Uttar Pradesh Textile Technology Institute, Kanpur,
11/208, Souterganj, Kanpur

ENQUIRY LETTER

Package Code: TEQIP-III/2019/UP/upti/164　　　　**Current Date: 05-Jul-2019**

Package Name: Electrical Lab I　　　　　　　　　　**Method: Shopping Goods**

Sub: INVITATION LETTER FOR Electrical Lab I

Dear Sir,

1. You are invited to submit your most competitive quotation for the following goods with item wise detailed specifications given at Annexure I,

Sr. No	Item Name	Quantity	Place of Delivery	Installation Requirement (if any)
1	Base frame with Power Supply	2	UPTTI, KANPUR	YES
2	DC Fundamentals board	1	UPTTI, KANPUR	YES
3	DC Circuits Board	1	UPTTI, KANPUR	YES
4	Electric Networks Board	1	UPTTI, KANPUR	YES
5	AC Circuit Board	1	UPTTI, KANPUR	YES
6	Electric Power In Alternating Current	1	UPTTI, KANPUR	YES
7	Superposition Theorem kit	2	UPTTI, KANPUR	YES
8	Thevenin's theorem kit	2	UPTTI, KANPUR	YES
9	Maximum Power Transfer Kit	2	UPTTI, KANPUR	YES
10	Superposition & Reciprocity Kit	2	UPTTI, KANPUR	YES
11	Power factory training kit single phase	1	UPTTI, KANPUR	YES
12	RLC Series circuit Kit	1	UPTTI, KANPUR	YES
13	Power factor Training kit Three phase	1	UPTTI, KANPUR	YES
14	BH Curve Kit	1	UPTTI, KANPUR	YES

15	Single phase Transformer Training setup	1	UPTTI, KANPUR	YES
16	DC Shunt Motor With Brake test	1	UPTTI, KANPUR	YES
17	Three Phase Induction Motor Setup	1	UPTTI, KANPUR	YES
18	Electronic design work bench	1	UPTTI, KANPUR	YES
19	100 Mhz DSO	5	UPTTI, KANPUR	YES
20	Function Genarator	5	UPTTI, KANPUR	YES
21	Multi Meter	5	UPTTI, KANPUR	YES
22	DC Machine Open View	1	UPTTI, KANPUR	YES
23	Three phase Induction Motor Open View	1	UPTTI, KANPUR	YES
24	Single phase Induction Motor Open View	1	UPTTI, KANPUR	YES
25	Synchronous machine open view	1	UPTTI, KANPUR	YES

2. Government of India has received a credit from the International Development Association (IDA) towards the cost of the **Technical Education Quality Improvement Programme [TEQIP]-Phase III** Project and intends to apply part of the proceeds of this credit to eligible payments under the contract for which this invitation for quotations is issued.

3. **Quotation**

   3.1 The contract shall be for the full quantity as described above.

   3.2 Corrections, if any, shall be made by crossing out, initialling, dating and re writing.

   3.3 All duties and other levies payable by the supplier under the contract shall be included in the unit Price.

   3.4 Applicable taxes shall be quoted separately for all items.

   3.5 The prices quoted by the bidder shall be fixed for the duration of the contract and shall not be subject to adjustment on any account.

   3.6 The Prices should be quoted in Indian Rupees only.

4. Each bidder shall submit only one quotation.

5. Quotation shall remain valid for a period not less than **60** days after the last date of quotation submission.

6. Evaluation of Quotations: The Purchaser will evaluate and compare the quotations determined to be Substantially responsive i.e. which

    6.1 are properly signed; and

    6.2 Confirm to the terms and conditions, and specifications.

7. The Quotations would be evaluated for all items together.

8. Award of contract The Purchaser will award the contract to the bidder whose quotation has been determined to be substantially responsive and who has offered the lowest evaluated quotation price.

    8.1 Notwithstanding the above, the Purchaser reserves the right to accept or reject any quotations and to cancel the bidding process and reject all quotations at any time prior to the award of Contract.

    8.2 The bidder whose bid is accepted will be notified of the award of contract by the Purchaser prior to expiration of the quotation validity period. The terms of the accepted offer shall be Incorporated in the purchase order.

9. Payment shall be made in Indian Rupees as follows:

    Satisfactory Delivery & Installation - 90% of total cost
    Satisfactory Acceptance - 10% of total cost

10. Liquidated Damages will be applied as per the below:
    Liquidated Damages Per Day Min % :N/A
    Liquidated Damages Max % : N/A

11. All supplied items are under warranty of **12** months from the date of successful acceptance of items and AMC/Others is **0**.

12. You are requested to provide your offer latest by **16:00** hours on **26-Jul-2019**.

13. Detailed specifications of the items are at Annexure I.

14. Training Clause (if any) **yes**

15. Testing/Installation Clause (if any) **yes**

16. Performance Security shall be applicable: **5% (Security must be in the form DD in favour of Director, UPTTI, Kanpur, payable at Kanpur. Performance security will be submitted by lowest Qualified bidder at the time of installation and will be detained up to the expiry of warranty.)**

17. Information brochures/ Product catalogue, if any must be accompanied with the quotation clearly indicating the model quoted for.
    The supplier must mention about the brand name/No. during submission of quotation. They must enclose the original catalogue of machine/Instrument.

18. Sealed quotation to be submitted/ delivered at the address mentioned below, **Uttar Pradesh Textile Technology Institute,Kanpur,11/208, Souterganj, Kanpur**

19. We look forward to receiving your quotation and thank you for your interest in this project.

20. Delivery within 60 Days.

(Authorized Signatory)

Name & Designation

Director
U.P. Textile Technology Institute
11/208, Souterganj
Kanpur U.P.-208001

Annexure I

Sr. No	Item Name	Specifications
1	Base frame with Power Supply	**Base Frame with Power supply : The base frame must have the following features on board.** Power supplies: • 0/+15 Vdc, 1 A • 0/-15 Vdc, 1 A • +15 Vdc, 1 A • -15 Vdc, 1 A • +5 Vdc, 1 A • -5 Vdc, 1 A • 6 – 0 – 6 Vac, 1 A Features: • Voltage regulation and protection against over voltage or short circuit. • Complete with a set of connecting cables
2	DC Fundamentals board	• **DC fundamental kit must be compatible with the above Base Frame to perform the experiment** Must cover the following topics. • DC power sources • Batteries • Conventional directions of voltages, e.m.f. and currents • Ohm's law • Circuit with linear resistance and non linear resistance • Series/parallel resistive circuits • Power in dc circuits • Linear/non linear variable resistor • Voltage/current divider circuits • Direct current meters **Must have the Fault simulation features** **DC Fundamental board have the following circuit block on board.** • Batteries • Switches • Ohm's law • Series circuit • Parallel circuit • Series/Parallel circuit • Power • Linear/non-Linear variable resistor • Voltage divider • Voltmeter/Ammeter/Ohmmeter
3	DC Circuits Board	• **DC Circuit board must be compatible with the above Base Frame to perform the experiment** Must cover the following topics. • Structure of the circuits • Electric current • Voltage and electromotive force • Electric resistance • Conventional sense of voltage and current • Types of measurement and types of errors • Types of instruments • Measurement of e.m.f. and voltage • Measurement of the current • Measurement of the resistance • Relationships among current, voltage and resistance: Ohm's law • Conductors resistivity and temperature coefficient • Circuit with linear and non-linear resistance • Types of resistors • Identification of the value of the resistors • Series and parallel resistors • Constant signals • Variable signals • Wheatstone Bridge **Must have the Fault simulation features** **DC Circuit board have the following circuit block on board.**

		Electrical circuit: Components and measurements • Series generators • Parallel generators • Ohm's law • Application of the Ohm's law: how a resistance influences the current • The resistivity: resistance, length, section and resistivity of a conductor • Linear and non-linear ohmic resistance • Series circuit: current, resistance and voltage • Colour code of the resistors • Wheatstone Bridge.
4	Electric Networks Board	**Electric Network board must be compatible with the above Base Frame to perform the experiment.** Must cover the following topics. • Elements of an electrical network: node, arm, mesh • First Kirchoff principle • Second Kirchoff principle • Series resistances • Parallel resistances • Series-parallel connection • Voltage dividers • Theorem of the effect superposition •Thevenin theorem • Norton theorem •Millman theorem **Must have the Fault simulation features** **Electric Network board have the following circuit block on board.** • Series resistors and Kirchoff voltage law verification • Parallel resistors and Kirchoff current law verification • Series-parallel resistors • Effect superposition •Thevenin theorem • Norton theorem •Millman theorem • Voltage divider
5	AC Circuit Board	**AC Circuit board must be compatible with the above Base Frame to perform the experiment.** Must cover the following topics. • Sinusoidal alternating currents and voltages • Vector and symbolic representation of the sinusoidal electric quantities • Product of a sinusoidal quantity by a constant • Sum and difference of sinusoidal quantities • Product of two sinusoidal quantities • Product of a sinusoidal quantity by a complex number • Elementary bipoles: R, L, C • Series and parallel of the bipoles: R-L, R-C, R-L-C • Oscillating circuits: frequency response of the ac circuits • Low-pass filter, high-pass filter, pass-band filter Must have the Fault simulation features **AC Circuit board must have the following circuit block on board** • Alternating quantities • Resistive circuit • Capacitive circuit • R-C circuit (series and parallel) • Inductive circuit • R-L circuit (series and parallel) • Series resonant circuit • Parallel resonant circuit • Low-pass filter (R-C) • High-pass filter (C-R) • Low-pass filter (L-R) • High-pass filter (R-L) • Pass-band filter
6	Electric Power In Alternating Current	**Electric Power board must be compatible with the above Base Frame to perform the experiment.** Must cover the following topics. • Active power • Reactive power • Apparent power • Boucherot's theorem • Power and energy measurements • Phasing of a single-phase system • Calculation of the phasing capacity **Must have the Fault simulation features** • Active, reactive and apparent power (ohmic, inductive, ohmic- inductive load) • Active, reactive and apparent power (ohmic, capacitive, ohmic-capacitive load) • Boucherot's theorem • Phasing of an ohmic-inductive load
7	Superposition Theorem kit	Superposition theorem in D.C. circuits. • On board test points to observe signals • On board schematic diagram • Flexibility of making circuit connections • Lightweight & compact

8	Thevenin's theorem kit	**Thevenin's theorem in D.C. circuits.** • On board test points to observe signals • On board schematic diagram • Flexibility of making circuit connections • Lightweight & compact
9	Maximum Power Transfer Kit	**Verification of Maximum power transfer theorem.** • On board test points to observe signals • On board schematic diagram • Flexibility of making circuit connections • Lightweight & compact
10	Superposition & Reciprocity Kit	**Superposition & Reciprocity Theorem Experiment Board and Trainer Kit** • On board test points to observe signals • On board schematic diagram • Flexibility of making circuit connections • Lightweight & compact
11	Power factory training kit single phase	Measurement of power and power factor in a single phase ac series inductive circuit and study improvement of power factor using capacitor, capacity of Inductive Load: 5Amp. With Digital Multi Function Meter
12	RLC Series circuit Kit	Time response of R-L-C series circuit to a step D.C. voltage input
13	Power factor Training kit Three phase	Measurement of power in 3- phase circuit by two wattmeter method and determination of its power factor for star as well as delta connected load. Kit Consist of Three Phase Dimmer Stat, two Wattmeter, 3Phase Single Element Power Factor Meter, Lamp Load bank, 3 Phase, 5Amp
14	BH Curve Kit	To observe the B-H loop of a ferromagnetic material
15	Single phase Transformer Training setup	**Single Phase Transformer: Input: 230V, 50HzAC, Output: 115V,**Tapping on both sides 50%,86.6%,100%. Open Execution. Copper Double Wound. Capacity: 1KVA **1 phase Auto Transformer** -230/0- 270V, 8A enclosed type with terminals **SPSE Wattmeter (UPF) AC,** Portable Dynamometer type 150 mm Scale with antiparallax mirror knife edge pointer 0-5/10, 0-125/250V **SPSE Wattmeter (LPF) AC,** Portable Dynamometer 150 mm Scale with anti-parallax mirror knife edge pointer class . 0-5/10A, 75/150/300V
16	DC Shunt Motor With Brake test	**Brake test on D.C. Shunt motor:** 3 HP, 230V, 1500 rpm With Mechanical Loading arrangement. Mainly Consist of Motor Base Plate, Pulley, Load adjustment Wheel, Spring Balance Control Panel Inclusive Connection Studs And Meters, Includes Fuse Protection, Rotary Switch, Terminal S, 3 Point Starter Ammeter/Voltmeter/Field Ammeter
17	Three Phase Induction Motor Setup	**3-phase induction motor :** 3 Phase 415v/3hp/50hz /1500rpm S.Q.I.M; With Pony Break arrangement Control Panel Consist MCB, DOL Starter, One Ammeter & one Voltmeter, Housed in MS enclose
18	Electronic design work bench	**Electronic design work bench must have the following features.** • Two-channel USB digital oscilloscope (1MΩ, ±25V, differential, 14-bit, 100MS/s, 30MHz+ bandwidth - with the Analog Discovery BNC Adapter Board)

		- Two-channel arbitrary function generator (±5V, 14-bit, 100MS/s, 12MHz+ bandwidth - with the Analog BNC Adapter Board)
		- Stereo audio amplifier to drive external headphones or speakers with replicated AWG signals
		- 16-channel digital logic analyzer (3.3V CMOS and
		- 1.8V or 5V tolerant, 100MS/s)
		    Digital Bus Analyzers (SPI, I²C, UART, Parallel)
		    16-channel pattern generator (3.3V CMOS, 100MS/s)
		    16-channel virtual digital I/O including buttons, switches, and LEDs – perfect for logic training applications
		    Two input/output digital trigger signals for linking multiple instruments (3.3V CMOS)
		- Single channel voltmeter (AC, DC, ±25V)
		- Network Analyzer – Bode, Nyquist, Nichols transfer diagrams of a circuit. Range: 1Hz to 10MHz
		- Spectrum Analyzer – power spectrum and spectral measurements (noise floor, SFDR, SNR, THD, etc.)
		- Data Logger - Exportable data and plot functionality
		- Impedance Analyzer - Capacitive and Inductive Elements
		- Protocol Analyzer - SPI, I2C, UART, and CAN
		- Two programmable power supplies (0…+5V , 0…-5V).
		- The maximum available output current and power
		- depend on the Analog Discovery 2 powering choice:
		    500mW total when powered through USB. (Each supply can provide between 0mW and 500mW so long as the total does not exceed 500mW.)
		    2.1W max for each supply when powered by an auxiliary supply.
		    700mA maximum current for each supply.

19	100 Mhz DSO	<u>100MHz; 2 channels; 1GSa/s; 2M memory depth; 7" display, LAN connectivity:</u> ***Technical Specification :-*** - **Acquire System** - Real-time Sampling Rate: 1 GSa/s - Memory Depth : 40 Kpts (Normal Mode) ; 2 Mpts (Long Memory Mode) - Acquire Mode : Normal, Peak Detect, Average - Average : Averages: 4, 16, 32, 64, 128, 256 - Waveform interpolation :Sinx,X - **Input** - Channel :2 - Coupling: DC, AC, GND - Max. Input voltage : 400 V , 1 MΩ - Channel Isolation> 100:1 - Probe attenuator: 1 X, 10 X, 50 X, 100 X, 500 X , 1000 X - **Horizontal System** - Timebase Scale 150 MHz 2.5 ns/div - 50 s/div - 100 MHz 2.5 ns/div - 50 s/div - Display Format Y-T, X-Y, Scan - Timebase Accuracy ±50 ppm - Scan Mode 100 ms/div ~ 50 s/div

		• **Trigger System** • Trigger Mode Auto, Normal, Single • Trigger Level Range Internal: ±6 divisions from center of screen EXT: ±1.2 V EXT/5: ±6 V • Hold off Range 100 ns ~ 1.5 s • Trigger Coupling AC, DC, LF Rej, HF Rej • Trigger Sensitivity 1 Divisions: DC-10 MHz 1.5 Divisions: 10 MHz - Max BW • Trigger Displacement Pre-trigger: Memory depth/ (2*sampling) Delay Trigger: 260 div • **Edge Trigger** • Slope Rising, Falling, Rising & Falling • SourceCH1/CH2/EXT/(EXT/5)/AC Line • **Slope Trigger** • Slope Rising, Falling • Limit Range <, >, = • Source CH1/CH2 • Time Range 20 ns ~ 10 s • **Pulse Trigger** • Source CH1/CH2 • Pulse Range 20 ns - 10 s • **Video Trigger** • Signal Standard NTSC, PAL/Secam • Source CH1/CH2 • **Math Function** • Operation + , - , * , / , FFT • FFT Rectangular, Blackman, Hanning, Hamming • FFT display Full Screen, Split • **Save/Recall** • **Type Setting, Waveform, Bmp, CSV 2 refs, 20 settings, 10 waveforms internal Save to USB disk** • **I/O Standard I/O USB Host, USB Device, LAN, Pass/FailPass/Fail 3.3 V TTL Output** • **Display (Screen)** Display Type 7 inch TFT-LCD • Display Resolution 800×480 • Display Color 24 bit • Contrast (Typical) 500:1 • Backlight 300 nit • Wave display range 8 x 16 div • Wave Display Mode Dots, Vectors • Persist Off, 1 s, 2 s, 5 s, Infinite • Menu Display 2 sec, 5 sec, 10 sec, 20 sec, Infinite • Screen-Saver Off, 1 min, 2 min, 5 min, 10 min, 15 min, 30 min, 1 hour, 2 hour, 5 hour • Color mode Normal , Invert
20	Function Genarator	**Function Generator:** • 5MHz 1 channel 125MSa/s wave length • 16Kpts function/arbitrary waveform output • Amplitude:4mV ~ 20Vpp (high impedance) • Modulation function(AM,DSBAM,FM,PM,ASK,FSK,PWM,Sweep,Burst),EasyPulse technology

21	Multi Meter	- Display LCD - AC Voltage Measurement - DC Voltage Measurement - AC Current Measurement - DC Current Measurement
22	DC Machine Open View	Open View Working Model for DC Shunt Motor DC Shunt Motor should be the Industrial/Educational model suitable for demonstrating to students the complete know of the Basics, Components, Starting methods, Wear & Tear & Maintenance of these motors packaged in small rating. Students can make connections of their own with the help of the terminations provided for study of Motor operation. Technical Specs : Power ratings available :0.5 Hp Voltage Input: 220V DC Excitation : 220V DC Armature : 220V DC RPM: 1500 RPM
23	Three phase Induction Motor Open View	Open View Working Model for 3 Phase Induction motor 3 Phase 0.5 hp 2 Pole Foot Mounted Induction Motor should be the Industrial/Educational model suitable for demonstrating to students the complete know of the Basics, Components, Starting methods, Wear & Tear & Maintenance of these motors packaged in small rating. Students can make connections of their own with the help of the terminations provided for study of Motor operation. SPECIFICATIONS : Type: squirrel cage induction motor Rated Voltage : 415 V Output Power (hp) : 0.5 HP Frequency : 50 Hz Output Power (kW) : 0.37 kW Pole : 2 Pole Phase : Three Phase Mounting : Foot Mounted Body Material : Cast iron Speed : 1440/1500 RPM Casing: Squirrel Cage

24	Single phase Induction Motor Open View	Open View Working Model for Single Phase Capacitive Start Induction motor. Motor design Should be compact and motor temperature withstand capacity increases upto 155 deg. Celsius. It Should protects motor from winding burning due to voltage fluctuations. Should be Dual coated H Class copper winding wires gives high motor efficiency. Specifications : Speed: 1500 rpm Phase:Single Warranty:1 Year Mounting: Foot Mounted Body Material: Rolled Sheet Voltage: 220-240 V Pole: 4 Power: 0.5 HP
25	Synchronous machine open view	Open View Working Model for 3 Phase Auto Synchronous motor 3 Phase 0.5 hp 2/4 Pole Foot Mounted Induction Motor should be the Industrial/Educational model suitable for demonstrating to students the complete know of the Basics, Components, Starting methods, Wear & Tear & Maintenance of these motors packaged in small rating. Students can make connections of their own with the help of the terminations provided for study of Motor operation. SPECIFICATIONS : Type: squirrel cage induction motor Rated Voltage : 220V - 415 V Output Power (hp) : 1 HP Frequency : 50 Hz Output Power (kW) : 0.37 kW Pole : 2/4 Pole Phase : Three Phase Mounting : Foot Mounted Body Material : Cast iron Speed : 1500 / 3000 RPM Casing: Squirrel Cage

FORMAT FOR QUOTATION SUBMISSION
(In letterhead of the supplier with seal)

Date: _____

To: _____
_____

Sl. No.	Description of goods \ (with full Specifications)	Qty.	Unit	Quoted Unit rate in Rs. (Including Ex-Factory price, excise duty, packing and forwarding, transportation, insurance, other local costs incidental to delivery and warranty/ guaranty commitments)	Total Price (A)	Sales tax and other taxes payable	
						In %	In figures (B)
Total Cost							

Gross Total Cost (A+B): Rs. _____ (Amount in figures)

We agree to supply the above goods in accordance with the technical specifications for a total contract price of Rs. _____ (Amount in figures) (Rupees _____ amount in words) within the period specified in the Invitation for Quotations.

We confirm that the normal commercial warranty/ guarantee of _____ months shall apply to the offered items and we also confirm to agree with terms and conditions as mentioned in the Invitation Letter.

We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery.

Signature of Supplier

Name: _____

Address: _____

Contact No. _____