

**झारखण्ड केन्द्रीय विश्वविद्यालय, राँची**  
**CENTRAL UNIVERSITY OF JHARKHAND, RANCHI**  
(संसदीय अधिनियम के तहत 2009 में स्थापित केन्द्रीय विश्वविद्यालय)  
(A Central University established by an Act of Parliament in 2009)

Ref no. CUJ/ P&S/CAP/10/2016/88

Dated: ...09...../06/2016

संलग्न शीट (अनुबंध- II ) में सामानों के लिए नीचे दिए गए नियम एवं शर्तों के अधीन मुहरबंद कोटेशन आमंत्रित किए जाते हैं:

Sealed quotations are invited for the article enclosed in the separate sheet (Annexure-II) subject to the terms and conditions given below:

कोटेशन प्रभारी क्रय, झारखण्ड केन्द्रीय विश्वविद्यालय, रातु लोहरदगा रोड, ब्राम्बे, राँची - 835205 के नाम होना चाहिए एवं दिनांक 08/09/2016.....को या उससे पहले मिल जाना चाहिए। तकनकी बोली दिनांक 13-09-16.....को अपराह्न 3:00 बजे खोला जाएगा।

The quotation should be addressed to The Purchase In-charge, Central University of Jharkhand, Ratu-Lohardaga Road, Brambe, Ranchi, 835205 and should reach on or before 08-09-16 Technical bid will be opened on 13-09-16.....at 3:00 pm.

**नियम एवं शर्तें**

**TERMS AND CONDITIONS**

1. बिना किसी मिटान और ओवरराइटिंग वाले कोटेशन मुहरबंद लिफाफे में प्रभारी क्रय, झारखण्ड केन्द्रीय विश्वविद्यालय, रातु लोहरदगा रोड, ब्राम्बे, राँची - 835205 के नाम भेजा जाना चाहिए। लिफाफे पर संविदा/इन्क्वायरी संख्या एवं नियत तिथि लिखा होना चाहिए नहीं तो कोटेशन को नज़रअंदाज कर दिया जा सकता है। कोटेशन / इन्क्वायरी को डाक/कूरियर/हाथो-हाथ भेजा जाना चाहिए।

Quotations without any erasures and overwriting must be submitted in sealed cover addressed to Purchase In-charge, Central University of Jharkhand, Ratu- Lohardaga road, Brambe, Ranchi- 835 205 super-scribed Tender/ Enquiry No. and the due date failing which, quotation may be ignored. Tender/ quotation should be sent through Post/ Courier/ By Hand.

2. उद्धृत दर पैकिंग, अग्रेषण, बिक्री कर, माल ढुलाई और बीमा शुल्क सहित होना चाहिए और कोटेशन के खुलने की नियत तिथि से तीन महीने के न्यूनतम अवधि के लिए हमारी स्वीकृति के लिए वैध होनी चाहिए। कोटेशन परेषिती के स्थान यथा झारखण्ड केन्द्रीय विश्वविद्यालय, रातु लोहरदगा रोड, ब्राम्बे, राँची - 835205 के आधार होना चाहिए ।

The rate quoted should be inclusive of all packing, forwarding, sales tax, freight and insurance charges and should remain valid for our acceptance for minimum period of three months from the due date of opening of the quotations. The quotation should be CUJ consignee's site basis i.e. Central University of Jharkhand, Ratu- Lohardaga Road, Brambe, Ranchi.

3. आपूर्ति की जाने वाली सामग्री के मूल कंपनी के निर्माता का नाम स्पष्ट रूप से निर्दिष्ट किया जाना चाहिए । सचित्र साहित्य / या चित्र, में पूरा विवरण, यदि कोई हो, की मूल प्रति (फोटोकॉपी नहीं) सभी कोटेशन के साथ अनिवार्य रूप से संलग्न करना चाहिए।

Manufacturer's name of the company of materials offered must be clearly specified. Complete details of illustrated literatures/ or drawings, in original (not photocopies), if any must accompany all quotations.

4. ठेका अवधि के दौरान निविदाओं के खुलने के बाद विश्वविद्यालय उद्धृत मूल्यों में संशोधन के अनुरोध पर विचार नहीं करेगा चाहे जो भी कारण हो।

The University will not entertain requests for revision in prices once quoted for whatever reason after the tenders are opened during the period of contract.

5. सभी माल हमारे निरीक्षण प्राधिकारी द्वारा निरीक्षण के लिए रातु लोहरदगा रोड, ब्राम्बे, राँची - 835205 में हमारे विश्वविद्यालय में दिया जाना चाहिए।

All goods must be delivered at our university at Ratu- Lohardaga Road, Brambe, Ranchi for inspection by our inspecting authority.

6. हमारे गंतव्य पर आपूर्ति किए गए माल के निरीक्षण के बाद स्वीकृति के 30 दिनों के भीतर पूर्ण भुगतान कर दिया जाएगा। विभिन्न भुगतान की शर्तें युक्त कोटेशन को नजरअंदाज किया जा सकता है।  
Full payment will be made within 30 days of the receipt and acceptance after inspection of supplies at (our) destination, quotations containing different payment terms are liable to be ignored.
7. आदेश की पुष्टि के बाद सभी वस्तुओं को रातु लोहरदगा रोड, ब्राम्बे, राँची - 835205 स्थित हमारे विश्वविद्यालय (क्रय व भंडारण) में निःशुल्क आपूर्ति किया जाना चाहिए।  
All goods must be delivered at our university at Ratu- Lohardaga road, Brambe, Ranchi (Stores & Purchase Section) free of cost after confirmed order.
8. केवल ऐसे निर्माता / अधिकृत डीलर / ख्यातिप्राप्त कंपनियां जो कोटेशन में सूचीबद्ध सामानों की खरीद-बिक्री करते हैं एवं जिन्हें इन सामानों की बिक्री और मरम्मत का अनुभव है, कोटेशन दें।
9. Only Manufacturer/ Authorized dealer/ firms of repute dealing in the items listed in the quotation having experience in sale and repair/ maintenance, need apply.
10. सामानों के केवल नवीनतम मॉडल ही कोट करें।  
Only latest models of items need to be quoted.
11. यह विशेष रूप से उल्लेख किया जाना चाहिए कि क्या उद्धृत मूल्य में सभी कर और शुल्क भी शामिल है। बिक्री कर और / या अन्य शुल्क जो कानूनी तौर पर लगाया जाना है और जिन्हें दावा करने का इरादा है तो स्पष्ट रूप से निविदा में दिखाया जाना चाहिए।  
It should be mentioned specifically whether price quoted includes all taxes and duties. Sales tax and/ or other duties legally leviable and intended to be claimed should be distinctly shown in the tender.
12. वैट/सीएसटी पंजीयन संख्या एवं इसकी वैधता दिखाया जाना चाहिए। निविदा कागजातों के साथ दस्तावेजी साक्ष्य संलग्न किया जाना चाहिए।  
VAT/CST Registration Number and its validity should be indicated. Documentary evidences be supplied/ attached to the tender documents.
13. सभी दर शब्दों एवं अंकों दोनों में दर्शाया जाना चाहिए। शब्दों एवं अंकों में दिए गए दरों में अंतर की स्थिति में शब्दों में दिया गया दर ही मान्य होगा।  
All rates shall be indicated both in words and figures. Where there is difference between the rates quoted in words and figures, rate quoted in words will prevail.
14. क्रय आदेश दिए जाने के 30 दिनों के भीतर आपूर्तिकर्ता वस्तुओं की आपूर्ति करेगा। क्रय आदेश आवश्यकताओं के आकलन करने के बाद दिया जाएगा और इसलिए वास्तविक मात्रा में वृद्धि / कमी हो सकती है।  
The supplier shall make delivery of the items within 30 days from the placement of the purchase order. The purchase order would be placed after assessing the requirement and hence, actual quantity may increase/ decrease.
15. सामाग्री के लिए निविदा कागजात दो बोली प्रणाली में होगा जिसमें **तकनीकी बोली (अनुलग्नक -I)** एवं **मूल्य बोली (अनुलग्नक - II)** शामिल है। निविदा कागजातों को सामाग्री वार दो अलग-अलग मुहरबंद लिफाफे में देना होगा एवं लिफाफे के ऊपर सामग्री का विवरण जिसके लिए बोली दिया गया है स्पष्ट रूप से दर्शाना होगा।  
The Tender Document for items will be Two- Bid system consisting of **Technical Bid (Annexure-I) and Price Bid (Annexure-II)**. The Tender Document will be submitted item-wise in two separate sealed covers clearly mentioning on the envelope the details of items for which Bid is submitted.
16. निविदा कागजात का मूल्य रु 1000 / - (केवल एक हजार रुपए ) ( अप्रतिदेय ) है। निविदा कागजात मूल्य बैंक, ड्राफ्ट के माध्यम से "झारखण्ड केन्द्रीय विश्वविद्यालय" के पक्ष में राँची में देय, तकनीकी बोली के साथ संलग्न किया जा सकता है।

The price of Tender Document is Rs. 1000/- only (One Thousand rupees only) (non- refundable). The Tender Document price may be attached to the Technical Bid in the form of Bank Draft in favour of "Central University of Jharkhand" payable at Ranchi.

17. निविदा कागजात जिसमें तकनीकी बोली, मूल्य बोली एवं बयाना, उपकरण मूल्य का 10% बैंक ड्राफ्ट के रूप में "झारखण्ड केन्द्रीय विश्वविद्यालय" के पक्ष में राँची में देय, शामिल है, अलग-अलग लिफाफे में रखा होना चाहिए एवं लिफाफे पर उसका नाम लिखा हुआ होना चाहिए। निविदा कागजात के साथ बयाना अनिवार्य रूप से साथ लगा होना चाहिए अन्यथा निविदा कागजात को निरस्त कर दिया जाएगा। सभी कागजात एक बड़े लिफाफे में रखा जाना चाहिए एवं उसके ऊपर निविदा संख्या एवं सामग्री का नाम लिखा होना चाहिए।

The Tender Documents comprising of Price-Bid, Technical Bid and **Earnest Money Deposit** of 10% of the value of the equipment (**refundable**) in the form of Bank Draft in favour of "Central University of Jharkhand" payable at Ranchi kept in the separate envelope super- scribed with the name of the same. The Tender Document must be (*accompanied with*) enclosed with Earnest Money Deposit otherwise the tender document will be rejected. All the documents must be (*kept in*) enclosed in a bigger size envelope super- scribed with the tender number and item name.

18. ISO 9001 and ISO 14001 प्रमाणन रखने वाले विनिर्माता ही निविदा में भाग लेने के योग्य है ।  
Only those Manufacturers (*eligible*) liable to participate (*which are*) having ISO 9001 and ISO 14001 certification.
19. सभी कानूनी विवाद झारखण्ड उच्च न्यायालय, राँची के न्यायाधिकार के अंतर्गत होगा ।  
All legal disputes shall be under the jurisdiction of Jharkhand High court, Ranchi.
20. विश्वविद्यालय को किसी बोली को बिना कोई कारण बताए स्वीकृत अथवा निरस्त करने का अधिकार सुरक्षित होगा। इस संबंध में कोई भी पत्राचार पर विचार नहीं किया जाएगा।  
The University reserves the right to accept or reject any Bid, without assigning any reason thereof. No correspondence in this regard will be entertained.
21. सभी प्रतिभागी कंपनियों को निम्नलिखित के पक्ष में सहायक कागजात संलग्न करना चाहिए:  
All the participating firms should attach supporting documents in favour of (*following*):
- क्षेत्र में कम से कम 5 सालों का अनुभव  
Have at least 5 years of experience in the field.
  - पिछले तीन सालों में प्रत्येक वर्ष कम से कम रु 50 लाख का वार्षिक टर्नओवर होना चाहिए (यथा 2012-13, 2013-14 व 2014-15) (कंपनियों को अपने लेखापरीक्षा कंपनी से दिए गए अवधि के लिए टर्नओवर प्रमाणपत्र प्रस्तुत करना होगा)।  
Have an annual turnover of at least Rs. 50 Lakh per annum for each of the last 3 years (i.e 2012-13, 2013-14 & 2014-15) (Agency should produce a certificate from their Audit Firm in respect of turnover for the mentioned period).
  - उद्योग निदेशालय या लघु उद्योग या अन्य किसी उपयुक्त प्राधिकारी के साथ पंजीकृत होना चाहिए  
Be registered with Directorate of Industries or Small Scale Industries or any other appropriate authorities.
  - वैट/सीएसटी के अंतर्गत पंजीकरण के लिए वैध टीआईएन संख्या  
Have valid TIN Number for registration under VAT/CST
  - आयकर के लिए पैन संख्या । आयकर जमा करने संबंधी पिछले दो सालों के लिए सहायक कागजात (यथा 2013-14 व 2014-15)  
Have PAN for Income Tax. Supporting documents for Income Tax return for the last Two years (i.e 2013-14 & 2014-15).
  - सहायक कागजात के साथ तकनीकी बोली के संबंध में दस्तोवजी सबूत

Documents as proof in respect of Technical bid along with supporting documents.

- g) एजेंसी का प्रोफाइल एवं ट्रैक रिकार्ड (3 साल)  
Profile and Track Record of the agency. (3 years)
- h) पिछले तीन सालों का हस्ताक्षरित तुलन पत्र  
Copy of signed Balance Sheets of last three years.
- i) प्रदर्शन/वारंटी/बैंक गारंटी/निरीक्षण/एलडी/देर से आपूर्ति के लिए जुर्माना संबंधी विस्तृत नियम एवं शर्तें हमारे क्रय आदेश में दिया जाएगा।  
Detailed terms and condition regarding performance/ warranty/ Bank guarantee/ inspection/ LD/ Penalty for delayed supplied will be elaborated in our purchase order.
22. उपकरण का विस्तृत ब्यौरा अनुलग्नक - II के रूप में संलग्न है।  
Details specification of the equipment annexed as Annexure-II.
23. यदि कोई निविदाकर्ता किसी विदेशी कंपनी की ओर से प्रतिभागिता करता है तो उस कंपनी को डीजीएसएंडडी के साथ सूचीबद्ध होना चाहिए।  
If any Tenderer participated on behalf of foreign company as Indian agent. The firm should be enlisted (*with*) from DGS&D.
24. किसी प्रकार की जानकारी के लिए आप हमारे ईमेल आईडी [purchase\\_stores@cuja.ac.in](mailto:purchase_stores@cuja.ac.in) पर संपर्क कर सकते हैं  
For any queries you may contact (*at*) our email ID [purchase\\_stores@cuja.ac.in](mailto:purchase_stores@cuja.ac.in).



अध्यक्ष / Chairman  
(अकादमिक क्रय / Academic Purchase)



**झारखण्ड केन्द्रीय विश्वविद्यालय, राँची**  
**CENTRAL UNIVERSITY OF JHARKHAND, RANCHI**  
 (संसदीय अधिनियम के तहत 2009 में स्थापित केन्द्रीय विश्वविद्यालय)  
 (A Central University established by an Act of Parliament in 2009)

**DETAILS OF ARTICLE**

**PRICE-BID**

Sl. No.	Description of the Items	Qty.	Rate quoted (in Rs.)
1	Measurement of temperature coefficient of resistance by Carey Foster bridge. <b>Specifications:</b> Meter bridge(1) Power Supply (2V/1A)(1) Fractional resistance box(1) Table galvanometer (1) Two equal resistance coils Plug commutator (Brass) (1) Resistance box (0-10, 0 ohm)(brass made) Temperature coefficient of resistance apparatus (hypsometer type) Heating arrangement for temperature coefficient apparatus.	04 Set	
2	Platinum resistance thermometer. Complete in all respects. <b>Specifications:</b> Potentiometer (10 wire type, sunmica top, jockey slides on brass rod, 10 contact jockey, resistance 20 ohm approximately), Brass made P.O. box(four arms ratio, ratio arms 10,100 and 100 W third arm 5000 W. Coils made manganine wire, double wound on ebonite bobbin, all plugs are interchangeable, bright electro plated brass blocks) Thermo couple(brass made) Copper-Constantin, Ice bath Water bath with temperature controller with thermostat system. Power supply (2V/ 1A) Spot reflecting galvanometer	1 set	
3	Two beam interference <b>Cat No. Item Name SK005 SN629</b> Fresnel biprism 1 Universal lens holder (Biprism) 1 Optical bench hexagonal 1 Adjustable slit self centering Sodium light source Micrometer eyepiece Convex lens in holder 1 Transverse saddle 1 Fresnel mirror 1 Microscope objective in holder 1 Translucent screen 1 Cylindrical base 1 Vernier caliper 1 Measuring tape 1 He-Ne laser 2mW 1	1 set	

4	Young's double slit experiment Graticule, 1/2 mm or Ronchi ruling Lens (+14D) Greaseproof paper screens, small Power supply for lamp Metre rule Lamp, holder and stands <u>Setting up Young's experiment with light</u> Double slit made from glass microscope slide Double slits holder	4 set	
5	Measuring Young's modulus (using Travelling microscope) Wood, steel or aluminium beam (1 m long, rectangular or square cross section) , Two rigid knife-edge supports Hooks, mass pieces Vernier calliper Micrometer screw guage Travelling microscope	2 set	
6	Figure of merit of dead beat galvanometer PO Box, Dead beat Galvanometer, Internal resistance-480Ω, Time period- 20sec 01 Lamp & scale setup for Galvanometer- 01 Standard low resistance- 02 DC Power supply- 2volt (fixed)- 01 Commutator- 01 Resistance Box- (1Ω-5000Ω)- Connecting wires	4 set	
7	Biot Savart's Law: Specifications: Optical bench, Set of 3 circular loops with holders, power supply 0-30 V DC, 0-20 A , Gauss meter with axial probe, flexible plug lead(100 cm), red, flexible plug lead (100 cm), black. One set of each item.	4 set	
8	<b>Accessories required:</b>		
A	Microscope (for Newton's ring)	01 no.	
B	Heater of 2000 Watt required for Lee's disc method	01 no.	
C	Mercury thermometer required for Lee's disc method with a list 0.1 degree Celsius and maximum reading of 150 degree Celsius.	02 nos.	
D	Convex lens of focal lengths 15 and 20 cm.	04 sets each	
E	Convex lens of focal length 100 cm	06 sets	
F	LED torch (with Battery Charger & Cell)	03 sets	
G	Spectrometer	04 sets	
H	Prism (apex angle= 60 degree)	04 sets	
I	Spirit level (maximum 2 inches)	02 sets	
J	Sodium lamp casing with four openings with transformer: Rs 5000	01 no.	
	<b>VAT/CST if any</b>		
	<b>Total Price including all taxes etc.</b>		

Place: .....

Name: .....

Date: .....

Business Address: .....

.....

Signature of Bidder: .....

Seal of the Bidder:

झारखण्ड केन्द्रीय विश्वविद्यालय, राँची  
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**DETAILS OF ARTICLE**

**PRICE-BID**

Sl. No.	Description of the Items	Qty.	Rate quoted (in Rs.)
1	<b>G.M. COUNTING SYSTEM WITH ACCESSORIES</b> GM COUNTING SYSTEM (Micro-controller based) KIT (research model) along with all necessary connecting Cables, End Window G.M. Detector , G.M. Detector sliding bench, Source holder bench, Stand for detector, Radioactive Source Kit (Three Gamma Sources (2.5 micro curie) i.e.Cs-137, Co-60, Ba-133 & Three Beta Sources i.e.Tl-204, Sr-90, Tl-90), Aluminium Absorber Set (twenty absorber coils with different thickness), Lead and Copper Absorber (Contains ten absorber of each type), Data Communication software CD & necessary connecting Cables (For downloading data into PC) , G.M. Tutor Software and manual CD.	01 no.	
2	<b>GAMMA RAY SPECTROMETER SYSTEM &amp; ACCESSORIES</b> MINIM Gamma Ray Spectrometer System (with Microcontroller based Counter/Timer) Consisting of MINIM Bin & Power Supply, High Voltage Unit , Linear Amplifier, Single Channel Analyser, Counter Timer, NaI Scintillation Detector (Size 2" x 2" Well type with built-in Pre-Amplifier), Five Gamma ray standard sources (2.5 microcurei) i.e. Cs-137, Co-60, Co-57, Na -22, Ba-133, Source holder bench, Software tutor for Experiments with Gamma Ray Spectrometer, All necessary connecting Cables, Manual CD	01 no.	
3	<b>GAMMA RAY SPECTROSCOPY AND COMPTON EFFECT</b> Universal Computer Spectrometer, Scintillation probe with stand, Set of 8 gamma sources, Set of 20 Absorbers, Lead Shield for radioactive sources, All necessary USB and other cables, Manual CD	01 no.	
4	<b>PLANCK'S CONSTANT BY LED</b> Planck's Constant apparatus, Oven, LED Red, LED Yellow, Variable voltage source 0 - 2V DC, resolution 1mV, Current meter 0-20mA / 2000mA, In - built temperature sensor. Selector Switch : V-I and T-I experiment <b>Selector Switch at V-I position :-</b> Voltmeter Display : 3½ digit, 7segment LED, auto polarity & decimal indication. Voltage Range : 0.000-2,000V Current Display : 3½ digit, 7segment LED Current Range : 0-2000mA <b>Selector Switch at T-I position :-</b> Current Display : 3½ digit, 7segment LED Current Range : 0-20mA Temperature Display : 3½ digit, 7segment LED Temperature Range : Room temperature to 60.0°C Oven : Heater pin 4 & 5. Temperature pin 1 & 2 Oven Connector : 5 Pin, DIN type	01 no.	

	<p>LED Connector : 3 Pin, DIN type            Input Voltage : 220V, 50Hz AC, Fuse : 1A, 250 V  <b>OVEN WITH TEMPERATURE SENSOR</b>            Heating Element : 20 ohm            Oven Connector : 5 Pin, DIN type            Ambient Temperature : 60° C            Temperature Sensor : Pt100            Output Pin : Heater pin 4 &amp; 5.            Temperature pin 1 &amp; 2  <b>LED (Yellow and Red) : LED Size 5mm 5mm</b>            Wave Length 590nm 700nm            Connector 3 Pin, DIN type 3 Pin, DIN type, Manual CD</p>		
5	<p><b>Photo-conductivity</b>            Photo-resister in holder (Cds),            Power Supply 12V AC/DC 5 Amp., Lamp housing, Convex lens in holder,            Polarizer (pair), optical Bench, Adjustable slit self-centring, Reg. Power            Supply (0-16V DC), Digital multimeter, Flexible plug lead, 50 cm, Red (02),            Flexible plug lead, 1m (black), Manual CD</p>	01 no.	
6	<p><b>Zeeman Effect Experiment</b>            Optical Bench, Fixed Saddle(04), Transversal Saddle (02), Convex Lens on            Holder, Polarizer, Quarter Wave Filter, Electromagnet, Power Supply for            Electromagnet, Mercury Lamp with Supply, Mercury Lamp Holder, Fabry            Perot Etalon &amp; Interference Filter, CCD Camera, Monitor, Manual CD</p>	01 no.	
7	<p><b>Advance Spectrometer along with Accessories</b>            Bi-Prism (EDF), Tomy bar, Magnifier, Allen Key, Fresnels Grating Holder            and Prism Holder, LED Torch, Scale : Brass, Dia. 175mm., Sodium Lamp            with transforassembly.            Objective: Achromatic, focal length 178 mm, aperture 32mm, Slit: German            silver, Reticle : 90° cross etched on glass, Least count : 20 seconds, Base :            Aluminium Casting, Manual CD, Diffraction Grating (02 nos.)</p>	01 no.	
8	<p><b>Planck's Constant By Cs Photocell</b>            Power Supply, Photocell, Mercury Light Source, Convex lens in holder, Iris            Diaphragm, Set of Six Filters, Electrometer Amplifier, Capacitor, 100pF,            630V, Push Switch module, Multimeter, Optical bench, Saddle with 11mm            bore, Flexible plug lead red (50 cm), Flexible plug lead black (50 cm),            Flexible plug lead Yellow (100 cm), Flexible plug lead Black (100 cm),            Flexible plug lead Red (100 cm), Earthling Lead, Manual CD</p>	01 no.	
9	<p><b>Complete Set of Wheatstone Bridge</b></p>	02 nos.	
10	<p>Digital Oscilloscope Analog Bandwidth 50-100 MHz, Sample rate 1GS/s,            Two Analog Channels, necessary BNC and other cables for the use of CRO.</p>	01 no.	
11	<p>Stabilizers 5 KVA</p>	01 no.	
12	<p>Rechargeable LED Torch with 10 spare battery cells.</p>	5 nos.	
13	<p>Sodium Bulb (35 Watt)</p>	5 nos.	
	<b>VAT/CST if any</b>		
	<b>Total Price including all taxes etc.</b>		

Place: .....

Name: .....

Date: .....

Business Address: .....

Signature of Bidder: .....

Seal of the Bidder:



**झारखण्ड केन्द्रीय विश्वविद्यालय, राँची**  
**CENTRAL UNIVERSITY OF JHARKHAND, RANCHI**  
 (संसदीय अधिनियम के तहत 2009 में स्थापित केन्द्रीय विश्वविद्यालय)  
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**DETAILS OF ARTICLE**

**PRICE-BID**

Sl. No.	Description of the Items	Quantity	Rate quoted (in Rs.)
1	<b>Electron Spin Resonance Spectrometer</b> , Complete in all respect, except a oscilloscope	3 set	
2	<b>Determination of the gamma and beta ray absorption coefficients by using a G.M. counter.</b> i) End window GM Detector ii) GM detector stand iii) Radioactive Source Kit, iv) Aluminium & Lead absorber kit	2 set	
3	<b>Manual good quality multimeter</b>	2 set	
4	<b><u>Ultrasonic Interferometer For Liquids</u></b>  i) High Frequency Generator: Single and Multi-frequency  ii) Measuring Cell: Maximum displacement of the reflector ( 25 mm), Required quantity of liquid: 10 c.c, Least count of micrometer: 0.001 or 0.01 mm  iii) Shielded Cable	1 set	
5	<b>30 MHz two channel Oscilloscope for ESR experiments</b>	3 set	
6	<b>Online UPS 1.0KVA with 3 nos. of external batteries (65AH-12Volt) with connection cable</b>	02 nos.	
	<b>VAT/CST if any</b>		
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Sl. No.	Description of the Items	Quantity	Rate quoted (in Rs.)
1	Thermal & Electrical conductivity of metals : Specifications: Conductivity rod of Copper(1), Conductivity rod of Aluminium (1), calorimeter vessel (1), Calorimeter vessel with rod holder (1), Laboratory jack (1), weighing balance (1), immersion heater (1), temperature sensor (3), three finger clamp(3), Support base (2), support rod (2), Bosshead (5), power supply 20A(1), Microvoltmeter (1), Connecting lead (4), glass beaker (1) Number in parentheses implies number of quantity required.	4 set	
2	Measuring Specific heat of solid: Specifications: A shaped base (1), Universal clamp (1), Dewar flask (1), Bosshead (2), Rod (1), steam Chamber (1), Beaker (1), Copper, Lead, Glass shots(pack)(1 each), Round bottom flask (1), Rubber cork (2), Spirit lamp (1), Thermometer (2), Weighing scale (1), Silicon tubing 1.5 m(1) Number in parentheses indicates the quantity needed.	4 set	
3	Magnetic field in Helmholtz coil: Specifications: Power supply with DC 0-16V, 5Amp(1), Gauss meter with axial probe(1), Coil N=390, diameter=150mm(2), Support base (2), Support rod (2), Base for Helmholtz Coil (1), U channel small (1), Deflection compass with base (1), Axial probe holder (1), Multimeter (1), Lead 100 cm (black) (2), Lead 100 cm (red)(1), Lead 50 cm red (1), Lead 50 cm yellow(1). Number in parentheses indicates the quantity required.	4 set	
4	Kerr's effect Specifications: Kerr cell 1 Polarizer / Analyzer (2) Halogen light source (1) Object screen (1) High voltage power supply (1) Power supply (1) Prism table (1)	3 set	

	Optical bench (1) Convex lens in holder (1) Set of six filter (1) Diode laser (1) Flexible plug lead, 1m (red) (1) Flexible plug lead, 1m (black) (1) Transverse saddle (1) Pin hole photodetector		
5	Faraday's effect Flint glass (1) Electromagnet unit (1) Polarization / Analyzer (2) Translucent screen (1) Optical bench, 1 m (1) Power supply for electromagnet (1) Digital gauss meter with hall probe (1) Stand rod, 25 cm (1) Boss-head square (1) Plug lead 100 cm, Black (2) Plug lead 100 cm, Red (1) Plug lead 50 cm, Yellow (1) Transverse saddle (2) He-Ne laser (1) Stand base (1)	3 set	
6	Laurent's half shade polarimeter Polarimeter Laurent's half shade (1) Sodium Light Source (1) Polarimeter tube (big) (1) Beaker, Funnel (1) Pipette (1)	4 set	
7	<b>Measuring Earth magnetic field using tangent</b> Galvanometer Tangent galvanometer (TG) (1), Commutator (C), rheostat (R)(1 each), Battery (E)(1), Ammeter (A), key (k)(1 each)	4 set	
8	Half wave and full wave rectifier Bread board (1) Diodes (1N4007) (1) Resistor (1K $\Omega$ ) (1) Capacitor 100 $\mu$ F (1) Transformer with Center Tapped Secondary ( 9 - 0 - 9 ) V Digital Multimeter/ Digital Voltmeter (0-20V) Cathode Ray Oscilloscope (CRO) (0-20MHz) Connecting wires (Single Strand)	2 set	
9	Four probe method Probes Arrangement Germanium crystal in the form of a chip Oven(maximum temperature 200 degree Celsius) Four Probe Set-up, DFP-02 (i) Multirange Digital Voltmeter Range X1 (0-200mV) & X10 (0-2V) Resolution 100 $\mu$ V at X1 range Accuracy $\pm 0.1\%$ of reading $\pm 1$ digit Impedance 1M $\Omega$ Display 3 $\frac{1}{2}$ digit, 7 segment LED (12.5mm height) with auto polarity and decimal indication Overload Indicator Sign of 1 on the left & blanking of other digits (ii) Constant Current Generator	1 set	

	Open Circuit Voltage : 18V Current range : 0-20mA Resolution : 10µA Accuracy: ±0.25% of the reading ±1 digit Load regulation: 0.03% for 0 to full load Line Regulation: 0.05% for 10% changes Oven Power Supply		
10	Accessories required :		
A	Sample (Germanium crystal) for four probe method.	02 sets	
B	Ammeter ( range 0 to 5 ampere)	2 set	
C	Ammeter (range 0 to 200 mA)	2 set	
D	Voltmeter ( 0 to 3 volts)	2 set	
E	Voltmeter ( 0 to 500 mv)	2 set	
F	Rheostat	4 set	
G	Multimeter	10 set	
H	Digital Gauss meter	1 set	
I	Constant current source	1 set	
J	Dc supply (Battery)	1 set	
K	Three way Plug Key	5 set	
L	Copper wire()	20 mtr.	
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Sl. No.	Experiment Name	Specifications	Quantity	Rate quoted (in Rs.)
1	To determine the height of a building using a Sextant	<b>Accuracy:</b> Less than 18" of arc for -5 to 90 degrees, Index Mirror: Rectangular, 57x42mm, aluminized on the rear side. <b>Standard Accessories:</b> 1 adjusting wrench 2 dry cells UM-3, 2 light bulbs.	05 nos.	
2	To study the Lissajous Figure	function generator, digital multimeter	05 nos.	
3	Surface Tension- Capillary tube	Beaker, Few Capillary tube, Stand with clamps	05 nos.	
4	To measure Voltage, frequency and phase difference using a CRO	30 MHz, Cathode ray Oscilloscope, Function generator, CRO Probe	02 nos.	
5	Micrometer		10 nos.	
6.	Digital Stopwatch	Least count 0.1 sec	10 nos.	
<b>VAT/CST if any</b>				
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