

**TENDER SCHEDULE NO:- AA/1**

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

## LIST OF SHORTFALL MACHINERY

DELEVERY POINTS:- Saraju Prasad ITC, AT &amp; PO :- Durgji, Jhalda, Dist. Purulia

Sl.No.	Description of Item with Specification	QtyRequired	UNIT	RATE (Rs)	TOTAL AMOUNT (Rs)	
					In figures	In words
1	<p>Tong Tester</p> <p>General Specifications</p> <p>Incorporates CMOS LSI Circuit for automatic transfer of measuring range.</p> <p>3-3/4 digits - 3999 counts, LCD Display</p> <p>AC/DC flow 40 mA / 100 mA AC/DC (Measurement of AC/DC mA, current with test leads)</p> <p>Maximum Clamp Dia: 52mm</p> <p>DATA HOLD facility</p> <p>Low Battery indication</p> <p>Auto Power Off</p> <p>Power Supply 3V battery (2 pcs 1.5V batteries)</p> <p>Weight approx: 360 gms</p> <p>Accessories: Leads, Manual, Battery, carrying case</p> <p>Audible continuity</p> <p>Frequency and capacitative measurement</p> <p>An ideal tool for electrical measurement made in accordance with IEC - 1010 -1 Safety Standards.</p> <p>DC Voltage</p> <p>Range Accuracy Resolution Overload Protection</p> <p>400mV +(0.8%+2d) 0.1mV 1000V</p> <p>4V +(0.8%+2d) 1mV 1000V</p> <p>40V +(0.8%+2d) 10mV 1000V</p> <p>400V +(0.8%+2d) 100mV 1000V</p> <p>1000V +(1%+3d) 1V 1000V</p> <p>AC Voltage</p> <p>Range Accuracy Resolution Frequency Range Overload Protection</p> <p>400mV +(1.2%+5d) 0.1mV 50~60 Hz 1000V</p>	1No.	each			

4V +(1.2%+5d) 1mV 50~60 Hz 1000V  
 40V +(1.2%+5d) 10mV 50~60 Hz 1000V  
 400V +(1.2%+5d) 100mV 50~60 Hz 1000V  
 600V +(1.5%+5d) 1V 50~60 Hz 1000V  
 AC Current (mA From Input Terminals)  
 Range Accuracy Resolution Frequency Range Overload Protection  
 4 A +(1.5%+5d) 1mA 50~60 Hz 100 A  
 40 A +(1.5%+5d) 10mA 50~60 Hz 100 A  
 400 A +(1.5%+5d) 100mA 50~60 Hz 1500 A  
 1000 A +(1.5%+5d) 1A 50~60 Hz 1500 A  
 Resistance  
 Range Accuracy Resolution Overload Protection  
 400Ω +(1%+3d) 0.1Ω 220 V  
 4kΩ +(1%+3d) 1Ω 220 V  
 40kΩ +(1%+3d) 10Ω 220 V  
 400kΩ +(1%+3d) 100Ω 220 V  
 4MΩ +(1%+3d) 1KΩ 220 V  
 400MΩ +(1.2%+5d) 10KΩ 220 V  
 Capacitance  
 Range Accuracy Resolution Overload Protection  
 40nF +(3%+5d) 0.01 nF 100 V  
 400nF +(3%+5d) 0.1 nF 100 V  
 4uF +(3%+5d) 1 nF 100 V  
 40uF +(3%+5d) 10 nF 100 V  
 100uF +(3%+5d) 100 nF 100 V  
 Frequency  
 Range Accuracy Resolution Overload Protection  
 40 Hz +(0.5%+3d) 0.01Hz 100 V  
 400 Hz +(0.5%+3d) 0.1Hz 100 V  
 4 KHz +(0.5%+3d) 1Hz 100 V  
 40 KHz +(0.5%+3d) 10 Hz 100 V  
 400 KHz +(0.5%+3d) 100 Hz 100 V  
 4 MHz +(0.5%+3d) 1KHz 100 V  
 20 MHz +(0.5%+3d) 10 KHz 100 V  
 Diode Test  
 Indicates the approximate value of forward direction voltage decrease of

	diode, measuring condition forward direction direct current flow approximately 0.5 mA, backward direction direct voltage approximately 1.5V. Continuity Test					
2	Starters for 3 phase , 400v , 50 cycles , 2 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			
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 Indicating lamps on both the sides (AC & DC) Accessories: • Tachometer for Speed Measurement. • The circuit diagram will be supplied with the Motor. • Instruction Manual	1Set	set			
4	Motor Generator ( DC to AC ) Set Consisting of : 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	1Set	set			
5	Motor Series DC , 220 volt , 0.5 to 2 HP , coupled with mechanical load.	1No.	each			
6	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.	2Nos.	each			

	<ul style="list-style-type: none"> <li>Suitable Analog Ammeter.</li> </ul> <p>Accessories: • Tachometer for Speed Measurement. • The circuit diagram will be supplied with the Motor. • Instruction Manual</p>					
7	Motor AC Phase Wound Slip Ring type 5HP 400 volts , 3phase , 50cycles with starter and switch.	1No.	each			
8	<p>DC Compound 3HP 250V with 4 Point Starter and Laboratory type Motor should be mounted on a base plate.</p> <p>The Panel Board Consist of :</p> <ul style="list-style-type: none"> <li>4 Point DC Starter.</li> <li>Field Regulator</li> <li>Suitable Analog Voltmeter.</li> <li>Suitable Analog Ammeter.</li> </ul> <p>Accessories: • Tachometer for Speed Measurement. • The circuit diagram will be supplied with the Motor. • Instruction Manual</p>	2Nos.	each			
9	Motor AC Single Phase, 230Volt, 1HP Repulsion type complete with starter and switch.	1No.	each			
10	Motor AC Single Phase 230volt 50 cycles ¼ HP with starter / switch	1No.	each			
11	Motor AC Single Phase 230 volt 50cycles 1 HP capacitor type with starter switch 1 HP	1No.	each			
12	<p>Universal Motor 750W AC/DC 250V Laboratory type Motor should be mounted on a base plate.</p> <p>The Panel Board Consist of :</p> <ul style="list-style-type: none"> <li>Suitable Analog Voltmeter.</li> <li>Suitable Analog Ammeter.</li> </ul> <p>Accessories: • Tachometer for Speed Measurement. • The circuit diagram will be supplied with the Motor. • Instruction Manual</p> <p>DC Shunt Motor 3HP 250V with 3 point starter and speed regulator Laboratory type Motor should be mounted on a base plate.</p> <p>The Panel Board Consist of :</p> <ul style="list-style-type: none"> <li>3 Point DC Starter.</li> <li>Speed Regulator.</li> <li>Suitable Analog Voltmeter.</li> <li>Suitable Analog Ammeter.</li> </ul> <p>Accessories: • Tachometer for Speed Measurement. • The circuit</p>	1No.	each			

	diagram will be supplied with the Motor. • Instruction Manual					
13	<p>DC Compound 3HP 250V with 4 Point Starter and Laboratory type Motor should be mounted on a base plate.</p> <p>The Panel Board Consist of :</p> <ul style="list-style-type: none"> <li>• 4 Point DC Starter.</li> <li>• Field Regulator</li> <li>• Suitable Analog Voltmeter.</li> <li>• Suitable Analog Ammeter.</li> </ul> <p>Accessories: • Tachometer for Speed Measurement. • The circuit diagram will be supplied with the Motor. • Instruction Manual</p>	1No.	each			
14	<p>Oscilloscope</p> <p>Dual Trace /Double beam 20 MHz</p> <p>Vertical Deflection System</p> <p>Deflection Factor Range: 5mV per Division to 10V per Division in a 1 - 2 - 5 sequence of 11 steps</p> <p>Accuracy: (+) 3% Approx.</p> <p>Variable Control Range: Continuously variable and uncalibrated between step setting. Increases deflection factor by at least 2.5 to 1</p> <p>Bandwidth (-3 db): 20 MHz or more</p> <p>Rise Time: 17.5 nS or less</p> <p>AC Coupled Cut Off Frequency: 10 Hz or less</p> <p>Common Mode Rejection Ratio: At least 10 to 1 at 20 MHz</p> <p>Input Characteristics Direct Input Via 10 : 1 probe</p> <p>Resistance 1 M.Ohms + 2% 10 M.Ohms + 5%</p> <p>Capacitance 30 pF + 5 pF 20 pF + 5 pF</p> <p>Max. Safe Input Voltage (DC or AC Coupled) 400 V ( DC + AC ) Peak</p> <p>Channel Isolation: Greater than 100 : 1 at 10 MHz</p> <p>Visual Delay Time: 40 ns or more</p> <p>Invert Mode: In Channel 2 only</p> <p>Trigger System</p> <p>Trigger Sensitivity (For Auto &amp; Norm. Mode)</p> <p>Internal Signal: 0.1 Div</p> <p>External Signal: 0.2 V p-p</p> <p>TV Field Mode (Composite Sync.)</p> <p>Internal: 2 Div</p>	2Nos.	each			

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.  
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

	<p>Mechanical Characteristics  Weight: 7.2kg  Dimensions: 320mm (L) x 124mm (W) x 380mm (D)</p>				
15	<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 <math>\pm</math>10%, AC, 1Phase, 50/60Hz.  Display : Analog models: 96mm square  Accuracy : <math>\pm</math>4% of full scale deflection/range  Shut down sensitivity in HV circuit : 20mA approx.  Rate of rise of voltage : Motorized sets only: 2kV/second  approx. (<math>\pm</math>20% max.)  Dimension : 50x55x48</p>	2Nos.	each		
16	<p>Stepper Motor Demonstrator  Features :  Single stepping and free running modes of operation with speed variation  and direction reversal – internal TTL circuit. 360°C motion servo –  potentiometer position –  pickup for motor dynamics operation through microprocessor kit –  sample control programs provided.  Stepper Motor Specification  Torque : 2.8 kg – cm  Step Angle : 1.8°  Power : 12 , 1A / Phase  220<math>\pm</math>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>	2Nos.	each		

Versatile keyboard / display controller using 8279 Serial I/O lines , 22 parallel lines from 8155 and 24 from 8255 Built in audio cassette interface 6 digit seven segment LED display.					
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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