

TENDER SCHEDULE NO:- V/1

Bill of Quantities/ Schedule of Requirements for TRADE : "ELECTRICIAN "

LIST OF SHORTFALL OF MACHINERY

DELEVERY POINTS:- ITC Jalpaiguri, P.O. & Dist. Jalpaiguri

SI.No.	Description of Item with Specification	QtyRequired	UNIT	RATE (Rs)	TOTAL AMOUNT (Rs)	
					In figures	In words
1	Starters for 3 phase , 400v , 50 cycles , 2 to HP AC motor a) Auto Transformer type starter b) Star delta starter with manual , semi auto and automatic c) Direct on line starter	1No.	each			
2	Electrical Machine Trainer (Basic Unit) with flat Demo panel table top rack with set of panels. Essential accessories and following 300W chasis mounted machines (7Nos.) DC machine with swinging stator has torque speed sensor mounted to measure shaft power. a] Integrated DC m/c mounted as Dynamometer & with speed/torque sensor. b] Integrated 3 phase AC 300W m/c chasis mounted c] Integrated 1 phase AC 300W motor chasis mounted d] Integrated 1 phase AC generator & Sync.300W M e] Universal Motor AC/DC, 300W, Chasis mounted f] Repulsion motor chasis mounted g] Squirrel cage 3 phase AC 300W, 2 speed chasis mounted motor.	1Set.	set			
3	MG Set Consisting of Squirrel Case Induction Motor 7HP 400V, 50 cycles with directly coupled DC shunt generator 5 KW 250V with built in panel board laboratory type MG Set should be mounted on a base plate. The Panel Board Consist of : 3-Phase Cir Circuit Breakers Star Delta Starter (Contact type & points) Shuck Field Regulator DC Circuit Breaker Suitable voltmeter on AC & DC side Suitable line ammeters on AC & DC side Field Circuit ammeter	1Set	set			

	<p>Indicating lamps on both the sides (AC & DC)</p> <p>Accessories: • Tachometer for Speed Measurement. • The circuit diagram will be supplied with the Motor. • Instruction Manual</p>					
4	<p>Motor Generator (DC to AC) Set Consisting of :</p> <p>Motor shunt 5 HP , 440 volts with starting compensator and switch directly coupled to generator AC , 3.5 KVA , 400/230 volts , 3- phase , 4 wire , 0.8 PF 50cycles with exciter and 1 switch board mounted with regulator , circuit breaker , ammeter , voltmeter</p>	1Set	set			
5	<p>Motor Series DC , 220 volt , 0.5 to 2 HP , coupled with mechanical load.</p>	1No.	each			
6	<p>DC Shunt Motor 3HP 250V with 3 point starter and speed regulator Laboratory type Motor should be mounted on a base plate. The Panel Board Consist of :</p> <ul style="list-style-type: none"> • 3 Point DC Starter. • Speed Regulator. • Suitable Analog Voltmeter. • Suitable Analog Ammeter. <p>Accessories: • Tachometer for Speed Measurement. • The circuit diagram will be supplied with the Motor. • Instruction Manual</p>	2Nos.	each			
7	<p>AC Squirrel Case Induction Motor 3HP , 400V with DOL Starter Laboratory type Motor should be mounted on a base plate. The Panel Board Consist of :</p> <ul style="list-style-type: none"> • DOL Starter • Suitable Analog Voltmeter. • Suitable Analog Ammeter. <p>Accessories : • Tachometer for Speed Measurement. • The circuit diagram will be supplied with the Motor. • Instruction Manual</p>	1No.	each			
8	<p>Motor AC Phase Wound Slip Ring type 5HP 400 volts , 3phase , 50cycles with starter and switch.</p>	1No.	each			
9	<p>DC Compound 3HP 250V with 4 Point Starter and Laboratory type Motor should be mounted on a base plate. The Panel Board Consist of :</p> <ul style="list-style-type: none"> • 4 Point DC Starter. • Field Regulator • Suitable Analog Voltmeter. • Suitable Analog Ammeter. 	2Nos.	each			

	Accessories: • Tachometer for Speed Measurement. • The circuit diagram will be supplied with the Motor. • Instruction Manual					
10	Motor AC Single Phase, 230Volt, 1HP Repulsion type complete with starter and switch.	1No.	each			
11	Motor AC Single Phase 230volt 50 cycles ¼ HP with starter / switch	1No.	each			
12	Motor AC Single Phase 230 volt 50cycles 1 HP capacitor type with starter switch 1 HP	1No.	each			
13	Universal Motor 750W AC/DC 250V Laboratory type Motor should be mounted on a base plate. The Panel Board Consist of : • Suitable Analog Voltmeter. • Suitable Analog Ammeter. Accessories: • Tachometer for Speed Measurement. • The circuit diagram will be supplied with the Motor. • Instruction Manual DC Shunt Motor 3HP 250V with 3 point starter and speed regulator Laboratory type Motor should be mounted on a base plate. The Panel Board Consist of : • 3 Point DC Starter. • Speed Regulator. • Suitable Analog Voltmeter. • Suitable Analog Ammeter. Accessories: • Tachometer for Speed Measurement. • The circuit diagram will be supplied with the Motor. • Instruction Manual	1No.	each			
14	DC Compound 3HP 250V with 4 Point Starter and Laboratory type Motor should be mounted on a base plate. The Panel Board Consist of : • 4 Point DC Starter. • Field Regulator • Suitable Analog Voltmeter. • Suitable Analog Ammeter. Accessories: • Tachometer for Speed Measurement. • The circuit diagram will be supplied with the Motor. • Instruction Manual	1No.	each			
15	Oscilloscope Dual Trace /Double beam 20 MHz Vertical Deflection System	2Nos.	each			

Deflection Factor Range: 5mV per Division to 10V per Division in a 1 - 2 - 5 sequence of 11 steps
Accuracy: (+) 3% Approx.
Variable Control Range: Continuously variable and uncalibrated between step setting. Increases deflection factor by at least 2.5 to 1
Bandwidth (-3 db): 20 MHz or more
Rise Time: 17.5 nS or less
AC Coupled Cut Off Frequency: 10 Hz or less
Common Mode Rejection Ratio: At least 10 to 1 at 20 MHz
Input Characteristics Direct Input Via 10 : 1 probe
Resistance 1 M.Ohms + 2% 10 M.Ohms + 5%
Capacitance 30 pF + 5 pF 20 pF + 5 pF
Max. Safe Input Voltage (DC or AC Coupled) 400 V (DC + AC) Peak
Channel Isolation: Greater than 100 : 1 at 10 MHz
Visual Delay Time: 40 ns or more
Invert Mode: In Channel 2 only
Trigger System
Trigger Sensitivity (For Auto & Norm. Mode)
Internal Signal: 0.1 Div
External Signal: 0.2 V p-p
TV Field Mode (Composite Sync.)
Internal: 2 Div
External: 0.3 Div
Horizontal Deflection System
Sweep Rate: 0.2s per Div to 0.1 Micro Sec per Div in a 1 - 2 - 5 sequence of 20 steps. Magnification extends Max. usable sweep speed to 20ns per Div.
Accuracy: (+) 3 % Approx.
Variable Control: > or = 2.5 : 1
Sweep Linearity: (+) 10 %
X-Y Operation
Deflector Factor: 0.2V/div ~0.5V/div
Frequency Bandwidth (-3dB): DC:0~1MHz; AC: 10Hz ~ 1MHz
Calibration Signal
Deflection Factor: 5mV per Division to 10V per Division in a 1 - 2 - 5 sequence of 11 steps
Accuracy: (+) 3% Approx.

	<p>Bandwidth: DC to at least 1 MHz Phase Difference Between X and Y Axis Amplifiers: < 'OR' = 3° from DC to 50 kHz Z Modulation Sensitivity: 5V cause noticeable modulation positive going input decreases intensity Usable Frequency Range: DC - 1 MHz Max. Safe Input Voltage: 50 V (DC + AC)pk Input Resistance: 10 K.Ohms Trace Rotation: Possible Probe Adjustment Signal Output Voltage into 1M.Ohms load: 0.5V + 2% Repetition Rate: 1 KHz + 2% Wave Form: Square Wave Cathode Ray Tube Display Area: 8 Div x 10 Div (1 Div = 1 cm) Nominal Accelerating Voltage: 2 KV Power Requirement Line Voltage Range: 220V + 10% Line Frequency: 50 Hz + 2 Hz Max. Power Consumption: 40W Mechanical Characteristics Weight: 7.2kg Dimensions: 320mm (L) x 124mm (W) x 380mm (D)</p>					
16	<p>Oil Testing Kit Confirms to IS 6792, IEC 156 Tests insulating oils to IS, IEC, ASTM, etc. Test voltage to 0 – 60 kV. One piece construction with safety interlock Test voltage can be held at any level up to maximum kV meter continues to indicate 'bdv' even after breakdown Light weight, portable, rugged and reliable Specifications Input : 240 V ±10%, AC, 1Phase, 50/60Hz. Display : Analog models: 96mm square Accuracy : ±4% of full scale deflection/range Shut down sensitivity in HV circuit : 20mA approx.</p>	2Nos.	each			

	Rate of rise of voltage : Motorized sets only: 2kV/second approx. ($\pm 20\%$ max.) Dimension : 50x55x48					
17	<p>Stepper Motor Demonstrator</p> <p>Features :</p> <p>Single stepping and free running modes of operation with speed variation and direction reversal – internal TTL circuit. 360° motion servo – potentiometer position – pickup for motor dynamics operation through microprocessor kit – sample control programs provided.</p> <p>Stepper Motor Specification</p> <p>Torque : 2.8 kg – cm</p> <p>Step Angle : 1.8°</p> <p>Power : 12 , 1A / Phase</p> <p>220$\pm 10\%$, 50 Hz mains operation Complete in all respects , Except a measuring CRO High Performance 8085A CPU operating at 3 MHz 4K Powerful monitor firmware in 2732 . includes all standard commands , codes , functions and utility sub – routines 4K user RAM 6116</p> <p>Versatile keyboard / display controller using 8279</p> <p>Serial I/O lines , 22 parallel lines from 8155 and 24 from 8255 Built in audio cassette interface 6 digit seven segment LED display.</p>	2Nos.	each			
18	<p>DC Speed Control System</p> <p>Features and Specifications</p> <ul style="list-style-type: none"> • Speed control of a 12V, 4W permanent magnet d.c. motor • Speed range: 0 to 2000 rpm (typical) • Opto-interrupter based speed sensing • 4-digit speed display in rpm • Electronic tachogenerator for feedback • Separate unit for motor in a see-through cabinet • Smooth, non-contact eddy current brake • Built-in 3½ digit DVM for signal measurements • 220V$\pm 10\%$, 50Hz mains operation • Supporting literature and patch cords included <p>Essential accessory – 20MHz CRO</p>	2Nos.	each			

We agree to supply the above goods in accordance with the technical specification as per terms and conditions specified in Tender Notice.

We also confirm that the normal commercial Warrantee/Gurantee of 12 months shall apply to all the offered goods.

We also confirm that we have taken steps to ensure that no person acting for us or on our behalf will engage in corrupt, fraudulent, collusive, coercive or obstructive practice.

We agree to make necessary arrangements of Inspection and Testing of all the above items at places within Kolkata Metropolitan area before dispatch to the consignee.

Signature of Supplier