Govt. of Bihar

MUZAFFARPUR INSTITUTE OF TECHNOLOGY, MUZAFFARPUR, BIHAR – 842003

(Under the Department of Science & Technology, Govt. of Bihar, Patna)

Notice. No.: 429/ TEQIP-III Dated: 31/12/2018

Rebid for Power Electronics Lab

M.I.T. Muzaffarpur is in the process of procuring equipment of Electrical Engineering Department under TEQIP-III Scheme. Detail specification are as follows.

Package Name: MITM/EE/Power Electronics Lab

Package Code: TEQIP-III/BH/mitm/101

Interested suppler/bidders are required to give the following information/documents on principal@mitmuzaffarpur.org latest by 05.01.2019 so that invitation for bidding process can be initiated through PMSS.

1. Supplier Name :
2. Address(With Pin Code):
3. Contact Person Name :
4. E-Mail-ID:
5. Mobile No.:
6. TIN/GST No.
7. PAN No.

Sl. No.	Item Name	Quantity
1	**1-Phase and 3-phase Inverter, Rectifier, Semi-converter and corresponding firing circuit including Digital Oscilloscope.** **30MHz Digital Readout Oscilloscope with Component Tester** 1. 30 MHz Bandwidth, Microcontroller based Time Base with 18 calibrated steps, 0.5 µs/div. -0. 2s/div. Time base speed 20ns approx. X10 Magnification, 20 ns max sweep speed, Stable Triggering upto 40 MHz, Sensitivity Int 0.5 div., Ext 0.8 V approximately, Built-in-Component and continuity Tester, display of V/div, T/Div, Auto focus. 2 No's.(Isolated Inputs) channel for Power Scop, X100 & X10 Attenuation, AC - DC & Gnd Coupling, Max. 1500 V (DC + Peak AC) For X100 and Max. 150 V (DC + Peak AC) For X10 input voltage. PC Interface for remote control settings of Volt/div. & Time/div. **Workbench have following module:** **Power Circuit Module** 1. **Diode Assembly:** Diode: 6A10, Voltage: 1000 V, Current: 6 A, 2. **SCR Assembly:** SCR: TYN 616, Voltage: 600 V, Current: 16 A, Snubber: RC Snubber Protected. 3. **IGBT Assembly:** IGBT : G4BC20S, Voltage: 600 V, Current: 10 A, Snubber: RC Snubber Protected	3

	Firing Circuit Module 1. **Ramp Comparator Firing Circuit:** Power Supply: 15 V - 0 (AC Supply), +12V & Gnd (DC Supply), Firing Angle Control: 0 -180 variable, 2. **PWM Circuit:** Power Supply: ±12 V & Gnd (DC Supply), PWM Pulse: PWM Pulse 1, 0 - 90 % duty cycle, PWM Pulse 2, 0 - 50 % duty cycle, 3. **Three Phase Firing Circuit:** Power Supply: R, Y, B & N output1, Three Phase Low Voltage Power supply +12V & Gnd (DC Supply), Firing Angle Control: 0 -150° variable, 4. **Cycloconverter Firing Circuit:** Power Supply: 18 V - 0 - 18 V (AC Supply), +12 V, +5 V & Gnd (DC Supply), Firing Angle Control 0 -180° variable, 5. **Ramp and Pedestal Firing Circuit:** Power Supply: 15 V - 0 (AC Supply), Firing Angle Control: 30 -180° variable, 6. **Cosine Firing Circuit:** Power Supply: 15V - 0 (AC Supply), +12V,±5V & Gnd (DC Supply). Firing Angle Control: 0 -180° variable, 7. **Microcontroller Based Firing Circuit:** Power Supply:18V - 0 - 18V (AC Supply), +12V , +5V & Gnd (DC Supply), Firing Angle Control: 0 -180° variable,	
2	**Power Electronics trainer kit for V-I characteristics of different semiconductor devices.** **Technical Specification:** DC Power Supply : +5 V, -5 V 500 mA, +12V, -12 V 500 mA +15 V, 250 mA +35V, -35V, 250 mA AC Power Supply : 18V-0V-18V 0V-15V On board Firing Circuits Frequency range : 30Hz to 900Hz variable Amplitude : 12V PWM control of G1, G2, G3 and G4 Duty cycle control of "Gate" Signal is 0 to 100% SCR Assembly : 4 SCRs 2P4M, 400V/2A Power Devices : IGBT, MOSFET, UJT, DIAC, TRIAC, PUT2N6027 Pulse transformer on board : 2 nos. of 1:1 and one is 1:1:1 Circuit Components on board: Electrolytic Capacitor 1uF, 63V Metalized Capacitor 0.1uF, 63V Metalized Capacitor 0.33uF, 63V Diode 1N4007, Inductor 68mH, Inductor 68mH, Inductor 10mH Load selector : 6 load resistances- 47E/7W, 120E/5W, 270E/5W, 2K2/2W, 1K/1W, 1K/10W Power Supply (Mains) : 220V/110V, 50Hz	3
3	**SCR Triggering Circuit (R and RC triggering Circuit):** On board AC source : 0 V - 18 V On board firing circuits: R Triggering Circuit, RC Half Wave Triggering Circuit and RC Full Wave Triggering Circuit Firing angle variation : Gradually variation using firing control SCR : 1 SCRs 2P4M, 400 V/2A Power Supply (Mains) : 110V - 260V AC, 50Hz. Included Accessories: Patch cords and Mains cord	2
4	**1-Phase Cyclo-Converter** On board firing circuit: Ramp comparator firing scheme Firing angle variation: gradual variation from 0 to 180 degrees. SCR assembly: 4 SCR, 400V/2A Power Supply: 220V/110V, 50 Hz Resistive Load- 5W Included Accessories: Patch cords and Mains cord	2
5	**Step Up Chopper** On board firing circuit : Triangular wave comparator firing scheme Frequency variation : 27 Hz to 5 KHz (approx.) PWM variation : 0 - 50% SCR assembly : SCR TYN 616, 600 V, 16A Mains Supply : 220V/110V; 50 Hz / 60Hz Included Accessories : Patch cords and Main cord	2

6	**Step Down Chopper** On board firing circuit : Triangular wave comparator scheme Frequency variation : 27 Hz to 5 KHz (approx.) PWM variation : 0 - 90% DC motor : 24 V / 0.5 A, 100 SCR assembly : SCR 2P4M, 400V/2A Mains Supply : 220/110V, 50 Hz / 60Hz Included Accessories : Patch cords and Mains cord	2
7	DMM, **Specification:** • 3 ¾ Digit • 4000 Counts • Large LCD Display with Auto/Manual Range • Data Hold, Max. / Min. Value Hold , Sampling rate is 3 times/second • Capacitance, Frequency / Duty Cycle, • Temperature and Transistor Test • DC Voltage: 0.1mV ~ 1000V • DC Current : 0.1uA ~ 20A • AC Voltage: 0.1mV ~ 750V • AC Current: 0.1uA ~ 20A • Resistance Range : .1 ohm to 40Mohm • Capacitance : 10pF to 200uF Frequency : 0.1Hz to 30MHz	1
8	DSO (50MHz 4 analog) **Digital Oscilloscope :-** 50MHz 4 analog channel Digital Storage oscilloscope should support 1GSa/s sampling for analog channel, Memory Depth should be minimum 24 Mpts, Up to 30,000 wfms/s wave form capture rate, DC, AC or GND input coupling, Rise time 3.5	1
9	Three Phase four Wire Power Analyser Handheld • The instrument should be useful to measure three phase power, harmonics, voltage fluctuations, Swell/Dip/Interrupt/Transient overvoltage, In-rush current, Unbalance rate and IEC flicker simultaneously and power supply quality using Clamp on Probes. • The instrument should accept directly measurement input maximum up to 1000V and current from 200 mA to 3000A with user selectable different types of clamp on probes. • Accuracy: +/- 0.2 of reading +/- 0.2% of range • Input ranges: Voltage: 600/1000V, Current: 200 mA to 3000A as per Clamp probe selected by user. • A/D conversion: Simultaneous voltage/current input inversion and PPL Synchronism. • Input type: Voltage: Resistive potential division, Current: Clamp detection • Measuring Modes: Instantaneous Value (Waveform), Electric Energy, Demand, Harmonics, Voltage fluctuation, (Swell/Dip/Interrupt/Transient overvoltage, Inrush current, Unbalance rate. IEC flicker • Frequency range: 40 Hz to 70 Hz • Wiring combinations: 1P2W (max. 4 systems), 1P3W (max. 2 systems), 3P3W (max. 2 systems), 3P3W3current, 3P4W • Connection check function to check voltage input, current input, voltage phase sequence, clamp direction • Facility to check measurement range settings, CT & VT ratio setting, current clamp selections and data storage.	1

	• Electric energy measurement mode: Measuring element: Active power, Reactive power, Lag reactive power and Lead reactive power with accuracy of +/- 1 digit for active power and reactive power. • Record length: In built memory to record data up to 13 days with a sampling interval of 1 second. • Harmonic measurement mode: Harmonic analysis from 1st to 50th order with facility to display each item of Harmonic order in numerical values, graphs and vectors format. • Waveform measurement function: Voltage /Current waveform at in phase which should be zoomed up to 10 times. • Voltage fluctuation measurement function: Monitoring voltage fluctuations like dip, swell, transient, inrush and instantaneous power failure with facility to save Voltage RMS value, date and time when it occurs and at which channel it occur. • SD card memory of up to 2 GB should be available with instrument. • File copy function from internal memory to SD card in CSV, Binary, BMP and text format. • Inbuilt USB ver2.0 communication interface. • Software for controlling the instrument, for transferring data from internal memory & SD Card to PC and conversion of data into Excel or Word format • Accessories – Set of Clamp on Probes – 2 Amps,50 Amps, 100 Amps, 200 Amps, 500 Amps, Flexible type 1000Amps, Flexible type 3000 Amps, Set of Voltage probes, AC power adaptor, Rechargeable Ni MH battery pack, Carrying case, SD card for data storage.	
10	DSO (70 MHz) 70 MHz Digital storage oscilloscope Model DS 1074Z Bandwidth 70MHz, with 4 Analog channels 1G Sa/s Real-time Sample Rate on single channel and 500MSa/s(Dual-channel) Vertical Scale 1 mV/div to 10 V/div Time Base Scale 5 ns/div to 50 s/div Memory Depth : 20Mpts Innovative "Ultra Vision" technology and Multi- Levels intensity grading waveform display Waveform Capture Rate : 30,000wfms/s Low noise floor, Dynamic Range: 1mV/div to 10V/div Channel to Channel Isolation : DC to maximum bandwidth: >40 dB Complete Connectivity: USB Host, USB Device, LAN, Aux Output (TrigOut/ PassFail) USB Host & Device Compact size, light weight, easy to use Display : 7 Inch TFT WVGA (800x480), multiple intensity levels waveform PVP2150 150 MHz Passive High Z Probe: 4 sets;	4

Note: Detailed specification of all items will be attached in the invitation letter.

31.12.18

Principal
MIT Muzaffarpur

31/12/18