

# E-TENDER DOCUMENT



**CHAUDHARY RANBIR SINGH UNIVERSITY, JIND**

**FOR**

**SUPPLY, INSTALLATION, TESTING  
& COMMISSIONING OF INSTRUMENTS  
FOR SETTING UP A PHYSICS  
LABORATORY AT CRSU, JIND**

**Tender No.:**

**Nature of Tender: SUPPLY, INSTALLATION, TESTING & COMMISSIONING OF INSTRUMENTS FOR SETTING UP A PHYSICS LABORATORY AT CRSU, JIND**

(Service Provider)

(Authorized Signatory of CRSU, Jind)

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**Chaudhary Ranbir Singh University, Jind**  
(Established by the State Legislature Act 28 of 2014)  
Recognized by UGC 1956 u/s 12-B & 2 (f)



## E-TENDER NOTICE

The following e-tender is invited for providing the instruments of setting up a physics laboratory at CRSU, Jind on behalf of the Registrar, CRSU, Jind from reputed contractors/firms/agencies/private limited companies/ limited companies as per policy of Haryana Govt. vide letter No. 16/7/2015-1GSII dated 6th April, 2015.

Sr. No.	Name of Work	App. Amount	Bidfee + E-service fee	Time Period for Services	Start Date & Time of Bid Preparation & Submission	Expiry Date & Time of Bid Preparation & Submission	Date & time for opening of technical Bid	Date & time for opening of financial Bid
1.	Supply, installation , Testing & Commissioning of Instruments for Setting up a Physics Laboratory at CRSU, Jind	4.00 Lac	2000 +1000	05 Years	12.10.2018 17:00Hrs.	29.10.2018 11:00Hrs.	29.10.2018 11:01Hrs.	29.10.2018 12:00Hrs.

The e-tenders shall be opened in the Conference Room, CRSU, Jind in the presence of the agencies or their authorized representative who may like to be present by having proper authorization letter. The details of e-tenders for different items are given above which is available on the website <https://haryanaeprocurement.gov.in> for the work detailed in the table:-

**The payment for E-Tender Document Fee and e-Service Fee shall be made by eligible bidder online directly through Credit Cards/Debit Cards/Internet Banking Accounts and the payment for EMD can be made online directly through RTGS/NEFT or OTC Please refer to 'Online Payment Guideline' available at the Single e-Procurement portal of GoH (Govt. of Haryana) and also mentioned under the E-tender Document.**

For any query may contact on Telephone No. 01681-241002 & 01681-241004, 9215250206, 9541932506 on any working day between 9:00 A.M. to 5:00 P.M.

**Registrar, CRSU, Jind**

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### Detailed Notice Inviting E-tender

#### CHAUDHARY RANBIR SINGH UNIVERSITY, JIND

Invites the bid from eligible bidders through online portal.

The following e-tender is invited for rendering the different services/activities at CRSU, Jind on behalf of the Registrar, CRSU, Jind from reputed contractors/firms/agencies/private limited companies/limited companies as per policy of Haryana Govt. vide letter No. 16/7/2015-IGSII dated 6th April, 2015.

Sr. No.	Name of Work	App. Amount	Bidfee + E-service fee	Time Period for Services	Start Date & Time of Bid Preparation & Submission	Expiry Date & Time of Bid Preparation & Submission	Date & time for opening of technical Bid	Date & time for opening of financial Bid
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#### 1. Eligibility Criteria:

- The firm should have never been de-barred or black listed, an affidavit in this regard must be attached from first class magistrate.
- The bidder shall have at least 2 successfully completed jobs of the similar nature of activity in any organization under State/ Center Govt. undertaking/ state Autonomous Bodies/ State/ Central University/Education Institutes.
- The bidder must possess valid GST registration number (Self Attested Copy of same must be enclosed/uploaded).

**2. The payment for E-Tender Document Fee and e-Service Fee shall be made by eligible bidders online directly through Credit Cards/Debit Cards/Internet Banking Accounts. Please refer to 'Online Payment Guideline' available at the Single e-Procurement portal of Govt. of Haryana and also mentioned under the E-tender Document.**

**3. The interested bidders must remit the funds at least T+1 working day (Transaction + One working Day) in advance i.e. on or before 26.10.2018 upto 1700 Hrs. and make payment via RTGS /NEFT or OTC to the beneficiary account number specified under the online generated challan. The intended bidder/Agency thereafter will be able to successfully verify their payment online, and submit their bids on or before the expiry date & time of the respective event/Tender at <https://haryanaeprocurement.gov.in>.**

The interested bidders shall have to pay mandatorily e-Service fee (under document fee – Non refundable) of Rs.1000/- (Rupee One Thousand Only) online by using the service of secure electronic payment gateway. The secure electronic payments gateway is an online interface between bidders & online payment authorization networks.

The Payment for document fee/ e-Service fee can be made by eligible bidders online directly through Credit Cards/Debit Cards /Internet Banking.

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The interested bidders must remit the funds at least T+1 working day (Transaction + One working Day) in advance before the expiry date & time of the respective events and make payment via RTGS/NEFT to the beneficiary account number specified under the online generated challan.

The Bidders can submit their respective tender documents (Online) as per the dates mentioned in the keydates:-

#### Key Dates

Sr. No.	Department Stage	Bidder's Stage	Start date and time	Expiry date and time
1.		<b>Tender Document Download and Bid Preparations/Submission</b>	12.10.2018 (17:00 Hrs.)	29.10.2018 (11:00 Hrs.)
2.	<b>Technical Bid Opening</b>	-	29.10.2018 at 11:01 Hrs.	-
3.	<b>Financial Bid Opening</b>	-	29.10.2018 at 12:00 Hrs.	-

#### Important Notes:

- 1) The Applicants/bidders have to complete 'Application/Bid Preparation & Submission' stage on scheduled time as mentioned above. If any Applicant/bidder failed to complete his/her aforesaid stage in the stipulated online time schedule for this stage, his/her Application/bid status will be considered as 'Applications/bids notsubmitted'.
- 2) Applicant/Bidder must confirm & check his/her Application/bid status after completion of all activities for e-bidding.
- 3) Applicant/Bidder can rework on the bid even after completion of 'Application/Bid Preparation & submission stage' (Application/Bidder Stage), subject to the condition that the rework must take place during the stipulated time frame of the Applicant/BidderStage.
- 4) The Instructions to Bidders on Electronic Tendering System and Guidelines for online payments will be followed as per e-procurement portal of Government of Haryana.

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## Tender Document

Supply, Installation, Testing & Commissioning of Instruments for Setting Up a Physics Laboratory at CRSU, Jind

### **GENERAL INSTRUCTIONS TO BIDDERS**

#### **1. Eligibility Criteria:**

- i. The firm should have never been de-barred or black listed, an affidavit in this regard must be attached from first class magistrate.
  - ii. The bidder shall have at least 2 successfully completed jobs of the similar nature of activity in any organization under State/Center Govt. undertaking/state Autonomous Bodies/State/Central Universities/Educational Institutes.
  - iii. The bidder must possess valid GST registration number (Self Attested Copy of same must be enclosed/uploaded).
- 2. The payment for E-Tender Document Fee and e-Service Fee shall be made by eligible bidders online directly through Credit Cards/Debit Cards/Internet Banking Accounts. Please refer to 'Online Payment Guideline' available at the Single e-Procurement portal of Govt. of Haryana and also mentioned under the Tender Document.**
- 3. The interested bidders must remit the funds at least T+1 working day (Transaction + One working Day) in advance i.e. on or before 26.10.2018 upto 1700 Hrs. and make payment via RTGS /NEFT or OTC to the beneficiary account number specified under the online generated challan. The intended bidder/Agency thereafter will be able to successfully verify their payment online, and submit their bids on or before the expiry date & time of the respective event/Tender at <https://haryanaeprocurement.gov.in>.**

The interested bidders shall have to pay mandatorily e-Service fee (under document fee – Non refundable) of Rs.1000/- (Rupee One Thousand Only) online by using the service of secure electronic payment gateway. The secure electronic payments gateway is an online interface between bidders & online payment authorization networks.

The Payment for document fee/ e-Service fee can be made by eligible bidders online directly through Credit Cards/Debit Cards /Internet Banking.

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3.	<b>Financial Bid Opening</b>	-	29.10.2018 at 12:00 Hrs.	-

**4. TECHNICAL BID AND FINANCIAL BID: As per e-tender document.**

**5. COST OF BID: As per e-tender document.**

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## 6. ONE BID PER BIDDER:-

The bidder shall be eligible to participate in the tender process only once with the same name. If anybody not found so, the bids will be rejected outrightly.

## 7. TENDER DOCUMENT:-

### Contents of Tender Documents.

The Tender Document has been prepared for the purpose of inviting e-tender for Supply, Installation, Testing & Commissioning of Instruments for Setting up of Physics Laboratory at CRSU, Jind for providing the staff for different services at CRSU, Jind. The Tender document comprises of:

### (A) TECHNICAL BID:

- i. Tender Notice
- ii. General Instructions to the Bidder
- iii. General Terms & Conditions
- iv. Check list for the Technical Bid, Part-A
- v. Check list for the Technical Bid, Part-B
- vi. Undertaking (on a Stamp Paper of Rs.100.00)
- vii. Service Agreement (To be submitted by the successful bidder in original)
- viii. **BANK REFERENCE:** Certificate regarding financial transactions of the bidder is also to be attached with the tender form.

**Note:** Confidential report regarding work and conduct of the bidder may be obtained from other department/organization in which the bidder have provided their services in the past. In case of receipt of non-satisfactory report (s) with regard to work and conduct of the bidder, the University has full right to reject bid (s) of the bidder.

**(B) FINANCIAL BID:** Financial Bid for Supply, Installation, Testing & Commissioning of Instruments for Setting up of Physics Laboratory as per prescribed Performa.

The bidder is expected to adhere with all instructions, Forms, Terms and Conditions in the Tender document. Failure to furnish the requisite information as per tender document or submission of a tender not substantially responsive to the tender document in every respect will be at the bidder's risk and may result in rejection of the bid.

## 8. PREPARATION OF BIDS:

### Bid Prices

Bidder shall quote the rates in Indian Rupees on the prescribed Performa. The tendered rates include all the liabilities of the contractor such as cartage, breakage, installation, training, service charges/ Annual Maintenance Charges (AMC) (if any), all kinds of taxes etc. required for the smooth and satisfactory execution of the work which should be clearly stated by the contractor. Conditional bids will be summarily rejected.

The tender rates quoted in a foreign currency will not be accepted. Rates should be filled up in INR carefully both in words and figures.

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**\*8.1. Duration of Contract**

This contract shall be effective for a period of five years in the first instance & is extendable (for the period mutually agreed upon) depending on the Performance & services rendered by the agency & further approval of the Competent Authority.

**9. RIGHT TO ACCEPT AND REJECT ANY OR ALL BIDS:**

After Evaluation, the work shall be awarded normally to the Agency fulfilling all the conditions and who has quoted the lowest rate (inclusive for all categories) after complying with all the acts/provisions stated/referred to adherence in the tender. In case of tie of the rates quoted in the financial bid by the participating agencies then the work may be awarded to the agency having average higher turnover of the preceding last three financial years.

The CRSU, Jind is not bound to accept the lowest or any other bid and may reject any or all the bids without assigning any reason.

The CRSU, Jind may terminate the contract if it is found that the agency is black listed on previous occasions by any of the Govt. Deptt./Institutions/Local Bodies/Municipalities/Public Sector Undertakings, etc., a suitable action may be taken as deemed fit.

The CRSU, Jind may reject the Bid in the event that the Bid is accepted but the successful bidder fails to furnish the Performance Security or fails to execute the contract agreement.

**10. AWARD OF WORK ORDER:**

The CRSU, Jind, will award the work order to the successful evaluated bidder whose bid has been found to be responsive and who is eligible and qualified to perform the activity satisfactorily as per the terms and conditions incorporated in the bidding document.

The CRSU, Jind, will communicate to the successful bidder that his/her bid has been accepted by issuing a work order.

The successful bidder will be required to execute an agreement on non judicial stamp paper worth Rs. 100/- within a period of 10 days from the date of issue of Work Order.

The successful bidder shall be required to furnish a Performance Security equivalent to 10% of the bid amount in the form of Demand Draft or in the form of Bank Guarantee in favour of the Registrar, CRSU, Jind, payable at Jind within 15 days of receipt of "Work Order". The Performance Security shall remain valid for a period of 12 months after successful completion of the warranty period. The Performance security will be forfeited in the event of violation of any of the terms & conditions of the agreement/policy for deployment of services.

(Signature of the Bidder with seal)

(Service Provider)

(Authorized Signatory of CRSU, Jind)



## **GENERAL TERMS & CONDITIONS**

1. Vendor should provide Lab. Manual along with instruments;
2. Vendor will be responsible to provide 05 years onsite warranty on the supplied instruments;
3. Besides the demonstration of the instruments, it will be a sole responsibility of the vendor to provide at least three days training to the faculty and other staff at CRSU campus without any extra cost;
4. No quotation will be entertained after the last date in any case;
5. The rates should be quoted for all items/experiments, partial quotations will not be considered;
6. The vendor will be required to visit at least once in a semester time to the laboratory on the date given by Chairperson, Department of Physics, CRSU, Jind.
7. **The L1 (Lowest One) vendor will be treated as eligible on the basis of total amount quoted in the quotation. The comparative statement will be made on the basis of total amount quoted not on the basis of item to item.**
8. The agency shall provide a phone number of one authorized representative/supervisor for the services/ for dealings.
9. The vendor shall be responsible to provide immediate standby (if situation arises) of any instrument provided by him, if demanded.
10. Any disputes arising out and in relation to this agreement shall be referred to arbitration by sole arbitrator, to be appointed by the Vice-Chancellor of the University. The arbitration would be conducted and governed by and under the provisions of Arbitration and Conciliation Act 1996. The language of Arbitration shall be English and the seat of Arbitration shall be at CRSU, Jind Campus. Any legal dispute will be subject to jurisdiction of Jind Courts and no other Court shall have the jurisdiction.
11. All liabilities arising out of accident or mis-happening while on supply, installation, testing and commissioning of instruments for setting up a physics laboratory at CRSU, Jind shall be borne by the vendor. The vendor shall be responsible for any injury or accident to his staff during visit or commencing the project and no claim shall be given by the University.

### **OBLIGATIONS OF THE VENDOR:-**

- a. The Service Provider shall ensure full compliance with tax laws of India with regard to this contract and shall be solely responsible for the same.
- b. The CRSU, Jind will deduct applicable Tax at source under applicable section of Income Tax Act from the bill at the prevailing rates of such sum as income tax on the income comprised therein. Any other statutory deductions, if required shall also be made as applicable.

### **DISPUTE RESOLUTION:-**

- a. Any dispute and/or difference arising out of or relating to this contract will be resolved through joint discussion of the authorized representatives of the concerned parties. However, if the disputes are not resolved by joint discussions, then the matter will be referred for adjudication to a sole Arbitrator appointed by the Vice Chancellor, CRSU, Jind.
- b. The award of the sole Arbitrator shall be final and binding on all the parties. The arbitration proceeding's shall be governed by Indian Arbitration and Conciliation Act 1996 as amended from time to time.
- c. The cost of Arbitration shall be borne by the respective parties in equal proportions. During the pendency of the arbitration proceeding and currency of contract, neither party shall be entitled to suspend the work/service to which the dispute relates on account of the arbitration and payment to the contractor shall continue to be made in terms of the contract.

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**JURISDICTION OF COURT:-**

The courts at Jind (Haryana) shall have the exclusive jurisdiction to try all disputes, if any, arising out of this agreement between the parties.

**PAYMENT TOWARDS THE SERVICE PROVIDER:**

1. The 100% payment is to be made to agency after successful completion of work. The AMC will be made after completion of every year, however travelling allowances (TA) may be paid on spot.
2. The vendor has to execute an agreement on stamp paper of Rs. 100/- on the prescribed Service agreement Performa with the University and no payment will be released unless the said agreement is signed.
3. If any doubt or ambiguity/duplication arises as to the meaning and/or effect of any provisions of the agreement, the same shall be referred to the Vice-Chancellor, CRSU, Jind for clarification and his decision thereon shall be final and binding on both parties.
4. The agency, contractor, service provider, supplier are used in the tender have the same and one meaning/person.
5. Normal working hours of University are 9:00 am to 5:00 pm but in case of urgency, service/training may be demanded on holidays or beyond office hours also.

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**CHECK-LIST FOR TECHNICAL BID (Part-A)**

**(The below mentioned information/documents are required to be uploaded with the technical bid by the bidder)**

<b>Sr. No.</b>	<b>Documents required</b>	<b>Yes or No</b>
1.	One Self attested recent passport size photograph of the authorized person of the bidder, with name, designation, address, and telephone numbers. If the bidder is a partnership firm, name designation, address and office telephone numbers of Directors/Partners.	
2.	Undertaking on a Stamp paper of Rs. 100/- as per the given Format	
3.	Self-attested copy of PAN card	
4.	Self-attested copy of GST Resignation Number	
5.	Self-attested copy of Registration Number of the firm/agency	
6.	Proof of satisfactorily execution of similar works as specified in the Eligibility Criteria.	

(Signature of the Bidder with seal)

(Service Provider)

(Authorized Signatory of CRSU, Jind)

**CHECK-LIST FOR TECHNICAL BID (Part-B)**

Sr. No.	Documents required	Yes or No
1.	Experience of similar works:	
2.	Number of trained staff for implementing the activity:	
3.	ISO Certification of the firm, if any:	
4.	Any other information:	

**Note: Photocopies of all necessary documents duly self attested must be attached/uploaded for verification of the information provided.**

(Signature of the Bidder with seal)

(Service Provider)

(Authorized Signatory of CRSU, Jind)

**UNDERTAKING**  
**(ON A STAMP PAPER of Rs.100/-)**

To

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(Designation and Name of the  
concerned Department) Name of  
thefirm/Agency\_\_\_\_\_

Name ofthetender/services\_\_\_\_\_

Duedate:\_\_\_\_\_

Sir,

1. I/We hereby agree to abide by all terms and conditions laid down in tender document and agreement.
2. This is to certify that I/We before signing this bid have read and fully understood all the terms and conditions and instructions contained therein and undertake myself/ourselves abide by the said terms andconditions.
3. I/We abide by the provisions of prevailing Law of India or as amended by the Government from time to time (as applicable) and shall be fully responsible for all compliance & violation, ifany.

(Signature of the Bidder)  
Name and Address of  
the Bidder. Telephone  
No.

(Service Provider)

(Authorized Signatory of CRSU, Jind)

**Final Bid****Detail of items & services to be provided**

Sr.No	Name of Instruments	Detailed Specifications.	Unit
	<b>For M.S.C Physics Sem-I General Physics</b>		
1	To Study the velocity of liquid and its variation with temperature using ultrasonic interferometer.	Specifications:- • An Electronics unit with in built power supply, variable high frequency generator with range 2MHz, Mounted Rectangular Analog Meter Upto 100 UA for note the deflection references , Two variable Control on front panel for GAIN & Adjustment , Output RF Connector. • Measuring Cell with RF Connector . • Shielded Cable with impedance 50 OHM. • Stainless Steel liquid container vessel , with upper piston control micrometer valve with range 20 mm (Least count:-0.001 mm). • AC Mains Operated at 230 V, 50 Hz. • Optional Sample which can be used:- KCl/ NaCl/ Na2SO4/K2SO4.	1
2	Measurement of Hall Co-Efficient of given semiconductor , identification of charge carrier type & estimation of carrier concentration.	Specifications:- This apparatus is used to determine the three parameters.... Hall Co-efficient, Carrier Mobility, Carrier Density..... • The set up consists of Electromagnet of 7-5 K.G., • Power Supply for Electromagnet 0-100V, 4 Amps with digital meter. • Germanium Crystal mounted on PCB with four cable connection in which two for length wise and other two for breath wise • Its constant current power supply 0-3.5 mA fitted with two Digital Meters for Halls Voltage in mV and Crystal Current in mA. • Gauss Meter Digital 0-20K.Gauss with Hall Probe InAs. • Wooden Stand for clamping Hall Probe & Gauss Probe. • Two One Meter Long Patch Cords. • AC Mains at 230 V, 50 Hz.	1
3	To determine $e/m$ ratio of electron using Helical Method.	Specifications:-Having three major parts to measure electron for $e/m$ by Helical Method, 1. Standard Solenoid of multi-turned layers with 3000 turns fitted on wooden base , two output terminals. 2. High DC variable Power supply Up to 1000 V, for cathode voltage to CRT 3 Inch Dia. Provided with high resistance voltmeter (0-1000)VDC , Also having solenoid supply with coarse and fine control arrangement, an ampere meter (0-1)A is used to measure current passing in solenoid. 3. Cathode Ray Tube mounted to moveable inner side of the standard solenoid. 4. X-Y Shift Provision for CRT beam spot with positive & negative polarity.	1

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4	To determine numerical aperture of a optical fiber& size of Lycopodium powder using semiconductor laser.	Setup Contains:- <ul style="list-style-type: none"> <li>• Optical Bench arrangement:- Two Stainless Steel Rods with length 1.5 Meter with dia 19 mm in which one plain and one graduated with scaling 150 cm., Supporting Metallic Feets both ends, Four Uprights in which two movable and two fixed type.</li> <li>• Diode Laser :- An Electronics unit with in built regulated power supply, mounted RED Colour Laser Diode with housing and their connector.</li> </ul> Output Light Wattage:- 5mW. <ul style="list-style-type: none"> <li>• SampleFiber Cable with one meter length with their upright assembly.</li> <li>• Sample Rectangular Plate with STD dia PIN Hole`s .</li> <li>• Other Supporting Accessories:- Objective 20X, Lycopodium Powder .</li> </ul>	1
5	Determination of wavelength of He-Ne Laser using engraved scale as diffraction grating and measurement of thickness of thin wire.	Setup Contains:- <ul style="list-style-type: none"> <li>• He-Ne Laser:- A Laser Tube along with Power Supply are Housed in thick powered coated aluminium box , From Hole the laser beam comes out. It has also wavelength 6328 A` , Red Color, Random Polarisation, 2mW.</li> <li>• Suitable Stand for He-Ne Laser.</li> <li>• Screen:- A Bakelite Board with Iron Rod &amp; stand.</li> <li>• Diffraction Grating:- Special Grating for Laser experiment with three different lines per inches. 100/300/500 LPI.</li> <li>• Sample Thin Wire Fitted in metallic frame.</li> <li>• Other Ass:- Screw Gauge 20 mm, rectangular metallic scale with engraved scaling., Inch Tape.</li> </ul>	1
6	To calibrate a prism spectrometer with mercury lamp & hence to find the cauchy`s constants.	Setup Contains:- <ul style="list-style-type: none"> <li>• Spectrometer:- A Heavy Rigid Base with fitted at one end fixed collimating tube &amp; other end rotating telescope with eye-piece 10X , circular disc with vernier least count:- 60/30 Sec, Dia 6 Inch.</li> <li>• Light Source:- Mercury Bulb 80 Watt, Wooden Box for containing mercury bulb, Mercury Choke 80 Watt.</li> <li>• Prism:- EDF Prism 32x32.</li> <li>• Other Accessories:- Meg. Lens with LED, Spirit Level.</li> </ul>	1
7	Determination of Boltzmann constant from forward I-V characteristics of Si Diode.	Specification:-An Electronics unit which contains following features. <ul style="list-style-type: none"> <li>• In Built variable DC Power Supply (0-5)V, (0-50)V with 250 mA Current capacity.</li> <li>• Mounted Digital Voltmeter with range (0-199.9)V. DC with 3.5 seven segment based.</li> <li>• Mounted Digital Ammeter with dual range (0-199.9)uA and (0-199.9)mA with 3.5 seven segment based.</li> <li>• Mounted Bread Board with 1680 Tie Points.</li> <li>• Different Types of Si Diodes.</li> <li>• Single Stand Wire 2 mm with one end connector.</li> <li>• Terminal and sockets used 2 mm.</li> <li>• AC Mains Operated at 230 V, 50 Hz.</li> <li>• Housing :- Bakelite</li> <li>• Front Panel:- 3mm Bakelite sheets.</li> </ul>	1

8	Determination of planck`s constant (h) by measuring the voltage drop across light emitting diodes (LED`s) of different colours.	<p>Specifications:-</p> <ul style="list-style-type: none"> <li>• An Electronics unit with in built variable DC Regulated power supply (0-3)V DC.</li> <li>• Mounted digital meters for measure voltage (0-9.99) V DC &amp; current (19.99) mA respectively with readability 3.5 Digits .</li> <li>• Mounted Four Different colours of LED`s (RED/YELLOW/BLUE/GREEN) on front panel of kit.</li> <li>• Housing :- Plastic with Bakelite 3 mm Panel.</li> <li>• Operated at AC Mains 230 V,50 Hz.</li> <li>• Complete unit supplied with suitable 4 mm patch cords &amp; Detailed manual.</li> </ul>	1
9	To determine the refractive indices of liquids , transparent and translucent solutions and solids using Abbe`s - Refractrometer.	<p>Setup Contains:-</p> <p>Accurate measurement of index of refraction of transparent liquids, solids and solutions. For use in Sugar, Ghee and Oil Mills Pharmaceuticals and Chemical Laboratories, JAM Factories and Distilleries etc. Measuring range 1.3000 to 1.7000. Measurement of Sugar 0% to 95% Complete</p> <p>Designed for the Accurate &amp; quick Examination of the Refractive Indices &amp; Mean Dispersion of Liquids. Solids &amp; Oil.</p> <p>ND Range : N.D. 1.3000 to N.D. 1. 7000 in steps of 0.001</p> <p>Accuracy : 0.0002</p> <p>Sugar Percentage : 0 to 95% in steps of 1 Division</p> <p>Accuracy : <math>\pm 0.5\%</math></p> <p>Temperature : 0 – 50° C</p> <p>Light Source:- Sodium Light Source 35 Watt, Wooden Box, Sodium Light Transformer 35 Watt.</p>	1
10	To determine the wavelength of a laser using Michelson Interferometer.	<p>Heavy Duty Michelson Interferometer.:- Moveable surface coated mirror.Fixed surface coated mirror loaded with springs.Compensator.Beam Splitter.Universal adjustable Telescope with cross line graticule.Diffused Glass screen with pin-hole holder.Main knobs for moving mirror no.1, lease count 0.01mm.Slow motion drum for moving mirror no.2, least count 0.0001mm.Screw with nut &amp; spring to adjust the view of pin hole in horizontal position.Screw with nut &amp; spring to adjust the view of pin hole in vertical position.Base on stand for Interferometer.3 knurled heads for adjusting the mirror no.2 parallel to no.1.3 knurled heads for adjusting the mirror no.1 parallel to no. 2.Well grounded Lead Screw with pitch 1 mm. Pin hole disc.Condenser unit (adjustable).Eyepiece (adjustable).Spring knob for adjusting the lead screw.Viewing window to read main scale.Telescope holding clamp (universal type).• Philips Sodium vapour lamp 35 Watt. • Transformer for sodium vapour lamp 35 Watt. • Wooden box for sodium vapour lamp</p>	1
11.	AMC (after warranty period)		

(Service Provider)

(Authorized Signatory of CRSU, Jind)



	<b>For M.S.C Physics Sem-I Electronics</b>		
1	Find the frequency and amplitude of given electrical signal using CRO	<p>• Function Generator :-FREQUENCY RANGE: 7 decadic changeableness by Range - Push Switch and Coarse&amp; Fine Frequency Controls with LED display for Min. &amp; Max. Frequency DISPLAY : Digital 7 segment 5 digit display for frequency with LED display for Hz &amp; KHz indication WAVEFORMS (selectable) : Sine, Square, Triangle &amp; TTL pulse output Ramp and Pulse with the help of duty cycle / symmetry control OUTPUT AMPLITUDE : 20 V p/p into open circuit (10V p-p into 50 ohms) with Coarse (dB step) and fine control ATTENUATOR : 0 to 60dB variable (2X20 dB step coarse attenuator and 20 dB fine control)OUTPUT IMPEDANCE : 50 ohms &amp; 600 ohms switch selectable DC OFFSET : Variable upto + / - 10 V into open circuit DUTY CYCLE : (Ramp &amp; Pulse) Continuously variable for continuous working FM IN : Available via external input MAINS ON / OFF: Rocker Switch on back panel FUSE: Fuse for protection POWER REQUIREMENT : 230 V + / - 10% AC,50 Hz ACCESSORIES: BNC to crocodile cable and Instruction Manual. • Analog CRO Dual Channel 20/30 MHz.:-Highest Sensitivity up to 1mV/div (After Expand)Full band Trig Auto Sweep CircuitFlex Trig mode (Select either CH1 or CH2 Signal / External Signal)Alt-Trig View 2 in relative SignalExt Trig InputPower Supply : AC 200 ±10%VSpecificationBandwidth AC 10Hz ~ 30MHz (-3dB)DC ~ 30MHz (-3dB)Y Deflection 5mV / div ~ 20V / divRise Time &lt;18ns, Mag x 5 Accuracy : &lt;5%Max Input 400V(DC+ACp-p)Sweep Mode Auto, Trig, Lock, SingleSweep Rate 0.1µs/div ~ 0.2s/div l-2-5 20 steps, error ±5%Trig Source Y1, Y2, ALT, Line, Ext, TV-H, TV-VMin Sync. Level Trig DC ~ 30MHz, Int. 1 div,Ext. 0.2Vp-p, TV Int. 2div,Ext. 0.3Vp-p Trig Lock (50Hz ~ 10MHz) Internal 2divFreq. Response AC : 10Hz ~ 1MHz -3dBDC : 0 ~ 1MHz -3dBZ Max. Input 400V (DC+ACp-p)Min Input Level TTL LevelWaveForm Square waveAmplitude 1KHz ±2%Frequency 0.5Vp-p ±2%Standard Accessories Power Chord, Two 30MHz Oscilloscope Probes, Manual</p>	1
2	To design a power supply of +12 V using regulator IC's.	<p>Specifications:- An Electronics unit containing following features :- • In Built Fixed Step Down AC Supply with centre zero tapping as (15-0-15, 20-0-20, 25-0-25, 30-0-30) VAC. • Mounted Bread Board with 1680 Tie Points . • Components Used for design power supply 12 V (Diodes IN4007, Capacitor electrolytic, Regulator 12 V, Resistance). • Single Stand Wire with one end 2 mm connector . • Digital Voltmeter for measure the 12 V DC. • Terminals &amp; Sockets Used:- 2mm. • AC Mains Operated at 230 V, 50 Hz. • Housing :- Bakelite. • Top Panel Sheets:- 3 mm.</p>	1
3	To design a voltage regulator circuit using zener diode.	<p>Specifications:-An Electronics unit containing following features :- • In Built Fixed Step Down AC Supply with centre zero tapping as (15-0-15, 20-0-20, 25-0-25, 30-0-30) VAC. • Mounted Bread Board with 1680 Tie Points . • Components Used for design power supply (Diodes IN4007, Capacitor electrolytic, IC LM 317, Zener Diode 6 V, 12 V, Resistance). • Variable Pot for Line Voltage &amp; Load Resistance. • Single Stand Wire with one end 2 mm connector . • Digital Voltmeter for measure the V DC. • Terminals &amp; Sockets Used:- 2mm. • AC Mains Operated at 230 V, 50 Hz. • Housing :- Bakelite. • Top Panel Sheets:- 3 mm.</p>	1

4	To design and study of clipping and clamping circuit.	<p>Specifications:-</p> <p>An Electronics unit which contains following features..</p> <ul style="list-style-type: none"> <li>• In Built Variable Regulated DC Power Supply (0-5)V DC.</li> <li>• In Built Sine Wave Signal with variable amplitude upto 10 Vp-p.</li> <li>• Mounted Bread Board with 1680 Tie Points.</li> <li>• Components Used For Clipping &amp; Clamping ( Diode IN 4007, Different Values of Resistance, Different Values of Capacitors).</li> <li>• Terminals &amp; Sockets Used:- 2 mm .</li> <li>• Patch Cord Used:- 2 mm with one end connector.</li> </ul>	1
5	To design common emitter amplifier and study its frequency response.	<p>Specifications:-</p> <p>An Electronics unit which contains following features..</p> <ul style="list-style-type: none"> <li>• In Built Fixed Regulated 12 VDC.</li> <li>• Mounted Bread Board with 1680 Tie Points.</li> <li>• Components Used For Common emitter amplifier (Transistor CL-100 S, Supporting Different values of Resistance &amp; Capacitor) Variable Pot Resistance .</li> <li>• Terminals &amp; Sockets Used:- 2 mm .</li> <li>• Patch Cord Used:- 2 mm with one end connector.</li> </ul>	1
6	To design and implement the following Logic Gates using different discrete components OR, AND, NAND & NOR.	<p>Specifications:-</p> <p>Unit comprises of 5V/150mA DC Regulated Power Supply for logic 1 &amp; logic 0. Circuit diagram for OR, AND &amp; NOT gates has been printed &amp; components mounted on front panel to demonstrate the working of DTL gates. NAND &amp; NOR gates can be assembled using different combinations of Gates. In built voltmeter (0-10)V.</p>	1
7	To Study and validate network theorems.	<p>Specifications:-</p> <ul style="list-style-type: none"> <li>• Verify the different of theorems-</li> <li>• Superposition Theorems.</li> <li>• Thevinin's Theorems.</li> <li>• Norton Theorems</li> <li>• Maximum Power Transfer Theorems.</li> </ul> <p>Technical Specifications :Inbuilt fixed DC regulated power supplies :• Output Voltage :12VDC, 5VDC• On Board Analog Moving Coil Meters • Voltmeters : 0-3V &amp; 0-15V• Ammeter : 0-15mA &amp; 0-250mA (Dual Range )• Components Provided• Resistances• Circuit diagram printed on Front Panel &amp; all important test Points are brought out on front panel• Power requirement : 230 VAC 10%, 50Hz. • Digital Multi meter s.</p>	1
8	To study the output & transfer characteristics of a JFET and find its drain resistance trans-conductance and amplification factor.	<p>An Electronics device with in built of Two DC Regulated Power Supplies 0-15VDC/150mA &amp; 0- 3VDC/150mA, three round meters for voltage &amp; current measurement, FET BFW10 mounted behind the panel.</p>	1

9	To Study the rectifier and filter circuit and draw wave shapes.	An Electronics unit containing following features :- <ul style="list-style-type: none"> <li>• In Built Fixed Step Down AC Supply with centre zero tapping as (15-0-15, 20-0-20, 25-0-25, 30-0-30) VAC.</li> <li>• Mounted Bread Board with 1680 Tie Points .</li> <li>• Components Used for design power supply (Diodes IN4007, Capacitor electrolytic, Inductance for L Filters , Resistance).</li> <li>• Variable Pot for Line Voltage &amp; Load Resistance.</li> <li>• Single Stand Wire with one end 2 mm connector .</li> <li>• Digital Voltmeter for measure the 19.99 V DC.</li> <li>• Terminals &amp; Sockets Used:- 2mm.</li> <li>• AC Mains Operated at 230 V, 50 Hz.</li> <li>• Housing :- Bakelite.</li> <li>• Top Panel Sheets:- 3 mm.</li> </ul>	1
10	To study frequency response of RC coupled amplifier.	An Electronics unit which contains following features.. <ul style="list-style-type: none"> <li>• In Built Fixed Regulated 12 VDC.</li> <li>• Mounted Bread Board with 1680 Tie Points.</li> <li>• Components Used For Common emitter amplifier (Transistor CL-100 S, Supporting Different values of Resistance &amp; Capacitor) Variable Pot Resistance .</li> <li>• Toggle Switches for Feedback factor.</li> <li>• Terminals &amp; Sockets Used:- 2 mm .</li> <li>• Patch Cord Used:- 2 mm with one end connector.</li> </ul>	1
11	AMC AMC (after warranty period)		
	<b>Others</b>		
1	Digital Multimeters	Display: 3 ½ digit display with 1999 counts Over Range Indication: "1" Operating Temperature & Humidity: 0°C to 40°C < 75% RH Storage Temperature & Humidity: -10°C to 50°C < 75% RH Polarity Indication: Displayed For Negative Polarity Data hold Function Back Light Low Battery Indication Power supply: 9 Volt battery Unit Size : 138 X 69 X 31 mm Display Size: 20×45mm Weight : Approx.170g.(Including Batteries) Accessories: Instruction Manual, 1 Set test leads & 1pc 9Volt battery.	15
2	Soldering Kits	Soldering Iron 25 Watt, Metal Stand For Soldering Iron, Solder Wire 100 gm, Flux, Desolder Pump.	2
3	Tool Kits.	Screw Driver PYE Set with 6 Bits, Plier PYE 8 Inch, Wire Cutter, Tape Roll.	2

4	Analog Function Generator 100 KHz.	<p>Specification:- An Electronic Device which is very useful &amp; versatile laboratory instrument &amp; it provides three basic waveform-sine, square &amp; triangular..</p> <p>Frequency Range:- 1 Hz to 100 KHz.</p> <p>Input Voltage:- 220V, 50 Hz.</p> <p>Output Voltage:- 0-15/20V Peak to Peak Cont. Variable.</p> <p>Output Impedence:- 50 Ohm</p> <p>Housed Cabinet:- Metallic/Bakelite..</p>	5
5	CRO 30 MHz Dual Channel	<p>Highest Sensitivity up to 1mV/div (After Expand)</p> <p>Full band Trig Auto Sweep Circuit</p> <p>Flex Trig mode (Select either CH1 or CH2 Signal / External Signal)</p> <p>Alt-Trig View 2 in relative Signal</p> <p>Ext Trig Input</p> <p>Power Supply : AC 200 <math>\pm</math>10%V</p> <p>Specification</p> <p>Bandwidth AC 10Hz ~ 30MHz (-3dB)</p> <p>DC ~ 30MHz (-3dB)</p> <p>Y Deflection 5mV / div ~ 20V / div</p> <p>Rise Time &lt;18ns, Mag x 5 Accuracy :&lt;5%</p> <p>Max Input 400V(DC+ACp-p)</p> <p>Sweep Mode Auto, Trig, Lock, Single</p> <p>Sweep Rate 0.1<math>\mu</math>s/div ~ 0.2s/div 1-2-5 20 steps, error <math>\pm</math>5%</p> <p>Trig Source Y1, Y2, ALT, Line, Ext, TV-H, TV-V</p> <p>Min Sync. Level Trig DC ~ 30MHz, Int. 1 div,</p> <p>Ext. 0.2Vp-p, TV Int. 2div,</p> <p>Ext. 0.3Vp-p Trig Lock (50Hz ~ 10MHz) Internal 2div</p> <p>Freq. Response AC : 10Hz ~ 1MHz -3dB</p> <p>DC : 0 ~ 1MHz -3dB</p> <p>Z Max. Input 400V (DC+ACp-p)</p> <p>Min Input Level TTL Level</p> <p>WaveForm Square wave</p> <p>Amplitude 1KHz <math>\pm</math>2%</p> <p>Frequency 0.5Vp-p <math>\pm</math>2%</p> <p>Standard Accessories Power Chord, Two 30MHz Oscilloscope Probes, Manual</p>	5

**Amount in** :  
**Amount in Words** :  
**GST Amount** :  
**Total Amount** :

### Signature and Seal of the Bidder

In case of the rates quoted in the financial bid by the participating agencies then the work may be awarded to the agency having average higher turnover of the preceding last 3years

(Service Provider)

(Authorized Signatory of CRSU, Jind)