 1 Nos.	Technical Compliance(Yes/No)	Remarks
1.	<p>PFS Requirement:Lustre based Parallel file system with 330 TB usable space and with a performance of 3GB/s or higher (with linear upgrade in performance with future expansion). The performance needs to be demonstrated using third party benchmark (IOR/IOZone) with 1MB block size, and benchmark report for the solution proposed to be submitted with the bid. The solution must be designed with - Disks having redundant path to I/O server so that loss of one path doesn't lead to point of failure. I/O server must be configured in failover to enable storage to recover from failure of one I/O server. Servers and storage must have redundant power supplies and must be connected to the HPC setup outlined in this tender using 56Gbps (or higher) low-latency interconnect (Mellanox EDR InfiniBand or Intel® Omni-Path). The solution must comprise of at-least 4 I/O servers (acting as Metadata servers / Object Storage Servers) as below</p>		
2.	OST & MDT Specifications As below:		
i.	Disks for OST: 330TB or higher usable space with RAID6 or equivalent using SAS 7.2K RPM disks and with two hot-spare disks. All disks must be hot-pluggable and enterprise/datacentre grade		
ii.	Disks for MDT:2% or more of the PFS Usable Storage Space (OST) with RAID10/1E or equivalent using SAS 10K RPM disks and with one hot-spare disk. All disks must be hot-pluggable and enterprise/datacentre grade		
iii.	Connectivity:Connected to both the I/O Servers for high-availability configuration using 12Gbps (or higher) links		
iv.	Form Factor:Rack-mountable with rail-kit.		
v.	Power Supplies:Hot-pluggable and N+N redundant, 80PLUS Platinum or better		
vi.	Warranty:5yrs onsite comprehensive warranty		

## 4.5 I/O Node

S.No.	<b>(E) Technical specification for I/O Node, Qty- 4Nos.</b>	Technical Compliance(Yes/No)	Remarks
1.	Processor :2 × Intel® Xeon® Processor Scalable Silver 4000 Series; Number of cores = 12; Number of Threads = 24; Processor Base Frequency=2.1GHz; Cache = 16MB L3; Memory Type= DDR4-2400; Maximum Memory Speed= 2400MHz		
2.	Memory:RAM: 128GBECC DDR4-2666Mhz or better RAM. At least 16 DIMMs on motherboard		
3.	Hard Disk Drives/Solid State Drives:2 x 480GB SATA Enterprise Grade SSD – Endurance rating – 3DWPD		
4.	HDD bays:HDD bays supporting 8 or more SAS/SATA Hard drives and Solid State Drives. On board NVMe controller and at least 2 dedicated NVMe drive bays or more out of total bays available .		
5.	I/O slots ( <i>Peripheral Component Interconnect Express,PCIe</i> ) Minimum 2 × PCIe 3.0 slots must be vacant after populating Interconnect and RAID AOC(if any)		
6.	RAID Level support:RAID 0,1,10 levels supported RAID controller with equal to more than 2GB node with single controller		
7.	Graphics controller:Integrated Graphics with on board controller.		
8.	Network interface:At least 2 number of Gigabit ports on board.		
9.	Ethernet ports:2 × 1 Gbps Ethernet Standard LAN ports, 2 x 10G LAN Ports . 1 x 1 Gbps Ethernet LAN port x with Preboot Execution Environment ( <b>PXE</b> ) boot capability (including 2 x CAT6 cable for connecting to switches)		
10.	Ports :Minimum 2 USB 2.0 or higher and 1 graphics port		
11.	Cluster Interconnect :56 Gbps (or higher) Infinibandor Intel OPA with cable (same make as the IB/OPA switch).		
12.	Server management:(Intelligent Platform Management, Interface, <b>IPMI</b> ) <b>IPMI 2.0 Support with KVM and Media over LAN features. Must include any licenses, if required for using these features.</b> It should be able to automate mgmt. tasks and automated firmware updates. Form Factor: Rack Mount up to 2U or lesser.		



13.	<p>Power supplies :Redundant (N+N) 80 Plus Platinum rated efficient power supply. Cooling : Optimum no. of Cooling fans. Operating System : Should support latest version of 64-bit CentOS.</p> <p>System must be Microsoft Windows and RHEL Certified</p>		
-----	--	--	--

#### 4.6 Management and other S/W Stack

S.No.	<b>(F) Technical specification for Management and other S/W Stack</b>	Technical Compliance (Yes/No)	Remarks
1.	<p><b>Commercial Licensed Management S/W</b> : system management/monitoring toolset for configuration, diagnosis and management. Toolset/Manger must be capable of supporting package and image based provisioning, intuitive web interface for managing and customize the nodes, Nodes Manager tool set with provisioning , monitoring ,and reporting capabilities, Support for Customizing networks and compute node profiles, Capable of customizing compute to max, up to changing kernel parameter, And able to Push configuration changes and updates to the compute nodes.Product Datasheet must be provided with the bid with features and specifications listed.License must be issued in the name of Pt.Ravi Shankar Shukla University</p>		
2.	<p><b>Batch/Job Schedulers and workload management:</b></p> <p>Open source based or commercial workload managers for batch job scheduling with policies to allow Pre-emptive and backfill scheduling, Job monitoring and management, policy aware , resource aware and topology aware scheduling, GPU aware scheduling, advance reservation support, Live reconfiguration capability . Must be able to support interactive jobs with debugging on a dedicated debug queue.</p>		
3.	<p><b>Parallel Dev Environment Stack:</b></p> <p>1. Latest open-source C/C++/Fortran compilers and debuggers.</p> <p>2. Communication libs MPI/OpenMP/pthreads.</p>		
4.	<p><b>Intel® Parallel Studio XE Cluster Edition for Linux* - Named-user Academic for 3yrs – 1 Set</b></p>		

## 4.7 Communication Network

S.No	(G) Technical specification for Communication Network	Technical Compliance(Yes/No)	Remarks
1.	Interconnect Switch –I: 100% Non-blocking, Switching Fabric-100Gbps using IB or Intel OPA or proprietary low latency with embedded or host Subnet Manager for 36 devices or more and each switch(s) with redundant power supply/supplies. All cables required for connecting the devices quoted in this tender should be included/bundled. Switches having a non-blocking switching capacity of 7.2Tb/s or more		
2.	Interconnect Switch –II For Secondary Communication -Layer 2 Gigabit Switches with rack mount kits to connect with 24 devices or more thru dedicated ports		
3.	Interconnect Switch – III (for Management):Layer 2 Gigabit Switches with rack mount kits to connect with 24 devices or more thru dedicated ports		

## 4.8 Other Items

S.No	(H) Technical specification for Other Items, Qty- 4Nos	Technical Compliance(Yes/No)	Remarks
1.	Rack mount 17 inch Display, Keyboard, Video and Mouse (KVM)Rackable Console with All accessories		
2.	8 Port KVM over IP Switch (USB based) with all required Cables & Accessories. Qty -1		

#### 4.9 Power Back up Solution

S.No	(I) Technical specification for Power Back up Solution, Qty- 2Nos	Technical Compliance(Yes/No)	Remarks
1.	<p>Two UPS Units in Failover / Redundant Configuration (1+1) Each UPS of 20 KVA/18 KW should have following features : True online double conversions, IGBT Rectifier &amp; inverter based UPS. Three phases Input/ three phase output with SMF batteries Suitable for 30 Min backup on Full load at 0.9 Load P.f. using 42 Ah X 40 Battery with Each UPS, Input voltage range 340-478V at 100% load, 220-478 V @ 50% load. Input power factor 0.99. Battery Flexible design of 32 to 40 battery. Battery type should be Valve regulated lead-acid (VRLA) of make Exide/Panasonic/QUANTA/Rocket. Inbuilt Input Isolation Transformer is mandatory required, parallel communication port, RS232, USB, EPO and SNMP interface, BMS interface, Dust Filter at Air Inlet point are required. UPS should be provided with environment monitoring probe to measure temperature and humidity of UPS room. LCD Display indicating all important parameters. SNMP software should be compatible to, Window 8 . UPS software should be compatible to google chrome, Mozilla fire fox and Microsoft internet explorer. Battery open rack, battery interlinks battery breaker, battery to UPS cable as required should be provided with UPS systems.</p> <p>UPS warranty : 3 Year, Battery warranty – at least 2 Years Battery Approved Make : Quanta / Exide / Rocket / Panasonic</p>		

## 4.10 Cooling Solution

S.No	(J) Technical specification for Cooling Solution	Technical Compliance(Yes/No)	Remarks
1.	<p>Pt.Ravi Shankar Shukla University will provide a server room of the size 15 Feet x 20 Feet or bigger (bidders can visit the site to see the space allocated.</p> <p>Cooling Solution Specifications as below:</p> <ul style="list-style-type: none"> <li>i) The Data Centre to be provided with the appropriate Inbuilt/self contained cooling system based racks. The inbuilt/self contained intelligent rack based cooling system will able to remove high level of waste heat from server enclosures/rack and to provide uniform,&amp; effective cooling for servers and similar IT equipment (switches etc.) installed with in racks as offered by bidder, it will be provided with appropriate refrigerant.</li> <li>ii) Total IT Load to be taken care of 15KW , Cooling solution must provide redundant solution to take care 15KW IT Load , with redundant cooling units available in the solution offered (N+N) redundant. Each Unit capable to take care of 15KW IT Load.</li> <li>iii) Outdoor Cooling Units (if any) will be positioned out side the server room. Bidders can visit the facility for better understanding before supply.</li> <li>iv) Solution must comprise 32 A, Rack mount, vertical PDU with a combination of IEC C-13 and IEC C-19 sockets according to the IT equipment</li> <li>v) Front door with biometric access, rear door lock, smoke detection system with indicators, rodent control system, Environmental Monitoring System , Automatic Front Door Opening System , Fire Suppression System&amp; Detection Sensor, Hooter/Sensor available for alarm purpose in case of any malfunctioning, Touch Screen Front Panel Monitoring, IP Via Modbus enabled, double glass or toughened glass front panel.</li> </ul> <p style="text-align: center;">All the above facility of cooling system mention above <i>must be borne by Bidder</i></p>		
Bidder must have a turnover of Rs 10000000 or more per year for last three financial years and copy should be enclosed			

**1. SERVICE ENGINEERING SUPPORT TO BE PROVIDED BY THE SUPPLIER:.** Service Engineering Support well verse with linux operations/commands and capable to take care of the HPC Infrastructure facility is to be provided On Next business day support basis . *Any cost related to the same must be borne by Bidder.*

**2. Supply, Installation and In-house training:-** Before acceptance and installation of any item, the quality, specification and quantity will be verified by Pt.Ravi Shankar Shukla University.

- ❖ Installation of items part of this tender will have to carried out by the vendor/bidder. Any specific requirement of vendor regarding instillation of above mentioned items must be mentioned in the technical bid so that Pt.Ravi Shankar Shukla University can provide the resources for the same.
- ❖ 5 day **in-house training** by Certified Professionals at Pt.Ravi Shankar Shukla University including installation of software, bench-marking HPL, Management etc. must be conducted by Bidder. Any charges applicable for the same must be borne by the bidder.

### **Qualification Criteria:**

1. Server OEM must be listed in at least 2 Lists of Top 500.org lists during last 3 years
2. Server OEM must be listed in at least 1 Lists of India Top 100 Supercomputers lists during last 3 years (which was earlier maintained by IISC and now by C-DAC)
3. Storage OEM must have installed at least 1 PFS based storage systems of 100 or more TB in size as part of HPC in India at Govt. Education & Research Organisations. Documentary proof (PO and installation reports must be submitted with bids) during last 3 years.
4. One OEM (Server OEM) can authorize only one SI/Bidder to quote their products.
5. The bidder must be registered under the companies act 1956 or a registered firm (Proprietorship /Partnership) and have registered office in India.
6. On Site support to be provided by the Bidder or the OEM. Declaration to be submitted along with the bid.
7. Bidder must not be blacklisted by any Govt. organisation in India; a notarised declaration must be submitted with the bid.
8. Valid and Duly Authorized Manufacturer Authorization Certificate from the respective OEMs (Server, Storage , and Switch) in the name of Participating System Integrator/Bidder must be submitted at the time of submission of Bids. From Server, Storage, and Switch OEMs.
9. The server and storage should be of same make/OEM.
10. The bidder or OEM should have local support system in India.
11. The bidder or OEM should be on same line of business for 10 years in India.
12. Bidder must have installed Data Centre Servers or HPCC (x86 Architecture based) with peak performance of at least 30TF during last 5 years.
13. Provision of earthing in the premises has to be borne by the bidder for installation of HPC.

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 6600000 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 100000000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that “We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery”		

Geology Lab Requires Stand Alone Portable Meter To Measure Water Quality Parameters ,Trinocular Polarizing Microscope For Transmitted Light And Reflected Light Studies,Semi-Automatic Thin Section Lapping And Polishing Machine, Atomic Absorption Spectrophotometer,Table Top Cutting Cum Grinding Machine 1-D Resistivity Meterand Portable Multi-Channels & Multi-Electrode Resistivity Imaging System For Ip And Sp (2d & 3d) Survey With 48-Electrodes .

## 5. School of Studies Geology Lab

### 5.1 Standalone Portable meter to measure water quality parameters

**EMD of Rupees 45000**

S.No.	<b>(A) Technical specification for Standalone Portable meter to measure water quality parameters viz. pH, Electrical Conductivity, and temperature, Qty- 1Nos.</b>	Technical Compliance (Yes/No)	Remarks
1	<p>Single input channel with probe, Sensitive user interface with simple operation and accurate results; Guided calibration to reduce calibration errors; . Stabilization alerts and visual measurement lock; rugged design for field environment.</p> <p>Accuracy level:</p> <p>0.01 pH accuracy along with dual pH and selectable C or F temperature display</p> <p>4-digit display with temperature correction, Conductivity Resolution 10 uS, 0.1 mS; Conductivity Accuracy±2% full-scale ±1 LSD</p>		

## 5.2 Trinocular Polarizing Microscope for transmitted light and reflected light studies

S.No.	<b>(B) Technical specification for</b> Trinocular Polarizing Microscope for transmitted light and reflected light studies, Qty- 1Nos.	Technical Compliance (Yes/No)	Remarks
1	<b>Microscope Body/Frame:</b> Polarising Microscope for reflected light (RL) and Transmitted light (TL) illumination. Bertrand lens module should be provided for conoscopy & orthoscopic observation. Microscope body should be anti-microbial treated.		
2	<b>Stand&amp; Nosepiece:</b> Stand with 5position or better centerable objective nosepiece with slot for nosepiece compensator.		
3	<b>Phototube:</b> Trinocular observation tube should have inclination 30 degree & interpupillary range 52mm – 75mm or better.		
4	<b>Focus:</b> 3-gear focus drive (coarse / medium / fine) with 1 and 4 micron , torque adjustment, and adjustable upper focus stop,Self-adjusting focus mechanism		
5	<b>Eye Piece:</b> Eye piece wide field 10X/22 mm FOV with locking screw on left eye tube and cross hair 6graticule.Eye pieces should be suitable for observation with and without eyeglasses		
6	<b>Illumination:</b> Reflected light illuminator with built in adjustable aperture diaphragm produce bright, crisp and maintenance free lighting for all samples.Oblique UC-3D illumination at incident light observation .Hi Power LED with Quick control for light intensity ,Reflected light illuminator incorporates 4-fold turret, color-coded diaphragm assistant (CDA) ,Smith Reflector for Bright images in the reflected light		
7	<b>Objectives:</b> Strain free pol objective 4x/0.10,10x/0.25,20x/0.40 and 50x/0.75, objectives suitable for both transmitted and reflected light OR Objectives for transmitted light and reflected light 5x/0.13, 10x/0.25, 20x/0.45, 40x/0.65		
8	<b>Condenser:</b> Pol condenser with magnification labellingand switchable top		



S.No.	<b>(B) Technical specification for Trinocular Polarizing Microscope for transmitted light and reflected light studies, Qty- 1Nos.</b>	Technical Compliance (Yes/No)	Remarks
9	<p><b>Analyzer and Polarizer:</b>Analyser rotatable with 180°or above.</p> <p>Transmitted light polarizer should be 360°rotatable and Reflected - rotatable with 3 orientations 0°, 45° and 90°</p>		
10	<p><b>Compensators:</b>Quarter wavelength plate &amp; Tin plate</p>		
11	<p><b>Conoscopy:</b> Bentrand Lens for Conoscopy applications</p>		
12	<p><b>Stage:</b>Centerable 360° rotatable polarization stage with verniers.</p> <p>Stage carrier for adaptation of 3rd party stagesObject guide for Pol rating stage for x-y movement of specimen</p>		
13	<p><b>Camera&amp; Software:</b></p> <ul style="list-style-type: none"> <li>• Full HD color camera with 5 megapixels and speed 30 fps or better at 1920 x 1080, C- mount adapter 0.5x, shading correction should be applicable to live and captured images. SD card facility shall be available to work standalone / with computer.</li> <li>• Software for basic annotations and linear measurement, calibrated measurement parameters such as length, area, perimeter, diameter and angles. Measurement types include depicting the vector distance between points, determining angle, width and height and calculating areas and mean intensity. By tracing around the object of interest, it is easy to identify areas of significance and perform sophisticated measurements upon them. Object tracings can be stored and recalled in overlay format so that they can be reviewed effortlessly Data or report shall be exported in excel format.Microscope, Camera and software shall be from the same / single manufacturer for better synchronization.</li> </ul>		
14	<p><b>Computer System with Room environment control system :</b>Latest brand computer system with i7 processor, 8 GB RAM, 1 TB hard drive, 2 GB graphics, 24" LED screen, Window 10 (Licensed Version) along with UPS and Colour Laser Jet Printer. The system is to be kept at controlled room temperature.</p>		

### 5.3 Semi-Automatic Thin Section Lapping and Polishing Machine

S.No.	<b>(c) Technical Specification for Semi-Automatic Thin Section Lapping and Polishing Machine, Qty- 1Nos.</b>	Technical Compliance (Yes/No)	Remarks
1	Equipment: Variable Speed, Manual-cum-Semi Automatic Thin Section Lapping Polishing Machine		
2	Power Supply: 220 V;50 Hz ; 1ph		
3	Type: Single-station with 1(one) Magnetic Platen ( all consumables grinding/polishing surfaces should have suitable magnetic fixing arrangement ) and one concentrically grooved Rigid cast iron Lapping Disc		
4	Design: Sturdy Table-top model with vibration-resistant base ,integral body and Metallic corrosion resistant bowl, splash guard for manual and automatic preparation, complete with flow controlled Inlet Water Spout,Drain, bowl liner for easy cleaning and maintenance and operator interface for semi-automatic operation.		
5	Platen Diameter: 300mm or more		
6	Platen Speed: Variable, between 50-500 rpm or more		
7	Operator Interface : It should be mounted at elevated position (above polishing disc level) in front of operator allowing to control i. Platen rotation speed , ii. Water flow , iii. Power on/off		
8	Storage : Integrated storage pad should be provided for convenient access to accessories and sample while operation.		
	Pressure Head with Specimen Holder: Conveniently mounted Pressure Headwith Specimen Holder for enabling semi-automatic simultaneous preparation of up to 4 nos. of Thin Sections. It should have at least 8 nos. of fully adjustable pressure feet with rubber pad to be in touch with specimen.		

S.No.	<b>(c) Technical Specification for Semi-Automatic Thin Section Lapping and Polishing Machine, Qty- 1Nos.</b>	Technical Compliance (Yes/No)	Remarks
	Head rotating speed: Gentle approx. 5 rpm or less.		
	Pressure Head Force: Should be variable 2.5-20N on each specimen		
	Slurry Dispenser: Dispensing unit with adjustable flow rate for automatic dosing of diamond suspensions while polishing. The unit should be compatible with the Main Polishing Machine and Pressure Head and should be an integral part of machine.		
	<p>Essential Accessories</p> <p>(A) Splash Guard (one for manual preparation with palm rest and other for automatic preparation), Holder for simultaneous polishing of 4 thin sections, Holder for simultaneous polishing of 8 mounts of 25mm dia. , Holder for simultaneous polishing of 8 un-mounted section of 20x30mm , Thin Section Lapping Holder (2nos.) with Thickness Control mechanism ensuring repeatable and reproducible thickness of Glass slides and Thin Section , Thin Section Polishing Holder (4nos) for semi-automatic polishing. The proposal incorporates bid for dust free environment with ambient air temperature controller for the size 15 ft x 15 ft.</p> <p>(B) Vacuum impregnation cum mounting unit to perform following operations:</p> <ol style="list-style-type: none"> <li>i. Impregnation of porous specimens to fill all pores and cracks with Epoxy</li> <li>ii. Mounting of Mineralogical sample on to glass slide avoiding air bubbles</li> <li>iii. Vacuum :-860 mbar (-655 mm Hg) or better</li> <li>iv. The unit should measure the difference in relative pressure and programable in either Absolute or Relative pressure mode. The difference in pressure between ambient pressure and the pressure inside the chamber should be measured and displayed.</li> <li>v. The unit should maintain vacuum for user specified time in the program</li> <li>vi. The unit should have method database with editable built-in methods for selection of the pressure/vacuum and process time as per</li> </ol>		

	<p>requirement.</p> <p>vii. Transparent lid with pressure rod to obtain extremely thin epoxy layer (5 <math>\mu\text{m}</math>) between glass slide and mineralogical specimen.</p> <p>viii. Air compressor or vacuum pump for continuous driving the unit.</p>		
	<p>Essential Consumables :Silicon Carbide Power 220 grit – 2kgs</p> <p>i. Silicon Carbide Power 1000 grit – 1.5kgs</p> <p>ii. Standard Slides for thin sections with ground edges (27 x 46 x 1.2-1.5 mm) – 500pcs</p> <p>iii. 300mm dia. Magnetic Cloth for polishing with 3<math>\mu\text{m}</math> and 1 <math>\mu\text{m}</math> diamond – 5pcs for each size</p> <p>iv. Diamond Suspension combined with lubricant 3<math>\mu\text{m}</math> and 1 <math>\mu\text{m}</math> – 2 Liters each</p> <p>v. Squeeze bottles – 5 pcs</p> <p>vi. Two-part polypropylene re-usable mounting cup 25 mm diameter – 10 pcs</p> <p>vii. Transparent Epoxy cold mounting resin and hardener suited for vacuum impregnation – 5 liters</p> <p>viii. Fluorescent dye suitable to be missed with above Epoxy – 30gms or more</p> <p>ix. Epoxy Dispensing Tubes – 200pcs. or more</p>		
	<p>Installation,Commissioning &amp; Demonstration: To be performed at site, to be followed by 2-day demonstration after full commissioning.</p>		
	<p>Warranty: Should be 5 year from the date of Installation.</p>		

## 5.4 Atomic Absorption Spectrophotometer

S.No.	<b>(D) SPECIFICATION FOR ATOMIC ABSORPTION SPECTROPHOTOMETER</b>	Technical Compliance (Yes/No)	Remarks
1	PC controlled True double beam Atomic Absorption Spectrometer with Air/Acetylene and Nitrous Oxide Flame system having Integrated Flame and Graphite Furnace with universal Auto-sampler for Flame and Furnace and Automatic Continuous Flow Hydride Generation System.		
2	Monochromator: Czerny Turner Monochromator with a holographic grating of 1800 lines/mm or more using high capability Detector with reciprocal dispersion better than 1.6nm/mm, having focal length 330mm or better.		
3	Wavelength Range: 185-900 nm or better.		
4	Single Hollow cathode Lamp separate for each element ( Quote price for all lamps that will be selected later)		
5	Software selectable variable Spectral bandwidth 0.1 to 2 nm or better.		
6	Sensitivity: Better than 0.9Abs for 5 ppm Cu solution or better.		
7	High sensitivity inert adjustable nebulizer.		
8	Automatic 8 lamp turret to hold 8 different lamps.		
9	Separate burner Head for Air Acetylene (100 mm) as standard and N2O (50 mm) to be quoted (Burner head Titanium Alloy).		
10	Programmable and Computer controlled gas controls; Software operated Mass flow control for Fuel Flow.		
11	The system should have all safety features required for the system such as Gas Pressure Monitoring for all gasses, Burner Identification, Flame Sensor, Gas Leak Detector, Safety cut off switch,		
12	System operation with windows Software for controlling.		
13	To be offered with Pre-installed software, export of data to other applications and integrated QC Protocol, should have Absorption and Emission modes as standard as well as peak height, peak area, sequential and manual integration modes.		
14	Graphite Furnace: Up to 3000°C, with pyrotically coated transversely heated graphite tubes, programmable 8-10 stages or better. Cooled by additional water circulator system.		
15	Auto sampler for both Flame and furnace with total 100 sample position or more.		
16	Automatic Continuous Flow Hydride Generation System for hydride forming elements.		
17	Various safety interlocks like burner head, gas pressure, nebulizer, drain full condition etc.should be integrated inside the system.		

S.No.	<b>Following accessories to be supplied for complete installation of the system or any other to make the system workable with the main system:</b>	Technical Compliance (Yes/No)	Remarks
1	Acetylene Gas Cylinder with gas and dual stage SS regulator- 02 NOS.		
2	Nitrous oxide Gas Cylinder with gas and Heated regulator- 02 NOS.		
3	Oil Free Air Compressor, Water Re-circulator for Graphite cooling.		
4	Vent and Hood Assembly with 10ft. ducting.		
5	Branded Computer Controller directly from manufacturer as required to control the system with licensed loaded software and branded Laser jet B/W Printer		
6	3KVA Servo Stabilizer with surge suppressor for AAS and 600VA UPS with 15 minutes back up for Computer.		
7	Standard solutions 100ml, 1000ppm to be quoted for offered elements.		
8	Warranty: 05 Year warranty from date of installation		
9	Training: 05 days training to 02 scientists after completion of installation at site.		
10	Site Inspection & Pre-requisites: Site inspection to be carried out with details of installation pre-requisites to be intimated in details.		

## 5.5 1-D Resistivity Meter

S.No.	<b>(F) Technical specification for Specification of 1-D Resistivity Meter, Qty- 1Nos.</b>	Technical Compliance (Yes/No)	Remarks
1	<p>The equipment must be suitable for Resistivity sounding and profiling for shallow groundwater exploration, depth-to-rock determination, weathered bedrock localization and for determination of the depth &amp; thickness of aquifers.</p> <p>Microprocessor controlled measurement of Electrical Resistivity Meter, which must be portable, compact, and easy to use, with a range of Transmitter upto 400 V – 125 W – 2A. Display of voltage, current, apparent resistivity, and SP. The depth of penetration is 500m under favourable geological conditions. It should support electrode arrays for Schlumberger, Wenner, Gradient, Dipole-Dipole, Pole-Dipole, Pole-Pole configurations. The equipment should have an internal memory of 16 GB and above, with a facility of data transfer to PC through USB.</p> <p>Output Specifications: Current upto 2A, Voltage up to 400V (800V peak to peak), Power up to 125 W with a selectable cycle time of 0.25, 0.5, 1, 2, 4 or 8s. The Current measurement precision be minimum 0.5%. The accuracy parameters comprises of 24 bit voltage and current measurements, Noise monitoring before injection, SP compensation including linear drift, Digital stacking for noise reduction and Standard deviation computation. The power supply should be a rechargeable battery.</p> <p>Data Interpretation Software must include modules for electrical sounding (based on horizontally layered earth hypothesis), for pseudo-section inversion, for true resistivity 2D section, and for resistivity inversion of 3D surveys.</p> <p>Demonstration of the item may be called during evaluation of technical criteria.</p>		

## 5.6 Portable multi-Channels & Multi-electrode Resistivity Imaging System

S.No.	<b>(G) Technical specification for Technical Specification for Portable multi-Channels &amp; Multi-electrode Resistivity Imaging System for IP and SP (2D &amp; 3D) survey with 48-Electrodes for deeper depth of investigation, Qty- 1Nos.</b>	Technical Compliance (Yes/No)	Remarks
	Automatic multi-Channel and multi-electrode Resistivity imaging (SP and IP) system, capable of recording, storing Resistivity, SP and IP data for arbitrary electrode configuration; with automatic data acquisition, processing and interpretation software with the facility of 2-dimensional & 3-dimensional Resistivity Imaging. The equipment should be complete with all accessories: electrodes, jumpers, Reversible multi-core cable, chargers for internal batteries, transportation case and other required accessories for field survey.		
1	<b>General:</b> The unit should be compact and light with built-in alpha-numeric display, Transmitter, Receiver, 48-switching circuit are in a single housing (casing). Micro-processor based Processing unit, Internal memory should be integrated in the same housing. No separate electronics other than simple Reversible cables attached to the system.		
2	<b>Number of Channels:</b> Two or, more		
3	<b>Power Source:</b> Internal rechargeable battery source for Complete field survey, Imaging & VES data acquisition. There should be a connectivity port for external battery connection to the system.		
4	<b>Resistivity Measurement:</b> Direct data measurement & Storage of Resistivity, SP and IP for every measurement.		



S.No.	<b>(G) Technical specification for Technical Specification for Portable multi-Channels &amp; Multi-electrode Resistivity Imaging System for IP and SP (2D &amp; 3D) survey with 48-Electrodes for deeper depth of investigation, Qty- 1Nos.</b>	Technical Compliance (Yes/No)	Remarks
5	<b>Interface:</b> Equipment can be interfaced with PC or laptop for data processing and creation of sequences.		
6	<b>Cable:</b> <b>Reversible cable</b> with takeouts are in the 10m spacing with 48 take-outs. No electronics should be in the cable side. All the cables should be Reversible type, so that any segment can be connected at any point of the survey line.		
7	<b>Data Acquisition Type:</b> Roll Along and Move Sequence data acquisition should be carried out and should be software controlled.		
8	<b>Automatic Ranging:</b> Microprocessor Controlled. <b>Output Current:</b> Minimum 1200mA or more.		
9	<b>Output Voltage:</b> Minimum 400V and 800Vpeak to peak or more.		
10	<b>Voltage measuring Resolution:</b> 1micro Volt or better.		
11	<b>Output Power:</b> 100W or more.		
12	<b>Current measurement precision:</b> 0.5% typical.		
13	<b>Input Impedance:</b> 100 Meg Ohm minimum.		
14	<b>Input voltage protection:</b> up to 1000V.		
15	<b>Voltage measurement precision :</b> 0.5% typical.		
16	<b>Measurement Methods:</b> It should have capability to utilize all 48 electrodes at a time for measurement of resistivity.		

S.No.	<b>(G) Technical specification for Technical Specification for Portable multi-Channels &amp; Multi-electrode Resistivity Imaging System for IP and SP (2D &amp; 3D) survey with 48-Electrodes for deeper depth of investigation, Qty- 1Nos.</b>	Technical Compliance (Yes/No)	Remarks
17	<b>Noise Reduction:</b> Continuous digital stacking selectable from 1 to 255 stacks, or more for noise elimination. Noise should be monitored before injection of current.		
18	<b>Standard Deviation/ Quality Factor:</b> Real Time Standard Deviation Computation facility should be there to estimate the quality of data collected in the field. This value should be stored and transferred with every reading.		
19	<b>SP compensation:</b> Through automatic linear drift correction.		
20	<b>Resistivity accuracy:</b> 0.5% typical.		
21	<b>Induced Polarization:</b> Measured over four or more predefined windows.		
22	<b>Data Transfer:</b> USB data Transfer to any PC/Laptop		
23	<b>Calibration:</b> The system should have software based calibration facility.		
24	<b>Environmental:</b> Weather proof, Shock proof, Operating Temp:-20 to +70 degree Centigrade or better.		
25	<b>Users in India:</b>  Atleast ten (10) users of similar Instruments from same manufacturer must have supplied in India to the Govt. users, including IIT, NIT etc. Proofs need to be provided.		
26	<b><u>Software (Windows based):</u></b>		
	1. Sequence Creation Software (multi-user): For 2-D and 3-D Sequence creation for all standard / customized type arrays, including Wenner-Schlumberger, Dipole-Dipole, Pole-Dipole, Pole-Pole (Cross diagonal), Gradient etc. There must be facility for 2-D and 3-D viewing of the sequence along with its orientation and position of quadripoles. This should be designed in Laptop/PC in the laboratory and should have facility to transfer the same to Resistivity Imaging System, so that data can be collected in the field easily. 2-D & 3-D sequence data acquisition		

	<p>animation for each quadripole should be there to estimate the electrode positions, along with the <b>movie view facility</b>.</p> <ol style="list-style-type: none"> <li>2. Data Processing &amp; management Software (multi-user license): For Data transfer from Resistivity Imaging System to PC/Laptop and vice versa.</li> <li>3. For data processing, like elimination noise, topography correction, blocking high and unwanted data, viewing pseudo sections of Rho and IP etc.</li> <li>4. For 2-D &amp; 3-D data inversion and modeling with perpetual license.</li> </ol>		
28	<p><b>SCHEDULE OF REQUIREMENT:</b></p> <ol style="list-style-type: none"> <li>1. Multi-electrode Resistivity imaging, IP and SP system with 48-electrodes</li> <li>2. Reversible take outs Cable in the 10m spacing with 48 take-outs.</li> <li>3. Software for creation of various resistivity strings 2D &amp; 3D</li> <li>4. Software for data downloading and data uploading and processing (as above)</li> <li>5. 2D &amp; 3D Inversion Software for resistivity data interpretation</li> <li>6. Other complete accessories, like steel electrodes &amp; jumpers 48 sets, External battery connection cable, USB data transfer cable, internal battery charges-2 nos., Rugged Transportation Case.</li> </ol>		
29	<p><b>Training:</b> Data collection, Processing &amp; Inversion: Training need to be provided at atleast two times and again as when required by the Professor, as this is an educational institution.</p>		
<p>Bidder must have a turnover of Rs 4500000 or more per year for last three financial years and copy should be enclosed</p>			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 45000 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 4500000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that “We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery”		

## 6. School of Studies Life sciences

### 6.1 BINOCULAR MICROSCOPE

S.No.	(A) Technical Specification for BINOCULAR MICROSCOPE  , Qty- 3Nos.	Technical Compliance  (Yes/No)	Remarks
<b>EMD of Rupees 8,000</b>			
1	Instrument should have sidentopf observation head incline at 30° and rotatable in 360°.		
2	Instrument should have interpupillary distance adjustment from 50 to 75 mm or better		
3	Instrument should be supplied with anti-fungal coating plan objectives of 4X, 10X, 40X and 100 X (Oil).		
4	Instrument should have eye piece : wide Field 10X/20 mm		
5	Instrument should have co-axial focusing system with pre-focusing lever & tension adjustment knob, reverse angle quintuple nosepiece revolves on ball bearing.		
6	Instrument should be supplied with double layered mechanical stage with graduated locator marking.		
7	Instrument should have Abbe Condenser 1.25 with adjustable iris diaphragm.		
8	Instrument should have LED illumination and white bright field illumination.		
Bidder must have a turnover of Rs 800000 or more per year for last three financial years and copy should be enclosed			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 8000 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 800000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that "We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery"		

## 6.2 Inverted Phase Contrast Microscope with Screen and Camera

S.No.	<b>(b) Technical specification for Inverted Phase Contrast Microscope with Screen and Camera, Qty -02</b>	Technical Compliance (Yes/No)	Remarks
EMD of Rupees 41000			
1	Instrument should be integrated transmitted light inverted imaging System.		
2	Instrument should be supplied with mechanical stage with spring loaded clip.		
3	Instrument should be supplied with infinity corrected phase contrast long working distance plan achromat objectives of 4X, 10X, 20X and 40X.		
4	Instrument should have RMS threaded objectives with 45 mm or more parfocal distance.		
5	Instrument should have integrated 10 inches or more High Resolution Color LCD Screen with adjustable tilt and digital color camera 3 MP or more.		
6	Instrument should have 3 position condenser turret for bright-field and phase contrast.		
7	Instrument should have condenser working distance of 55 mm or more.		
8	Instrument should have coaxial focus knobs with tension control.		
9	Instrument should have LED illumination with adjustable intensity.		
10	Instrument should have image acquisition software for image capturing and saving.		
11	Instrument should have 2 USB 2.0 output ports.		
Bidder must have a turnover of Rs 4100000 or more per year for last three financial years and copy should be enclosed			

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 41000 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 4100000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that “We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery”		



## 7. Smart Class Room Solution

S.No.	(A) Technical Specification for Smart Class Room Solution, Qty- 50 Nos.	Technical Compliance (Yes/No)	Remarks
<b>EMD of Rupees 300000</b>			
1	Active Display/ Screen Size:Price be quoted for ≥86 inches both 86 inches and 98 inches diagonal		
2	Resolution: 4K / UHD (3840 x 2160 pixels)		
3	Display Back Light :LED/ DLED with background illumination compensator (Blue Eye)		
4	No. of Touch Points :Minimum Multi Touch Points 20/10 (Windows/ Android)		
5	Cursor Speed:100 points/sec ,200 dots/sec or better		
6	Viewing Angle: ( 175 degree or better)		
7	Contrast Ratio:4000:1 or above		
8	Brightness: 450 cd/m2 or better		
9	Touch Sensor with Response Time:Advanced Infrared Touch with optical bonding, <4ms 4ms or better response time		
10	Touch Screen Writing Tools:Using Stylus Pen or Finger or Eraser (should be able to sense writing from a pen of 2mm thickness)		
11	Audio Output (Speaker):Forward positioned, 15W x 2 (preferably Built in), 8Ω impedance, Frequency response from 90 Hz to 18KHz		
12	Chipset, CPU and GPU:The setup should be compatible with quad core computer processor like i5 and above. It should support Windows 7 windows 10(licenced)and above for multi-touch functions, as well as, Android 8 and above. The technical specifications of the Chipset, CPU and GPU be clearly mentioned; for example: MSD6A828, ARM Cortex A53 quad core 1.4GHz, ARM Mali450 hexa core 600MHz. The system should have inbuilt in 3GB RAM, 32GB ROM with a storage of 500 GB HDD		
13	Ports :HDMI (4K@30Hz), separate USB for Touch and for Media Play function; USB 2.0; RS232; 3.5mm Line out; RJ45 ( Input and output port for Local area network); USB 3.0 to connect external USB camera; OPS Slot (4K@60Hz); built-in Wi-Fi. The number of ports and its position in		

	<p>front and rear be mentioned clearly.</p> <p>The device must have a FHD camera and microphone (preferred built-in). Front panel inputs are preferred for easy connectivity</p>		

With Anti Glare & anti-finger print, touch surface hardness of more than 7, germ resistant screen; with an expected product life of minimum 50,000 hours in Green Category Product.

Lecture Recording & Streaming Software is a vital component. Requirements for Virtual Classes viz. FHD Camera & Mic should be clearly mentioned and the prices be quoted, if not available as a built-in option. The proposed purchase is to be used as Digital Teaching aid. The required software and tools should have and support for Virtual Whiteboard, Animated Virtual Lab Tools for Physics, Chemistry, Maths, Biology and Tools to grab attention for non-science subjects, Shape and Handwriting Recognition, Facility to Email, Export (doc, xml, ppt, PDF) & Print, able to Import PPT, PDF Images, Video etc. Files and Text to Speech Tools.

Training is to be provided so as to effectively use the hardware and software of the interactive flat panel. On-site technical support is mandatory during the period of warranty.

Documents for Original Equipment Manufacturer or Authorized Dealer, along-with OEMs Lab Reports, Factory Certification, ISO & Products BIS will be considered during the technical evaluation.

---

## Pt. Ravishankar Shukla University, Raipur (C.G.)

### Essential documents to be enclosed

No.	Particulars	Yes/No	Remarks
01	Cost of Tender Documents: Rs. 1000.00 (non-refundable) by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur. Downloaded Tender documents must enclose Demand draft of the cost of Tender Document		
02	EMD Rs. 45000 by Demand draft in favor of Registrar, Pt. Ravishankar Shukla University, Raipur		
03	GST Registration Number		
04	PAN Card No.		
05	Bidder must have turnover of Rs 4500000 or more in last three financial years		
06	Bidder must have supplied Laboratory equipment (items) to the departments of state/central universities, PSUs/NITs/IITs/IISERs or to reputed academic institutes against a single purchase order .		
07	The bidder should be a OEM or authorized agent of OEM(Annexure II)		
08	Warranty declaration		
09	Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the University / to provide consulting services for the preparation of the design, specifications, and other documents to be set for the procurement of the goods under this Invitation of Bids		
10	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices(Annexure v)		
11	The bidders should also enclose a statement on their letter head stating that "We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery"		

**Annexure – II****FORMAT FOR MANUFACTURER'S AUTHORISATION LETTER TO AGENT (on letter head)**

Ref. No.

Date:

To,

The Registrar

Pt. Ravishankar Shukla University, Raipur (C.G.)

**Sub.: Authorization Letter.**

Dear Sir,

We, \_\_\_\_\_, who are established and reputed manufacturers of \_\_\_\_\_, having factory at \_\_\_\_\_, hereby authorize M/s. \_\_\_\_\_ (name & address of Indian distributor /agent) to bid, negotiate and conclude the order with you for the above goods manufactured by us.

We shall remain responsible for the tender / contract / agreement negotiated by the said M/s. \_\_\_\_\_, jointly and severally.

We ensure that we would also support / facilitate the M/s \_\_\_\_\_ on regular basis with technology / product updates for up-gradation / maintains / repairing / servicing of the supplied goods manufactured by us, during the warranty period.

In case duties of the Indian agent / distributor are changed or agent / distributor is changed it shall be obligatory on us to automatically transfer all the duties and obligations to the new Indian Agent failing which we will ipso-facto become liable for all acts of commission or omission on the part of new Indian Agent / distributor.

Yours faithfully,

[Name &amp; Signature]

for and on behalf of M/s. \_\_\_\_\_ [Name of manufacturer]

**Note:** This letter of authorisation should be on the letterhead of the manufacturing concern and should be signed by a person competent and having the power of attorney to bind the manufacturer. A copy of notarised power of attorney should also be furnished.

## Annexure-III

**BANK GUARANTEE FORM FOR PERFORMANCE SECURITY**

To,  
 The Registrar  
 Pt. Ravishankar Shukla University, Raipur (C.G.)

WHEREAS..... (Name and address of the Supplier) (herein after called "the Supplier") has undertaken, in pursuance of contract no..... dated ..... (herein after called "the contract") to supply

.....  
 .....

AND WHEREAS it has been stipulated by you in the said contract that the Supplier shall furnish you with a bank guarantee by a scheduled/nationalized bank recognized by you for the sum specified therein as security for compliance with its obligations in accordance with and due performance of the contract;

AND WHEREAS we have agreed to give the Supplier such a bank guarantee;

NOW THEREFORE we hereby affirm that we are guarantors and responsible to you, on behalf of the Supplier, up to a total of .....  
 .....(amount of the guarantee in words and figures), and we hereby irrevocably and absolutely undertake to pay you immediately, upon your first written demand declaring the Supplier to be in default under the contract and without cavil or argument, any sum or sums within the limits of (amount of guarantee) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Supplier before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the contract to be performed there under or of any of the contract documents which may be made between you and the Supplier shall in any way release us from any liability under this guarantee and we hereby waive notice of any such change, addition or modification.

The Bank guarantee shall be interpreted in accordance with the laws of India. The Guarantor Bank represents that this Bank Guarantee has been established in such form and with such content that is fully enforceable in accordance with its terms as against the Guarantor Bank in the manner provided herein.

The Bank Guarantee shall not be affected in any manner by reason of merger, amalgamation, restructuring or any other change in the constitution of the Guarantor Bank or the Supplier. The Bank further undertakes not to revoke this Guarantee during its currency except with the previous express consent of the Buyer in writing.

The Bank declares that it has power to issue this Guarantee and discharge the obligations contemplated herein, the undersigned is duly authorized and has full power to execute this Guarantee for an on behalf of the Bank.

This guarantee shall be valid up to and including the ..... day of ....., 20.....

.....  
(Signature with date of the authorised officer of the Bank)

.....  
Name and designation of the officer

.....  
Seal, name & address of the Bank and address of the Branch

## Annexure – IV

## FORMAT FOR THE SUBMISSION OF RATES – PRICE BID

(To be submitted on the letterhead of the company/firm)

Date:

Name of the Equipment: **SUPPLY & INSTALLATION OF LAB EQUIPMENTS**

Name of the Manufacturer \_\_\_\_\_

Make of the Equipment \_\_\_\_\_

Model Number \_\_\_\_\_

County of Origin \_\_\_\_\_

**Subject: SUPPLY & INSTALLATION OF LAB EQUIPMENTS (Following format is used for imported items)**

S. No.	Currency	Description and Specification of the Item	Qty. in Units	Unit Price (a)	Agency Commission (If applicable) (b)	Discount (c)	Ex-works price (d=a+b-c)	Packing + Handling + DOC + Inland Freight + FCA Charges (e)	FOB/FCA Airport Price (f=d+e)	Insurance + Freight (g)	CIF Price (f+g)
1											

**Note:** At any circumstances, it is the responsibility of the foreign supplier to hand over the material to our forwarder at the origin airport after completing all the inland clearing. No Ex-works consignment will be entertained.

**For indigenous items please quote as per following format.**

S. No.	Description and Specification of the Item	Qty. in Units	Unit Price in Rs.	GST %	GST AMOUNT	Total Price in Rs.

**Note:** The above financial template should be strictly followed. Any deviation from the above template (in terms of description and specification of the item) may lead to cancellation of the tender.

This is certified that the rates quoted above are not more than the rates charged from any other Institute/ Department/Organization.

**Signature & Seal of the Tenderer**

**Annexure-V**

**FORMAT FOR NON BLACKLISTING OF SUPPLIER**

I/ We \_\_\_\_\_Manufacturer/partner/Authorized Distributor/Agent (strike out which is not applicable) of (Supplier) \_\_\_\_\_ do hereby declare and solemnly affirm that the individual/firm/company is not black-listed by the Union/State Government/Autonomous body.

Deponent

Address \_\_\_\_\_

I/ We hereby solemnly declare and affirm that the above declaration is true and correct to the best of my knowledge and belief. No part of it is false and nothing has been concealed.

Deponent

Dated: \_\_\_\_\_

(Note: To be furnished on non-judicial stamp paper duly attested by the Oath Commissioner.)



## Pt.Ravishankar shukla University

### COMPLIANCE SHEET

**IMPORTANTNOTE** :THIS STATEMENT SHOULD BE DULY FILLED AND ENCLOSED WITH QUOTATION.NONRECEIPT OF THIS STATEMENT OR INCOMPLETE DETAILS PROVIDED WILL LEAD TO REJECTION OF TENDER

**Tender Enquiry No:**

S.no	Commercial Aspects	PRSU Terms	
1	Terms of Delievry	PRSU	
2	Terms of Payment	100% payment within 30 days after receipt, acceptance and satisfactory installation of stores/equipment in good condition or the date of receipt of the bill whichever is later against the submission of Performance cum warranty bond(if applicable)	
3	Mode of Payment	RTGS/NEFT	
4	Bank Details for making Payment	To be enclosed	
5	Validity of Quote	90 days from the date of opening of Tender	
6	Name of Manufacturer	Name &complete address of the Manufacturer	
7	Currency in which quoted	INR	
8	Delivery Period	o6 weeks from effective date of Contract	

9	No. of Lots	01lot	
10	Installation/Supply	PRSU,Raipur	
11	Earnest Money Deposit		
12	Liquidated damages ( <b>mandatory requirement, if not accepted quotation will not be considered</b> )	At the rate of 2% of the total order value shall be levied subject to one time extension of the stipulated time for maximum 2 weeks on genuine grounds.	
13	Order to be placed on	complete address with Contact details of the supplier	
14	Custom duty percentage(CDEC)		
15	Applicable GST as per Govt. rules	GST % should be mentioned Separately	
16	Performance cum Warranty Bond	(10 % of the order value) As per tender	
17	Name & Address of the Firm:		
18	Compliance(choose any one)	We hereby accept all the terms & conditions of the tender Or We hereby accept all the terms & conditions of the tender except the one mentioned in separate sheet.(mention the non-compliance conditions in separate sheet)	
19	Signature &Name of the authorised signatory with stamp of the firm:		