



MUZAFFARPUR INSTITUTE OF TECHNOLOGY, MUZAFFARPUR, BIHAR – 842003

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

Notice. No.: 62/TEQIP-III

Dated: 25 /09/2018

Rebid for EM 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/EM-LAB

Package Code: TEQIP-III/BH/mitm/87

Interested supplier/bidders are required to give the following information/documents on principal@mitmuzaffarpur.org latest by 30.09.2018 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.

Sr. No	Items Specifications	Qty
1	3 Phase HV Thyristor Control Trainer 1 Input 3 phase DOL Starter panel DC voltmeter (0-600V), DC Ammeter (0-5A) Load 230V/15/40/60/100W X3 Inductive load=0.75W/3H/300mAX3Nos. 3 Ph. Bidirectional power cum Energy meter panel 6 SCR Firing/Synchronizing Panel Cosine firing scheme, Cyclo converter frequency generator 25Hz/12.5Hz 6 SCR/Diode Power Module Consist of 6 SCR with PIV rating 1200V/25A, 6 Diode with PIV rating of 1200V/16Amp, 3 No. of PT's arranged in circuit 230V: 12-0-12 @ 50mA 3 ph. dimmer (Auto Transformer) of 500VA may be ordered from safety point of view, 3 ph. induction motor (F.H.P) + 440 V DC MOTOR	1
2	STATIC KRAMER DRIVE TRAINER TENDER SPECIFICATIONS Input 3 phase DOL Starter panel FWD-OFF-REV switch panel DC voltmeter and DC ammeter panel	1

	<p>Variable AC / DC Supply Panel</p> <p>3 Ph. Bidirectional power cum Energy meter panel</p> <p>3 phase SCR Firing/Synchronizing Panel</p> <ul style="list-style-type: none"> •Cyclo converter frequency generator 25 Hz / 125 Hz <p>6 SCR/Diode Power Module</p> <p>Resistor Load</p> <p>DC Resistors= 750E/600E/300E/212E/162E/ 125E/ 112E/100E/400W /8 taps + OFF + separate 60E tap for DC series Gen.</p> <p>3 Ph. AC Slip ring Machine :</p> <ul style="list-style-type: none"> • Voltage : 415VAC, 50Hz • Capacity/RPM /Terminals : 300W/4 Pole m/c / 1500RPM 10 terminals <p>DC Shunt Machine :</p> <ul style="list-style-type: none"> • Voltage : Varm= 180V, Vfield = 180V • Capacity/RPM /Terminals : 300W/2 Pole m/c / 1500RPM 6 terminals 	
3	<p>Thyristor / IGBT controlled AC motor drive with VVVF control 3 phase 0.5 HP</p> <ul style="list-style-type: none"> ▪ 1ph. Motor, Alternator & Sync. Motor Panel <ul style="list-style-type: none"> □ 1ph. MCBs of 4A/1.6A – 2nos, bulb load. ▪ Instrumentation Power supply cum Multichannel DPM panel <ul style="list-style-type: none"> (a)+/-12 V ,500 mA (b) +5V ,300mA (c) Unregulated 17V dc/750 mA (d) line synchronizing signal. (e) 13V / 3 Amp. ▪ SCR Actuator (variable DC) cum sensor signal conditioning panel ▪ Integrated AC (1 phase) measurement panel ▪ AC voltmeter panel : 300V. <ul style="list-style-type: none"> □ 1 pole 4 way switch to select line voltage for three phase ▪ Dual range AC ammeter panel: 2A/6A selectable . <ul style="list-style-type: none"> □ 1 pole 7 way switch to select phase current for three phase ▪ IGBT Controlled AC Drive panel 230VAC. 50Hz ,3 phase 230 VAC 0.1 Hz to 100 (400)Hz ,Sine Wave PWM, 1/2 HP, single width for ½ HP 3 phase squirrel cage induction motor, ½ HP, 4 pole, 1500RPM, 6 terminal (delta 220Vac/star 440Vac) motor with digital speed measurement assembly 	1
4	<p>DC Motor Thyristorised speed control trainer with 160W DC Shunt motor chasis mounted</p> <p>1] Instrumentation Power supply cum Multi- channel DPM panel [10 Shrouded Banana]</p> <ul style="list-style-type: none"> (a) +/-12 V, 500 mA (b) +5V, 300mA (c) Unregulated 17V dc/750 mA (d) line synchronizing signal. (e) Multi channel DPM for digital display of speed, etc. <p>2] SCR Actuator (variable DC) cum sensor signal conditioning panel x 2 Nos. [4 Shrouded Banana]</p> <p>3] DC voltmeter and DC ammeter panel [14 Shrouded Banana]</p> <p>DC Shunt Motor Specifications: 180V/160W/1500RPM Chasis mounted table top with spring balance loading arrangement [10kg] and Electronic Tacho 1V/1000RPM.</p>	1
5	<p>SINGLE PHASE DUAL CONVERTER TRAINER</p> <p>1] Instrumentation Power supply cum Multi- channel DPM panel</p> <ul style="list-style-type: none"> a) +/-12 V, 500 mA (b) +5V, 300mA, c) Unregulated 17V dc/750 mA (d) line synchronizing signal. <p>2] SCR Actuator (variable DC) cum sensor signal conditioning panel x 2 Nos. [4 Shrouded Banana]</p>	1

	<p>a) Full bridge SCR based 0V-195V / 3 Amp cosine firing with linear characteristics.</p> <p>3] DC voltmeter and DC ammeter panel x 1 No. [14 Shrouded Banana]</p> <p>a) DC voltmeter (300-0-300VDC)</p> <p>b) DC Ammeter (5-0-5A) with polarity protection diode</p> <p>4] 1 phase Motor, Alternator & Sync. Motor Panel</p> <p>a) 1 phase MCBs of 4A/1.6A 2nos.</p> <p>5] Single Phase Dual Converter Controller Panel</p> <p>PMDC Shunt Motor Specifications: DC Motor 200VDC/ 200W with 1500RPM or 60W Lamp Load on Panel. Isolation Transformer 230:230@3A, 1 Phase.</p>	
6	<p>AC MOTOR SPEED CONTROL TRAINER</p> <p>Technical Specifications</p> <p>1] AC voltmeter and AC ammeter panel [14 Shrouded Banana]</p> <p>a) AC voltmeter (0-300V)</p> <p>b) AC Ammeter (0-1A).</p> <p>2] Instrumentation Power supply cum Multi- channel DPM panel</p> <p>(a) +/-12 V, 500 mA (b) +5V, 300mA</p> <p>(c) Unregulated 17V dc/750 mA</p> <p>(d) line synchronizing signal.</p> <p>(e) Multi channel DPM for digital display of speed.</p> <p>3] SCR Actuator (variable AC) cum sensor signal conditioning panel</p> <p>1. Full bridge SCR based 0V-230VAC / 12 Amp cosine firing with linear characteristics. This supply is required for AC motor armature.</p> <p>2. Supports signal conditioning circuit for speed to give output 0-2.5Vdc (FS). Electronic tachometer 0 -1V/1000 rpm</p> <p>Motor Specifications Table Top Machines / Accessories : Fractional HP AC/DC Motor 230VAC, 1/12 HP.</p>	1
7	<p>Motor Fault Simulator</p> <p>Input 3 phase DOL Starter panel</p> <ul style="list-style-type: none"> • 4 pole MCB of 415 V/1A . • DOL 9A Contactor with 230V / 50 Hz / 11VA COIL. <p>AC voltmeter panel</p> <p>AC Ammeter panel</p> <ul style="list-style-type: none"> • AC Ammeter of 2A/6A for three phase • The panel also facilitate single phase current monitoring along with thermal output of rating 2A, 4A, 6A. <p>Integrated AC (3/1 phase)</p> <ul style="list-style-type: none"> • Digital meter (96X96mm) for measurement of 3\emptyset & 1\emptyset parameters. • Power factor, frequency, watts, VAR, VA and energy in Kwhr. <p>FWD/REV, Star-Delta starter panel</p> <ul style="list-style-type: none"> • FWD/REV, 3 pole 3 way switch with centre OFF, 6A/440V. <p>3 Phase sequence indicator Panel</p> <p>Single Phasing Panel</p> <p>Grounding & Protection Panel</p> <p>3 Phase Induction Motor Fault Simulator Panel</p> <ul style="list-style-type: none"> • This panel also supports 9 numbers of DPST fault switches <p>Motor Specifications: 3 phase squirrel cage induction motor, ½ HP, 4 pole, 1500RPM, 6 terminal (delta 415Vac/star 440Vac) motor.</p>	1
8	<p>Four Quadrant Chopper Trainer</p> <p>Instrumentation Power supply cum Multichannel DPM panel</p>	1

	<ul style="list-style-type: none"> •$\pm 12V/500\text{ mA}$, $+5V/300\text{mA}$, Unregulated $17V\text{ dc}/750\text{ mA}$, line synchronizing signal, $13V/3\text{ Amp}$. •Multi channel DPM for digital display of parameters. •20 pin FRC power bus to supply power to neighboring panel. <p>4 IGBT/MOSFET power & sensing panel</p> <p>DC Voltmeter & Ammeter panel</p> <ul style="list-style-type: none"> •Voltmeter ($300V-0-300V$) & Ammeter ($2A-0-2A$) <p>DC Voltmeter & Ammeter panel</p> <ul style="list-style-type: none"> •Voltmeter ($30V-0-30V$) & Ammeter ($2A-0-2A$) <p>PMDC motor with loading arrangement</p> <p>PMDC Motor Specifications:</p> <ul style="list-style-type: none"> •$200V/200W/2000\text{RPM}$, $10V/1000\text{RPM}$. <p>Lamp load</p> <p>$230V/15/40/60/100W \times 3$ bulbs $20E/200W$</p>	
9	<p>ELECTRICAL VOLTAGE / CURRENT / ENERGY / WATT MEASUREMENT & CALIBRATION TRAINER</p> <p>Input 3 phase DOL Starter panel</p> <p>Integrated AC (1 phase) measurement panel =02 Nos.</p> <p>1 Phase Motor, Alternator & Sync. Motor Panel</p> <p>Integrated AC (3/1 phase) measurement panel</p> <ul style="list-style-type: none"> •Digital meter for measurement of 3ph. & 1-ph. parameters. •2 Nos. of voltage transformers, 1 Standard and 1 Under test. •Primary $230V$ & Secondary $24VAC$. • Consists of 2 nos. of CTs ($5A:1A$ secondary) • 3 capacitors ($10\mu F$, $1\mu F$, $0.1\mu F$) & $0.1E$, $0.01E$ $5W$ resistors, $500E$ pot. •1 phase MCB of $4A/1.6A$ <p>$230V/15/40/60/100W \times 3$ bulbs with individual ON/OFF using $6A$ toggle switch.</p> <p>(1) AC Resistors: $10K/5K/3.5K/2.5K/2K/1.5K/OFF$ $200W \times 3$ phases/ 6 taps. (2) DC Resistors : $750E/600E/300E/212E/162E/125E/112E/100E/400W/8$ taps + OFF + separate $60E$ tap for DC series Gen. (1) Inductive load: $0.15H/0.3H/0.45H/0.6H/0.75H/1.5H/3H/400\text{mA} \times 3$Nos. (2) Capacitive load : $1.25\mu/2.5\mu/5\mu/415VX$ 3Nos</p>	1
10	<p>Clamp on Power Logger with Harmonic Analysis with 2 nos AC/DC Current sensor 500A</p> <p>Single-phase 2-wire, single-phase 3-wire, three-phase 3-wire, three-phase 4-wire, $50/60\text{ Hz}$;</p>	01
11	<p>Digital Earth Tesetr;- (Dustproof & waterproof)</p> <p>$20\ \Omega/20\ \Omega/2000\ \Omega$, Accuracy $\pm 1.5\%$, earth voltage-0to30 Vrms,</p>	01
12	<p>Electrical Machines Trainer set</p> <p>Input 3 phase DOL Starter panel [10 Shrouded Banana]</p> <p>Multifunction 3 Phase Meter:-2 Nos.</p> <p>$3\text{Phase } 3/4\text{ wire}$, $400V/230V\text{ AC}$, $230V\text{ AC}$, $45-65\text{Hz}$, $5W$, LCD Display , $5A$, 0.1 VA/Ph., Modbus RTU RS 485 , SBSS Terminal</p> <p>FWD/REV ,Star-Delta starter panel [12 Shrouded Banana] 1 No.</p> <ul style="list-style-type: none"> • FWD/REV • Star/Delta <p>3 Phase wound Rotor & Sync. Motor panel [8 Shrouded Banana] 1 No.</p> <p>1 Phase Motor, Alternator & Sync. Motor Panel [14 Shrouded Banana] - 1 No.</p> <p>DC voltmeter and DC ammeter panel [14 Shrouded Banana] 1 No.</p>	01

	<p>SCR Actuator (variable DC) cum sensor signal conditioning panel [4 Shrouded Banana]-3 Nos. Instrumentation Power supply cum Multichannel DPM panel [10 Shrouded Banana] 1 No. Resistor Load Panel 1 No. (1)AC Resistors LC Load panel 2 Nos (A) Inductive load (B) Capacitive load. a. DC INTEGRATED M/C 1 No. Voltage : $V_{arm} = 180V$, $V_{field} = 180V$, Hand held tacho meter – 1 No.</p>	
13	<p>Computer Interface panel connects to pc usb port using usb IO module through 25 pin D (M) connector on CIP & Type A to mini B cable consisting of 4 ADC channels i/p: 0 to 2.5V with 1 no. AI input simulation pot, 1 DAC channel O/P 2.5 V, V to I function block I/P 0 to 2.5V & O/P 0-20 or 4-20 mA (100E load) switch settable, I to V function block: I/P 4 to 20 mA & O/P 0-2.5V, DC V/I measurement panel using panel. facility of modbus to communicate AC multi parameter measurement meter (MMM)/Power Network analyzer. supplied in electrical machine trianer quoted above. Software on CD: Virtual Workbench package is a USB / serial modbus based software working on windows dot Net platform coupled with USB IO module useful as general purpose utility which supports different control strategies, Modbus interface, Data logging, Event trigger, inbuilt Function generator</p>	02
14	<p>AC Integrated m/c-3 Phase Voltage : 415VAC, 50Hz Capacity/RP M/Terminals : 300W / 4 Pole m/c / 1500RPM 10 terminals Rotor Construction : must be Star connected, four terminals including star point brought out on 4 slip rings mounted on shaft. Stator Construction : Six terminals to be brought out to start the machine using STAR - DELTA Starter. Chasis mounted, 19mm dia,</p>	01
15	<p>WIND ENERGY TRAINER A) Wind turbine & Wind blower <input type="checkbox"/> Wind turbine - 1 No. <input type="checkbox"/> O/P wattage- 100W <input type="checkbox"/> O/P voltage- 75V <input type="checkbox"/> O/P current- 2A <input type="checkbox"/> Wind blower - 1 No. <input type="checkbox"/> Digital anemometer - 1 No. B) Main rack/ Control unit <input type="checkbox"/> Single phase supply panel - 1 No. <input type="checkbox"/> IGBT controlled AC drive panel - 1 No. <input type="checkbox"/> DC Application panel - 1 no <input type="checkbox"/> 12V LED lamp/ LED strip and fan. <input type="checkbox"/> Charge controller Panel - 1 No. <input type="checkbox"/> Stand- alone Inverter panel - 1 No. <input type="checkbox"/> DC voltmeter & DC ammeter panel - 2 No. <input type="checkbox"/> AC voltmeter & AC ammeter panel 1 no <input type="checkbox"/> Lamp load panel - 1 No. <input type="checkbox"/> Rheostat for generator loading - 1 no</p>	01

16	Analog Ammeter (0-5A)	05
	Analog Ammeter (0-10A)	05
	Power factor meter (250/500V,5A)	02
	Rheostat (4.1A,4.5W) and (6.8A,4.5W)	06
	Analog multimeter (0-500V, 0-10A AC/DC)	06
	Analog Voltmeter (0-600V, AC/DC)	10
	Digital Techometer (5 digit auto detection)	05
	3-phase auto transformer	01

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

✓ Faiz *th*
25/09/2018

myha
Principal 25/09/18
MIT Muzaffarpur