Gautam Buddha University

Yamuna Expressway, Greater Noida, Gautam Budh Nagar-201308 (UP)

SCHOOL OF ENGINEERING

TENDER FOR ELECTRICAL TECHNOLOGY LABORATORY EQUIPMENTS

Tender	**Supply, installation, commissioning and trial operations of the instruments/equipment for Engineering Electrical Technology Laboratory**
Document Sale from:	**31st May 2010 from 09:00 a.m.**
Document Sale to:	**09th June 2010 upto 01:00 p.m**
Bid Submission Date:	**09th June 2010 upto 03:00 p.m.**
Technical Bid Opening Date:	**09th June 2010 at 03:30 p.m.**
Earnest Money:	Rs.34,900/- (Rupees Thirty Four Thousand Nine Hundred Only)
Completion Period:	Four to six weeks from date of purchase order
Bid System	Two Bid System : 1) Technical Bid and 2) Financial Bid
Technical Bid Shall Contain	i. Technical specifications of each equipment ii. All documents in support commercial terms & conditions and eligibility criteria.
Financial Bid	The Financial Bid shall contain rate schedule only. The price shall be in words as well as in numeric numbers.

GENERAL TERMS AND CONDITIONS

1. Detailed information about equipments, specifications are available in tender document or downloaded from the University website www.gbu.ac.in.
2. Offer should be submitted in two parts, in two separate envelops; 1**) Technical Bid** and **2) Financial Bid**. These two envelops shall be sealed in a common cover and addressed/sent to **"Registrar, Gautam Buddha University, Gautam Budh Nagar - 201308 (U.P**) mentioning "**Tender against Tender Notification dt. 30-05-2010, Name of supply: Electrical Technology Laboratory Equipments**" so as to reach us on or before last day of submission.
3. The Technical Bid and Financial Bid should be duly filled up (preferably type written) and should clearly mention the features offered by the bidder against each specification.
4. The **Technical Bid** shall contain all documents in support of offered equipment specifications, commercial terms & conditions and eligibility criteria.
5. The **"Financial Bid"** shall contain rate schedule only. The price shall be in words and numeric numbers both.
6. **Eligibility Criteria**: All the participating suppliers/firms or principal manufacturer- should meet the following qualifying criteria. The firm should be a registered supplier for such supplies, with at least 10 years existence. Following documents are required to be submitted with Technical Bid, to qualify eligibility criteria:
    (a) Sales Tax/VAT registration certificate.
    (b) PAN and TIN number should be mentioned.
    (c) The firm should have 5 years of experience of supplying & installation for similar laboratory equipments to preferably IIT's, NIT's, Central Universities or Institute of National repute. The Supplier should submit the certificate/proof to justify the experience.
    (d) Firm should have completed minimum three similar supply and installation assignments of worth more than Rs. 20.00 lakh each, in last three years.
    (e) The firm should have minimum average annual turn-over of Rs. 100.00 Lakhs for previous five financial years. Audited balance sheet for previous five financial years should be submitted.
    (f) Authorized dealer certificate from Original Equipment Manufacturer.
    (g) Names of branch offices & service centers after sales arrangements.
    (h) Full technical specifications for all the equipment shall be submitted along with the Technical bid. Offers without proper technical specifications will be rejected.
    (i) Earnest Money Deposit (EMD) **as Rs.34,900/- (Rupees Thirty Four Thousand Nine Hundred Only)** is required to be submitted in the form of DD/Banker's Cheque drawn in favour of "Finance Officer, Gautam Buddha University" payable at "Greater Noida" along with the Technical Bid. If supply is not made within the prescribed period EMD would be forfeited.

(j) Authorized signatory should sign on all pages. Bids without authorized signature will be rejected.
(k) Commercial terms and conditions.
(l) Bidders Profile Performa (Format enclosed).

7. Offer should be sent in a sealed envelope, submitted either in person or by post on which name and address of the supplier/firm shall be written. Tenders received through mails or FAX will not be considered.
8. The tenders will be opened on scheduled date and time in the presence of the vendors present with authorization letter from the respective companies/firms. Suppliers intending to attend the tender opening should intimate in advance.
9. **THE RATES QUTOED SHOULD BE F.O.R. Gautam Buddha University (Gautam Budh Nagar, UP)** inclusive of all charges e.g. packing, forwarding local taxes, railway freight, transit insurance, for outside firms and free delivery at University stores in the case of local firms. Where there is no mention regarding delivery period in the quotations or where the items are offered ex-stock, the firms will be required to supply goods within one month's time.
10. The equipment should have USEPA/International/National validation certificates, wherever applicable.
11. The cost of the tender is Rs.1000/- inclusive of taxes (Nonrefundable) and it shall be paid in the form of DD/Banker's Cheque drawn in favour of "Finance Officer, Gautam Buddha University" payable at "Greater Noida". In case the tender documents are downloaded from the website, the cost shall be paid at the time of submission of the tender.
12. The tenderer must be either sole manufacturer of the instruments /equipment or the authorized agent/representative of the manufacturer. In the case of agent/representative, certified copy of the agency/authorization issued by the manufacturer should be enclosed with the tender.
13. The EMD of the successful tenderer will be refunded one month after completion of the supply and installation of the equipment to the satisfaction of the Gautam Buddha University. The EMD of the unsuccessful tenderers will be returned to the concerned immediately after finalization of the tenders.
14. Tenders should preferably be given only for those articles which are available ex-stock. Other items should be quoted separately giving the delivery period. Rates of imported goods be quoted excluding custom duty, as this University is exempted from payment of custom duty (by letter of Deptt. of Science & Technology, Min. of Sc. & Tech., GOI, Delhi).
15. Detailed specifications and "Make" of each item should be clearly given supported by the illustrated pamphlets wherever possible. Quotations without specifying the make and other particulars may be rejected. The payment will be made after the goods have been received, opened, checked and found to be in order up to our entire satisfaction. The accessories included in the equipment should also be clearly mentioned.

16. Losses or damage in transit will be in to the account of the Supplier. The supplier may, if he so desires, get the goods insured and include such charges in the tendered rate.

17. Offered rates should be valid at least for two months from the last date of receipt of tenders.

18. All legal proceedings, if necessity arises to the University may be any of the parties (University or Contractor/Supplier) shall have to be lodged in the courts situated at Gautam Budh Nagar and not elsewhere.

19. (a) The Penalty Clause is as under :-

    Should the tenderer fail to deliver the goods within the period specified in the tender form, the Competent Authority may, at his discretion, allow an extension in time subject to recovery from the tenderer as agreed liquidated damages, and not by way of penalty, a sum equal to the percentage of the value of tender amount which the tenderer has failed to supply for period of delay as stated below :-

i.	Delay up to one week	1%
ii.	Delay exceeding one week but not exceeding two weeks	2%
iii.	Delay exceeding two weeks but not exceeding one month	5%
iv.	Delay exceeding one month	5% for each month and part there of subject to maximum 10%

    (b) In case of failure to supply the goods within the prescribed time and in accordance with the specifications give in the Quotations, the University shall be free to cancel the order.

20. Successful bidder will have to furnish Performance Security @ 10 % of the equipment cost, in the form of Bank's Guarantee from any Nationalize Bank or F.D.R. The security shall be refunded after a period of one year from the date of satisfactory installation or expiry of warranty period, whichever more.

21. The price quoted should be in Indian Rupees. 100% payment will be made only after installation and commissioning. No advance payment will be made.

22. No revision of price bid will be allowed once the price bids are opened.

23. No increase in price will be allowed after our purchase order(s) are placed.

24. The warranty period should be clearly mentioned .The maintenance charges (AMC), if applicable, under different schemes after the expiry of the warranty should also be mentioned in a separate sheet.

25. A warranty certificate against all the manufacturing defects covering for a period of minimum one year from the date of installation shall be given at the time of supply of

the equipment. Any additional period towards warrantee will be given weightage in evaluation of the bids.

26. Inspection certificates of the instruments/ equipment inspected by the qualified engineer of the manufacturer and packed in accordance with the terms and conditions of this order must be enclosed.
27. During the warranty period or later whenever the firm is called upon to attend to the rectification of the defects/faults in the consignments, the firm shall attend to the repair work within a period of a week. They should render timely back up service whenever called upon. **A certificate to the effect should be attached to the tender.**
28. A certificate to the effect that instruments/equipment supplied is fully operational and no additional accessory or space is required to make the instruments/equipment run should be issued alongwith the delivery challans/invoice. GBU reserves the right to refuse payment in the event of not furnishing this certificate at the time of supply.
29. Complete user, technical and service documentation and spare parts catalogue are to be provided along with the supply of the item.
30. Failure to comply with all the terms and conditions mentioned herein would result in the tender being summarily rejected.
31. Vendors are informed that once the companies are shortlisted based on the eligibility criteria and technical specification, only then the financial bids of the firms that meet the eligibility criteria, technical specification / requirements would be opened.
32. Conditional tenders will not be accepted.
33. GBU reserves the right to modify or alter the specifications after short listing of tenders.
34. GBU reserves the right to change the order quantity or split the orders among multiple vendors without assigning any reason (s) whatsoever.
34. GBU reserves the right to reject any or all the tenders without assigning any reasons whatsoever.

Registrar
Gautam Buddha University

ACCEPTANCE

We accept the above terms and conditions and shall comply with them strictly.

SIGNATURE OF THE AUTHORISED SIGNATORY : _____

NAME OF THE SUPPLIER : _____

ADDRESS : _____

_____

"BIDDER'S PROFILE PROFORMA"

(write or print or type in block letters and please answer all the questions)

1. Name of the firm: ……
1. Date of incorporation:……..
2. Name of the company – Government/Public Ltd/Private Ltd/Partnership/ Proprietorship: ……..
3. Specify the number of years in this line of activity by the company:……..
4. Sales Tax/VAT registration No. (please attach certificate) : ……
5. Experience (in year) of supplying & installation for similar laboratory equipments to IITs, NIT's or Central Universities or any Academic Institute of National Repute (please attached certificate) : ……..
6. Turnover in the last three years (Figures should be in Indian Rupees in Lakhs; please attach the certified copies of balance sheet):(if the figures for 09-10 are not available then they may furnish balance sheet of year 06-07)

2007-08	2008-09	2009-10

7. Provide the postal address, telephone & fax numbers, and email address of the nearest service center : ……..… ……
8. What would be the delivery period from the date of the placement of an official purchase order : ……..
9. Enclose the list of customers to whom you have supplied /serviced during the last 3 years ending 31/03/2010 with full postal address and name of the contact person with phone, FAX numbers, and E-mail-id, billing amount etc. Certificate regarding satisfactory performance from the minimum three end users should be furnished.
10. Are you the manufacturer / authorized dealer / distributor/ reseller for the product quoted (please attached relevant certificate): ……..
11. Was there any elapse or delay in supplying the goods ordered or any service related issue during the warranty period for the products supplied by your firm to different Institutes/Universities during last three years? If yes, provide details.
12. Deviations in specifications, if any? Yes/No
13. Whether technical specification are attached with Technical Bid or not. Yes/No

(SIGNATURE OF THE AUTHORISED SIGNATORY)

FINANCIAL BID FOR ELECTRICAL TECHNOLOGY LABORATORY EQUIPMENTS

S. No.	Equipment and Specification	Qty.	Unit Price Rs.	Total Amount In Rs.	In words
1	**Supply and installation of Electrical Workbench** Ergonomically designed electrical workbench with instrument panel in vertical position and with sufficient space for working. Bench should have wheel (with locking mechanism) provided at legs so that it can be easily moved. Single AC supply shall be provided to power up all Instruments & MCB for safety purpose. Over all dimension of the workbench shall be 1170 mm x 770 mm x 1220 mm (660 + 520). Workbench should have following components- **A. Digital Storage Oscilloscope** **Specification** Channels: 02 nos, Bandwidth: DC-100 MHz, RTS: 1 G S/s, Memory Depth: 1MPoints, Color TFT LCD display, Auto measurement facilities, Math functions, Waveform storage facilities, Triggering (edge, video, pulse width, alt.) USB device & USB host, Pass/fail function, Power supply: 220V + 10%, 50 Hz, Metallic body with powder coating **B. Digital Multimeter (4½ digit)** **Specification** 4 ½- digit large LCD displays with back light max. Reading: 1.9999, Voltage measurement up to 1000 VDC and 750V AC, DC, AC Current up to 20A, ACV frequency Response: 50KHz, Frequency, Resistance, Capacitance measurement, Diode check and Continuity test. Power supply: 220V + 10%, 50 Hz **C. Function Generator (10 MHz):** **Specification** 1Hz-10MHz frequency in 7 steps, Sine, Sq., Triangle, Ramp, Pulse and serial Data outputs, 20 Vpp output and DC Offset, 20 × 4 character LCD Display, 30 MHz Frequency Counter, TTL output, 50W Impedance, AM Standard, AM Balance, FM, ASK, FSK, PWM modulation, 20 ,40 dB attenuation, Metallic body with powder coating **D. Digital LCR-Q Meter** **Specification** **Parameters:** L-Q, C-D, R-Q, Z-Q and Z-D, **Test frequency:** 100Hz, 120Hz and 1 KHz, **Measurement Range:** L-0.1 µH to 9.9999 KH, C- 0.1 pF to 9.9999	03			

	mF, R, |Z|- 1 m. – 999.99 m. **<u>E. Programable Power Supply</u>** **Specification** Output voltage: 0~36V, Constant current: 0~3A, Voltage resolution: 1mV at 0~3.999V & 10mV at 4~36V Current resolution: <=1mA, LCD display with backlight, Digital plus rotary switches,10 memory locations, RS-232 interface for PC controlled operations, Metallic body with powder coating **<u>F. Soldering/Desoldering Station</u>** Solder: 80 Watts, Temperature Range: 150 -450 centigrade Desolder: 50Watts (sold), 80 Watts (Desolds), Temperature Range: 150 -450 centigrade				
2	**Supply, installation of Cathode Ray Oscilloscopes (CRO)**				
	30MHz micro controller based analog Oscilloscope 30 MHz Oscilloscope with 80 character backlit LCD for display of parameters, Auto Time base, the built-in Frequency Counter read and displays the input frequency on LCD. Completely menu operated, 2 channel 4 trace Oscilloscope should have Component and Continuity testing facilities, Metallic body with powder coating **Technical Specifications:** **Operating Modes:** Channel 1, Channel 2, Channel 1 & 2 alternate or chopped (approx.350KHz), X-Y (Ratio 1:1 Input via CH 2), Add/ Sub CH 1± CH 2, Invert CH 2 **Vertical deflection (Y) :** (Identical channels) **Bandwidth:** DC-30 MHz (-3dB) DC-40 MHz (-6dB) **Rise Time:** 12 ns (approx.). **Deflection coefficients:** Micro-controller based 12 calibrated steps 5mV/Div 20V/Div (1-2-5 sequence). Electronic Control Display 80 character backlit Alphanumeric LCD. **Accuracy:** ± 3% **Input Impedance:** 1MΩ || 30pF (approx.) **Input coupling:** DC-AC-Gnd **Maximum Input voltage:** 350V (DC + Peak AC). **Time Base:** **Time coefficients:** Micro-controller based 18 calibrate steps, 0.5 s/Div- 0.2 s/Div (1-2-5 sequence) with magnifier X10 to 50 ns/Div, wi variable control to 20 ns/Div. Electronic	03			

	Control Display on 80 character backlit Alphanume LCD. With ALT selection (in X- menu), magnified swe and normal sweep can be seen simultaneously. Wh Auto Time Base key is pressed, the TB range is select automatically depending upon the input sig frequency **Accuracy: ±** 3% (in Cal position). **Hold off:** Variable control for Stable Triggering. **Ramp output:** 5 V_{pp} (approx.). **Trigger System:** **Modes:** Auto / Level **Source**: CH 1, CH 2, Alt-CH 1/CH 2, Ext. **Slope:** Positive or Negative **Coupling:** AC, Line Trigger **Sensitivity:** Internal 5mm, External 0.8V (approx.). **Trigger Bandwidth:** 50 MHz **Horizontal Deflection (X):** **Bandwidth:** DC - 2.5 MHz (-3 dB). **X-Y mode:** Phase Shift < 3° at 60 KHz **Deflection Coefficients:** Micro-controller based 12 calibrated steps 5mV/Div- 20V/Div (1-2-5 sequence). Electronic Control Display on 80 character backlit Alphanumeric LCD. **Input Impedance:** 1MΩ || 30pF (approx.) **Built-in Single Touch Component Tester:** **Test Voltage:** Max 8.6 V_{rms} (Open Circuited) **Test Current:** Max 8 mA_{rms} (Short Circuited) **Test Frequency:** 50Hz, Test circuit grounded to chassis. **Continuity Tester:** Beeper sounds < 75Ω (approx). **Cathode Ray Tube:** 140 mm. Rectangular tube with internal graticule. **Accelerating potential:** 2 KV (approx.) **Display:** 8 x 10 cm. **Trace rotation:** Adjustable on front panel **Calibrator:** Square Wave Generator 1 KHz (approx.), 0.2Vpp ± 1% for probe compensation. **Z Modulation:** TTL level **Interface:** USB **Stabilized Power Supply:** All operating voltages including the EHT **Mains Voltage:** 230V ± 10%, 50 Hz				
3	**Supply of Digital Multi-meters** 4 4/5 Digits - 50,000 Count, 3 3/4 Digits-4,000 Count, 4½ digit True RMS, Programmable and non-programmable.	05			
	4000 count Autoranging DMM • Auto Ranging				

	• 4,000 Count Display • DC/AC Volts and Current measurement • Resistance and Capacitance measurement • Duty Cycle, Frequency and Temperature measurement • Temperature mode. • Continuity, Transistor and diode test • Logic test • 9V Battery Power Supply				
4	**Supply of Function Generators** **10 MHz Function Generator with AM/FM Generator and 40 MHz Frequency Counter** **Features:** • 1 Hz-10 MHz frequency • Sine, Square, Triangle, Ramp, Pulse and serial Data Outputs • 20 V output and DC Offset • 20 × 4 character LCD Display Controlled by Menu keys • 40 MHz Frequency Counter. • TTL Output • 50 Impedance • AM Standard, AM Balance, FM, ASK, FSK, PWM Modulation. • 20, 40, 60 dB Attenuation. • Rise & Fall tim • USB Interface **Technical Specification:** Operating Modes: Sine, Square, Triangle, Ramp, Pulse, TTL and Serial Data Frequency Range: 1Hz, - 10 MHz Sine, 1Hz-2 MHz others Frequency accuracy: ± 2% ± 7 digits Sine wave Distortion: 1.5% (2MHz) & 2% (10MHz) typical) Square wave Rise & Fall Time: ≤ 50ns Pulse Duty Cycle: 15% - 85% var. (min width 200ns) Triangle Nonlinearity: ≤ 1% (typical) Output Impedance: 50 Ω Output Voltage: 20 Vpp O.C, 10 Vpp in 50 Ω Attenuation: 20dB, 40dB & 20dB (variable) Level Flatness: 0.5 dB (2MHz) & 1.5dB (10MHz) typical DC Offset: ± 5V adjustable Internal Sweep: 20ms – 4s variable Modulation: AM BAL, AM Std, FM, ASK, FEK, PWM Modulation Freq. Range: DC to 20 KHz Modulation Input: 2 Vpp & 10 Vpp max.	04			

	Modulation Generator Operating Modes: Sine, Square, Triangle Frequency Range: 10Hz to 100 KHz (Var.) Output: 2 Vpp Frequency Accuracy: ± 2% 7 digits Frequency Counter Frequency Range: DC to 40 MHz Resolution: 1 Hz Sensitivity: 0.5 volt Frequency Accuracy: ± 0.5 % Input Impedance: 1MΩ Max. Input Voltage: 200 V (DC+AC Peak) Power supply: 220V ± 10% 50, 60Hz on request PC Interface: USB Interface Display: Microcontroller based 20x4 Line LCD Display Controlled by Menu Key for Frequency, Amplitude, Functions, Parameters and Attenuation etc. Included Accessories: Extensive e – manual, BNC-BNC Cable, Mains Card, USB Interface cable. Metallic body with powder coating				
5	**Supply of Oscilloscope Demonstrator** **Features:** • Choice of any one built-in option • Stable Triggering up to 40 MHz • Algebraic sum & difference of both channels • Alternate Triggering • Line Trigger • Variable Hold-off • Component & Continuity Tester • X 5 magnification • Z modulation (TTL) • Max. sweep speed 40ns/cm • Bright Trace & Internal Graticule CRT • Low Line and portable • Available in two colors Black & Off-White **The following Specifications have made in this Oscilloscope :** **Operating Modes** Channel I, Channel II, Channel I & II Alternate or chopped (approx. 500 KHz), X-Y operation (Ratio-1:1 Input via CH II) Add/Sub CHI CHII, Invert CH II **Vertical Deflection (Y)** (Identical channels) Bandwidth : DC-20 MHz (3dB) DC 28MHz (-6dB)	02			

	Rise time : 17.5 ns (approx.) Deflection co-efficient : 12 calibrated steps 2mV/cm-10V/cm (1-2-5 sequence) Accuracy : ± 3% Variable Hold-off : For stable Triggering Input Impedance : 1 M. Input coupling : DC-AC-GND Maximum Input voltage : 400V (DC + Peak AC) **Time base :** Time coefficients : 18 calibrated steps, 0.5 (1-2-5 sequence with magnifier x 5 to 100 ns/cm, with variable control to 40 ns/cm) Accuracy : ± 3% (in Cal. Position) Ramp output : 5V (approx.) **Trigger system:** Modes : Automatic or variable Trigger level Source : CH I, CHII, ALT-CH, I/CH II, Line, Ext. Slope : Positive or Negative Coupling : AC Sensitivity : Int 5mm, Ext 0.8 V (approx.) Trigger Bandwidth : 40 MHz **Horizontal Deflection (x)** Bandwidth : DC-2.3 MHz (3 dB) X-Y mode : Phase Shift < 3 deg. At 60KHz Deflection co-efficient: 12 calibrated steps 2mV/cm-10 V/cm (1-2-5 sequence) Input Impedance : **Built-in Single Touch Component Tester** Test Voltage : Max 8.6 $_{Vrms}$ (shorted) Test current : Max 8mA (shorted) Test frequency : 50Hz, Test circuit grounded to chassis Continuity Tester : Beeper sounds < 75 Ω approx. **General Information** Cathode Ray Tube : 140 mm Rectangular tube with internal graticule P31 Phosphor Accelerating potential : 2000V (approx.) Display : 8 x 10cm Trace rotation : Adjustable on front panel Calibrator : Square wave generator 1KHz (approx.) 0.2V ± 1% for probe Compensation. Z Modulation : TTL level Stabilized Power Supply: All operating voltages including the EHT Mains voltage : 220V ± - 10%, 50/60Hz, 33 VA (approx.)				

	Weight (approx.) : 7.5 Kg (approx.) Dimensions (mm) : W285 – H150 – D380 Operating Temp : 0-40 deg. 95% RH Appearance : Off white with handle and till stand Metallic body with powder coating **Included Accessories :** 1. Manual : 1 No. 2. BNC-Test Prob : 1 No. 3. BNC-Crocodile Cable : 1 No. 4. Test Prods : 1 Pair 5. Poster knows your oscilloscope : 1 no.				
6	**Supply of Network Theorems Trainer** **Features:** • Exclusive and compact design. • On board digital Ammeter and Voltmeter. • Straight forward representation of Thevenin's Maximum Power Transfer and Tellegen's Theorems. • Provided with an extensive manual. **Technical Specifications:** **DC power supply :** +12V, +5V,500mA **Display:** Digital LCD Display for Voltage and Current **Voltmeter:** 200mV to 200V **Ammeter:** 2µA to 200mA • 2 mm Banana Sockets for connection • With Built-in SMPS Based Power Supply. **Accessories:** Operating manual, Patch Cards adequate number of patch cards. Iron case with powder coating	01			
7	**Supply of Network Theorems Trainer** **Features:** • Exclusive and compact design. • On board digital Ammeter and Voltmeter. • Straight forward representation of KVL, KCL • Provided with an extensive manual. **Technical Specifications:** **DC power supply :** +12V, +5V,500mA **Display:** Digital LCD Display for Voltage and Current **Voltmeter:** 200mV to 200V **Ammeter:** 2µA to 200mA • 2 mm Banana Sockets for connection • With Built-in SMPS Based Power Supply. **Accessories:** Operating manual, Patch Cards adequate number of patch cards. Iron case with powder coating	01			
8	**Network Theorems Trainer** **Features:**	01			

	• Exclusive and compact design. • On board digital Ammeter. • Straight forward representation of Norton's Superposition & Reciprocity Theorems. • Provided with an extensive manual. **Technical Specifications :** **DC power supply :** +12V, ±5V, 500mA **Display:** Digital LCD Display for Current **Ammeter :** 2mA to 200mA • 2 mm Banana Sockets for connection • With Built-in SMPS Based Power Supply. **Accessories:** Operating manual, Patch Cards adequate number of patch cards. Iron case with powder coating				
9	**Supply and Installation of Single Phase Transformer Lab** **Features:** R-Core Transformer Exclusive and rugged designed panel, Terminals are provided in different sections, Designed by considering all the safety precautions Diagrammatic representation for the ease of connections BS10 Safety terminal are provided. Stand Alone Operation. Provided with an extensive e-manual **Technical Specifications** **Mains Supply** : 230 V ±10 %, 50 Hz **Transformer** Rating: 1 KVA Primary Voltage: 0 - 125 V, 0 - 125 V Secondary Voltage : 0 - 125 V, 0 - 125 V **Meters Used** Voltmeter (MI): 300 V (2 Nos.) Voltmeter (MI): 50 V Ammeter (MI) : 5A (2 Nos.) Ammeter (MI) : 100 mA Wattmeter: 100 W Wattmeter: 500 W **Auto Transformer:** 270 V, 5 A **MCB** : 5 A	01			
10	**Supply and installation of DC Shunt Motor Lab** **Features:** • Mechanical Loading arrangement • Designed by considering all the safety precautions • High quality meters	01			

	• Diagrammatic representation for the ease of connections • Provided with an extensive e-manual • BS10 Safety terminal are provided • Metallic front panel with diagrammatical representation of the ckt. • Digital Tachometer is provided with the setup. **<u>Technical Specifications:</u>** **Input:** 180 V Fixed DC 0-180 V Variable DC **DC Machine** Type: DC Shunt Rating: ½ HP RPM: 1400 (No Load) **Meters used** Voltmeter (MC): 300 V Ammeter (MC): 1 A Ammeter (MC): 5 A **Power Supply Specification:** **Technical Details:** **Mains Supply:** 230 V ±10%, 50Hz **Outputs** Variable DC: 0 -180V Fixed DC: 180V **Transformer** Rating: 2kVA Primary Voltage: 0-230V Secondary Voltage: 0-150V, 0-150V **Meters Used** Voltmeter (MC): 300V Ammeter (MC): 10A **Auto Transformer:** 270V, 10A **MCB:** 10A The trainer should be provided with all standard accessories, e – manuals, Patch cards, and Mechanical loading arrangement.				
11	**Supply of Programmable DC Power Supply** **Silent Features:** • DC 0-32 V, 0-2 Amp. • Floating output. • LCD Display for Voltage and Current. • Current limit exceed indication (LED). • Step increment for Voltage. • User friendly settings of Voltage and Current	04			

	using keypad and cursor. • Constant voltage source and Constant current source. • USB interface facility. • Provision for programming to set the output voltage linearly with respect to time in different ways like step mode, pulse mode, ramp mode and pulse width mode. • Different types of standard waveforms like Square, Ramp, and Pulse can be generated with voltage with respect to time defined by the user. • Iron case with powder coating				
12	Moving coil Ammeter Portable: (In Bakelite casing or horizontal use, Knife edge pointer, parallax removing mirror, scale length 150mm, accuracy class 1.0)				
	0 – 2.5/5 A (AC)	05			
	0 - 1/2 A(AC)	05			
	0 - 1/2A(DC)	05			
	0 – 2.5/5 A (DC)	05			
	0 – 5/10 A (DC)	05			
	0 – 10/20 A (DC)	05			
	0 – 200 mA (AC)	05			
	0 – 500 mA (AC)	05			
13	Moving coil Voltmeter Portable: (In Bakelite casing or horizontal use, Knife edge pointer, parallax removing mirror, scale length 150mm, accuracy class 1.0)				
	0 – 150/300 V (DC)	05			
	0 – 300/600 V (DC)	05			
	0 – 5 /10V (DC)	05			
	0 – 10/20 V (DC)	05			
	0 – 50 V (DC)	05			
	0 – 15/ 30 V (AC)	05			
	0 – 25/ 50 V (AC)	05			
	0 – 150/300 V (AC)	05			
	0 – 300/600 V (AC)	05			
14	Moving coil Wattmeter Portable: (In Bakelite casing or horizontal use, Knife edge pointer, parallax removing mirror, scale length 150 mm, accuracy class 1.0)				
	5A – 10 A, 0 /75 /150 /300 W (UPF)	05			
	2.5/5A, 0 /150/300/ 600 W (UPF)	05			
	5A/10A, 0/75 /150 /300 W (LPF)	05			
	5/10 A, 0 /150 /300 / 600 W (LPF)	05			
	0 – 200mA, 0 /100 / 200 / 500W (LPF)	05			
	0 – 200mA, 0 / 100 / 200 / 500W (UPF)	05			
	2.5/5 A, 150/300/600 V (LPF)	05			

15	Energy Meter Portable: (In Bakelite casing or horizontal use, Knife edge pointer, parallax removing mirror, accuracy class 1.0) 5/10A, 230V, 50HZ,	02			
16	Tubelight Set (tubelight rod, 40W, chock coil, starter, tube light frame with electric connections)	02			
17	Motor (Induction type) 0 – 220 V AC input, 1500 rpm, 1 kW; BIS certified; Crompton Greaves make or equivalent	01			
18	Electric iron, 220 V, AC power, demonstration unit Philips make or equivalent	02			
19	Ceiling fan, 220 V, AC power, demonstration unit Crompton Greaves make or equivalent, BIS certified	02			
20	House wiring panel kit & other accessories; House wiring demonstration panel with general accessories, wires switches, sockets etc. complete of Anchor make or equivalent, BIS certified	02			
21	**Clamp-On Ground Resistance Testers** The Clamp-On Ground Resistance Testers measure ground rod and grid resistance without the use of auxiliary ground rods. Offer accurate readings from 0.01 to 1200Ω as well as ground leakage current from 1mA to 30Arms without disconnecting the rod under test.	01			
22	Resistors; 1 Ω to 100 MΩ each	200			
23	Capacitors, 0.1 µF to 100pF each, Electrolyte, Ceramic type	200			
24	Inductors; 1 µH 500 µ for laboratory uses	200			
25	Resistive Load No. of Phases: 3 Voltage: 400V Power: 5 kW in six steps	3			
26	Inductive Load No. of Phases: 3 Voltage: 400V Power: 5 kVA The load can be varied smoothly by moving wheel.	3			
27	1-phase Variable Inductor Voltage: 230V, 50Hz AC Power: 1 kVA Inductance can be varied smoothly over a wide range by moving plunger.	3			
28	3-phase Variable Inductor Voltage: 400V, 50Hz AC Power: 3 kVA Inductance can be varied smoothly over a wide range by moving plunger.	3			

29	Electrodynamic wattmeter Portable: (In Bakelite casing or horizontal use, Knife edge pointer, parallax removing mirror, scale length 150mm, accuracy class 1.0), 0 – 300 W	3			
30	3 – Phase auto transformer; 3- Phase, 0 – 415 V, 50 Hz AC. Output: 0 – 470V, 50Hz AC Power: 3kVA/5kVA	02			
31	Rheostat				
	300 ohm, 3 A, Continuous variable resistance	2			
	50 ohm, 5 A, Continuous variable resistance	2			
	500 Ω/ 1 A (Continuous)	2			
	50 Ω/ 10 A (Continuous)	2			
	1700 Ω/ 1 A (Continuous)	2			
32	Multi-range wattmeter Portable: (In Bakelite casing or horizontal use, Knife edge pointer, parallax removing mirror, scale length 150mm, accuracy class 1.0) 0 – 600 W (5 – 10 A)	3			
33	Single phase Auto transformer; Input: 0 – 230 V, 50 Hz, AC Output: 0-270V, 50 Hz, AC, 15A	4			
34	Tachometer, 0– 5000 RPM, Contact type, Accuracy 1%	2			
Grand Total					

Total cost of the offer is Rs._____ in words (Rupees _____

_____.

I abide by all the terms & conditions of the tender.

SIGNATURE OF THE AUTHORISED SIGNATORY : _____

NAME OF THE SUPPLIER : _____

ADDRESS : _____

_____