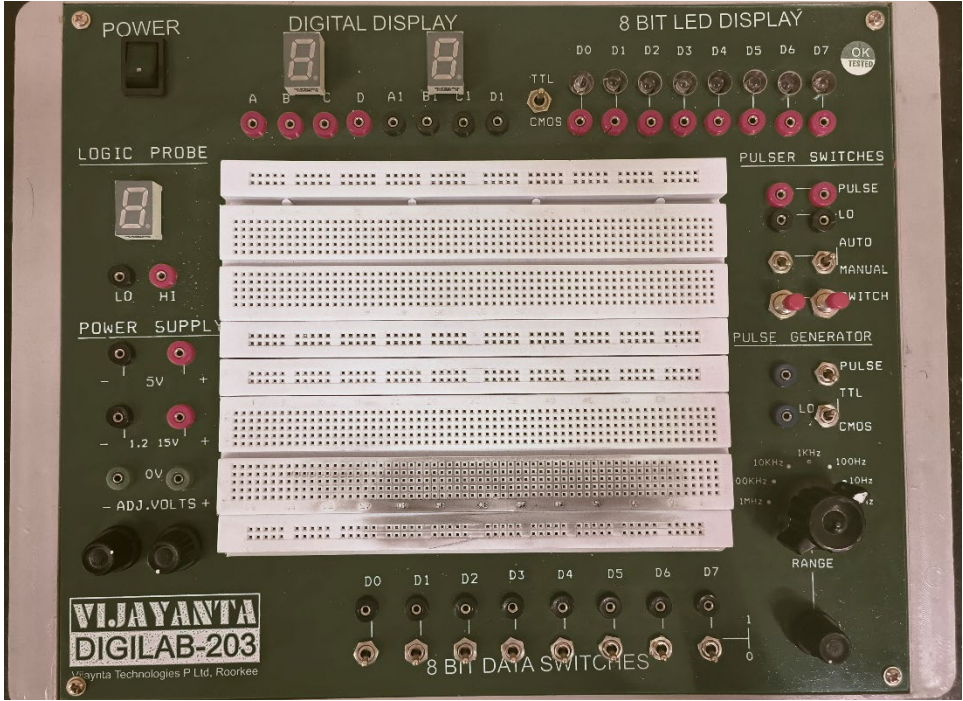

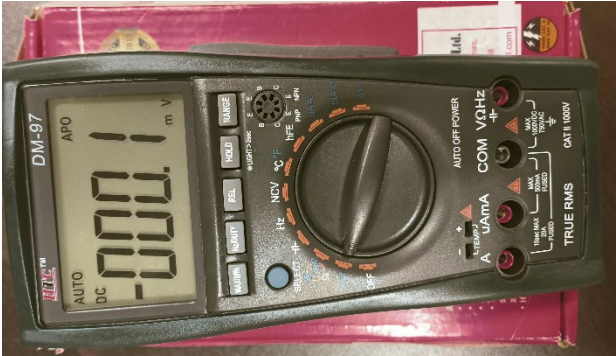




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ELECTICAL & ELECTRONICS LABORATORY
COLLEGE OF TECHNOLOGY

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List of Equipment's



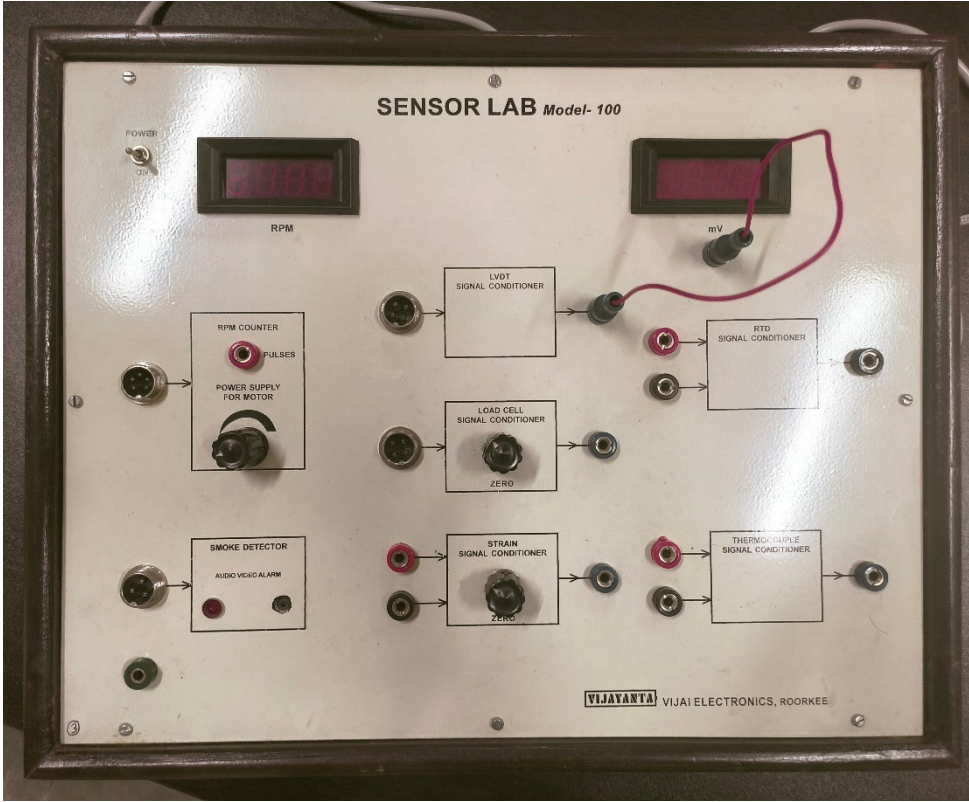
S. No.	Name of Equipment	Technical Specification	Figure of Equipment/Model/Device
01	Bread Board Trainer	Bread Board: 175, mm. x 134, mm. Connections: 1480. D.C. Power Supply: ± 5 Volt at 500 mAmp. (Fixed) ± 2 to 15 Volt at 500 mAmp. (Variable) Pulse Generator: Frequency Range: 1 Hz to 1 MHz in 6 steps. Amplitude: 2 Volt – 15 Volt (CMOS), 5 Volt (TTL) p – p. Duty Cycle : 50%, TTL/CMOS Output Pulsar Switches: 2 Nos. (Push to On – 1 Hz) Data Switches: 8 Nos. (Toggle switches for both TTL & CMOS). L.E.D. Display: 8 Nos. (TTL / CMOS Mode) BCD to seven segment Display: 2 Nos. Logic Probe: Logic Level Indicator for TTL/CMOS. (7Seg.) Power: 230 Volt, $\pm 10\%$, 50 Hz. Weight : 4Kg Approximately Dimension : 252mm \times 330mm \times 72mm	
02	DC Regulated Power Supply	Single Output Switching DC Power Supply (60W) 0-30V/2A Constant voltage (CV) and constant current (CC) operations Auto CV/CC switch ; Coarse and Fine control for voltage and current Two 3 digit LED display, 1 for voltage and other for current Line regulation - $< 0.05\% + 1\text{mV}$ Load regulation - $< 0.1\% + 5\text{mV}$ Ripple and Noise - $< 10\text{mVrms}$; Protection – Over load and current limit protections ; Accessories – Power Chord and user manual	
03	3 ½ Digit Multi-Meters	Basic Functions Range Basic Accuracy DC Voltage 0.1mV \sim 1000V $\pm(0.5\% + 4\text{digit})$; AC Voltage 0.1mV \sim 750V $\pm(0.8\% + 6\text{digit})$; DC Current 0.1uA \sim 20A $\pm(1.0\% + 5\text{digit})$ AC Current 0.1uA \sim 20A $\pm(1.5\% + 5\text{digit})$; Resistance 0.1 \sim 40M Ω $\pm(0.8\% + 2\text{digit})$; Capacitance 10pF \sim 200uF $\pm(3.5\% + 8\text{digit})$ Frequency 0.1Hz \sim 30MHz $\pm(0.5\% + 4\text{digit})$; Celsius -40oC — 1000oC $\pm(0.8\% + 4\text{digit})$; hFE (NPN or PNP) 0 \sim 1000	



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04	Passive components (Resistors, Inductors, Capacitors)	Different Values of Passive components (Resistors, Inductors, Capacitors)	
05	Small Signal active components	Different values of Small Signal active components	
06	Sensor / Transducer Trainer with Various Transducers like Strain, Pressure, , Temperature, Displacement / LVDT, etc)	Sensor Transducer Trainer with Various Transducers like strain, pressure, Smoke sensor, temperature, Displacement LVDT, etc. This unit is inside a wooden cabinet. All the Block diagrams of Signal conditioner, counter, zero adjustment and adder etc. All the necessary switches, potentiometer and multi color test points , (To observe the signals at various stages), are provided on the front panel. A RTD (Pt-100) Sensor for temperature measurement. A K-type Thermocouple Sensor for temperature measurement. A water container, thermometer, emersion rod are provided. Strain Gauge mounted on a cantilever beam fitted with a pan to applied Weights on it to generate the Strain for measurement. A Load Cell (Strain Gauge based) fitted with a pan to applied weight son it. LVDT (Range ± 10 mm) with transparent body fitted with a scale. A permanent magnet armature controlled small dc motor fitted with a disc and Electromagnetic Sensor for Speed measurement. A Smoke Sensor with an audio visual alarm. Built-in3½ digit Display for measurement of signal. Built in regulated power supply. 230 V ± 10 %, 50 Hz, mains operation.	



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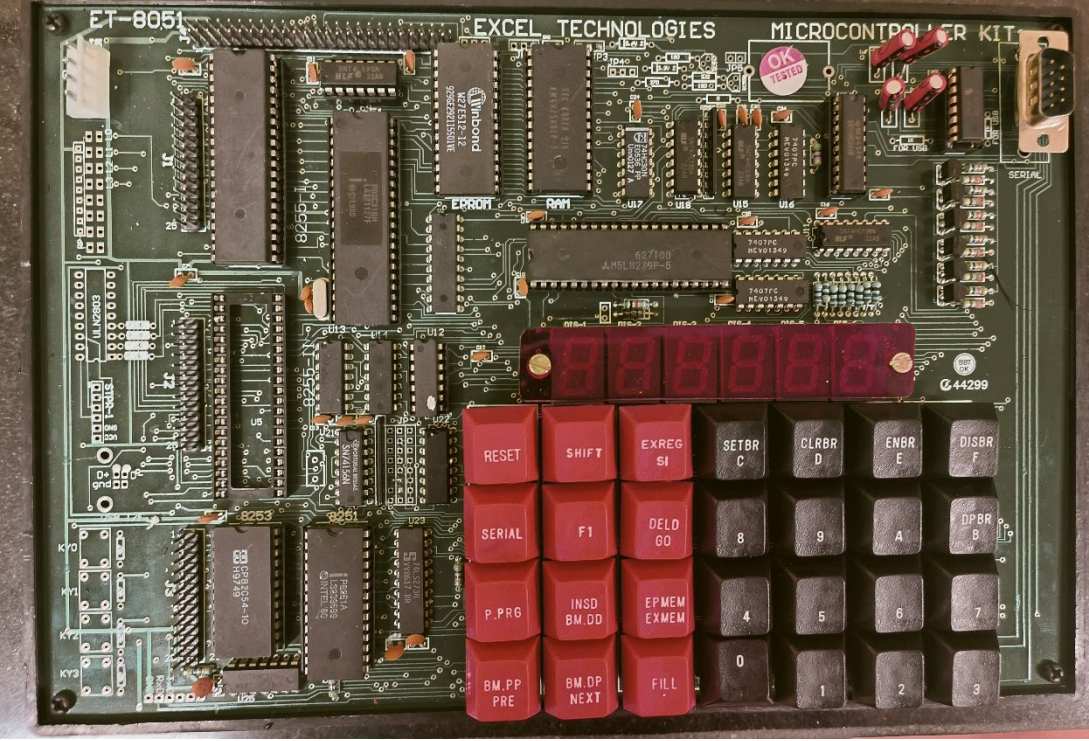
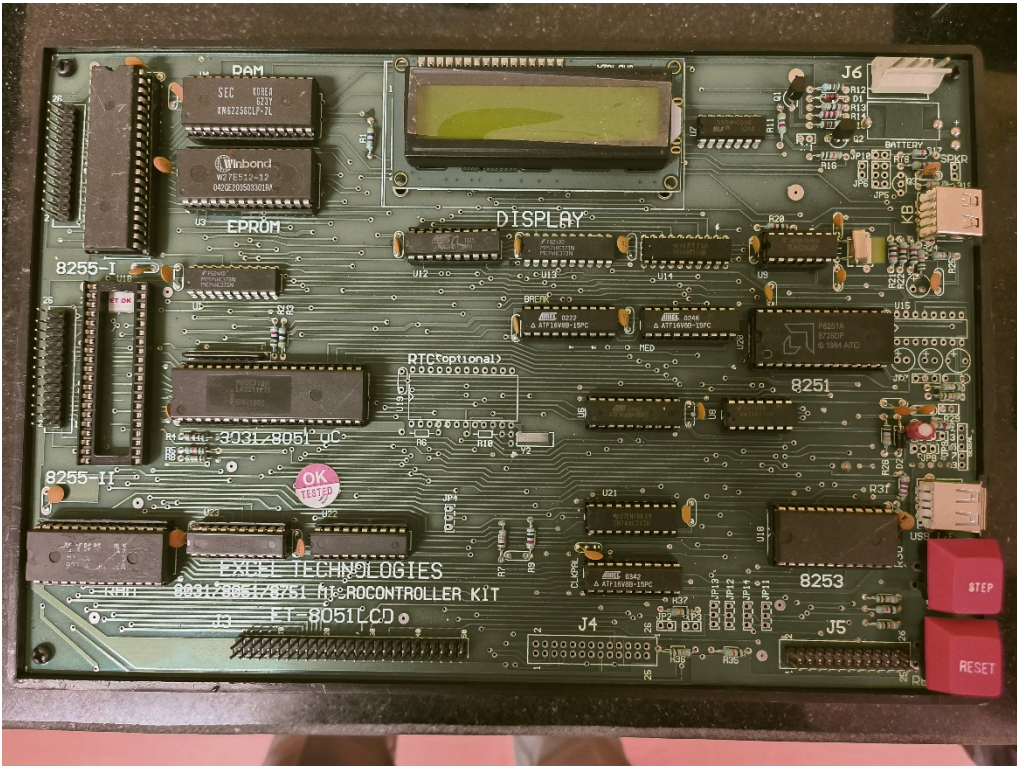
07	Single phase Transformers	Input Voltage: 0-230, volt/50Hz Single Phase, Output Voltage: 115V, Frequency: 45 to 60 Hz, Regulation: Better Than $\pm 3\%$	
08	Micro Processor Kit – 8085	<p>8085 Microprocessor (8 bit) chips, operating at 6.144 MHz frequencies. 32K bytes of EPROM loaded with powerful monitor program. 8 K bytes of RAM available to the user. Total on Board memory expansion of 64K bytes using 2732/2764/27128/27256/6264/ 62256/ with total 4 sockets of 28 pin. Memory mapping definable by the user. Battery Backup for RAM. 24 programmable I/O lines provided through 8255. Expandable to 48 lines Three 16-bit Timers/Counters through 8253. RS- 232C interface for CRT Terminal All address, data & control lines are available at 50-pin FRC connectoras per STD bus configuration. 20*4 LCD Display.104 Keys IBM Compatible Key Board.(USB)</p> <ul style="list-style-type: none">• On Board Real Time Clock (Optional)• On Board Assembler/Disassembler• Powerful software commands• Facility for Down/Up loading files from /to PC.	



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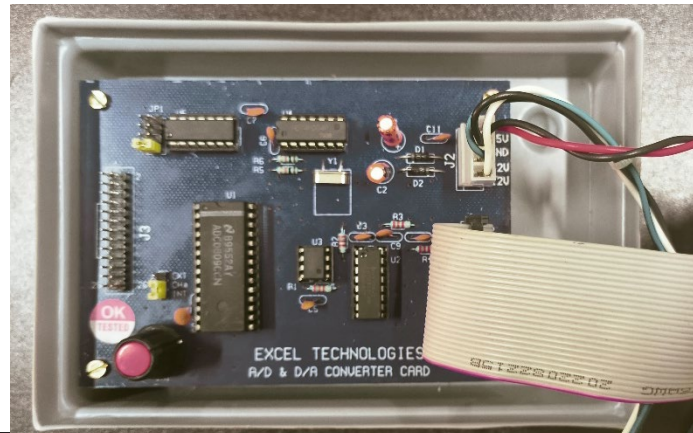
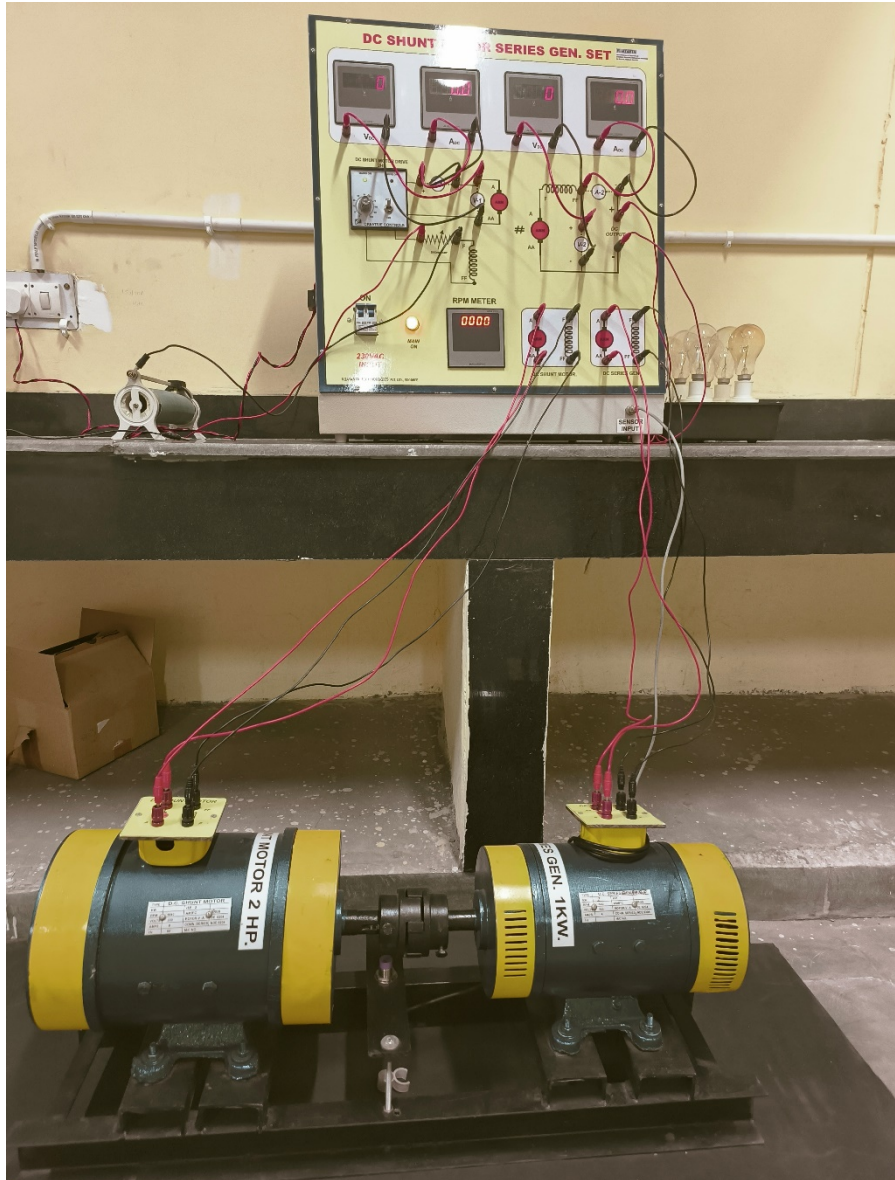
09	Microcontroller Kits 8051	8051 Microcontroller Kit. Basic Micro controller Kit Based on Intel's 8031/51. Micro controller @10/12MHz having following specs: 32K EPROM expandable further, 8K RAM expandable further,24 I/O lines expandable to 48 I/O ; Three 16 Bit Timer / Counters through 8254 RS232 Interface for Uploading / Downloading ; On board 8251 UART IC ; On board 8279 Keyboard & Display IC ; INT0 & INT1 interrupts and additional serial of 8031 available for expansion , 28 keys and 6 seven segment displays ,On board 8 Leds available which is connected to the 8051 Microcontroller, Up Loading/Down Loading facility from PC in Intel Hex format. Built in Power Supply, Enclosed in Plastic Box Supplied with user Manual	
10	Microcontroller Kits 89C52	8051 LCD Microcontroller Kit; Micro Controller Kit Based On Intel's 8031/51Micro Controller having following specifications: 8031/51 Micro controller (8 bit), operating at 20 MHz crystal frequency. 32k Bytes of EPROM loaded with Monitor program. 32K Bytes of RAM available to the user. 16K /8K Bytes of Scratch pad Ram. Total on board memory expansion to 64K bytes using 27512/62256with 3 sockets of 28 pin. Memory mapping definable by the user. 24 Programmable I/O lines through 8255.Expandable to 48. Three 16 bit Timers/counters through 8253. 8251 for RS232C interface for CRT/PC. On Board Interrupt Controller using 8259. On Board Real Time Clock. On Board Battery Back Up for RAM. All address, data & control lines are available at 50 Pin FRC connector. 16 x 2 LCD Display. IBM PC/AT Compatible ASCII Keyboard. On Board Assembler / Disassembler. Powerful software commands. Down/Up loading of files from/to PC. Built in Power Supply	



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11	DAC and ADC Interfacing Module with Cable	A/D and D/A Interface Module with cable	
12	DC Shunt & Series motor Speed Control Trainer	<ul style="list-style-type: none">• DC Shunt Motor with Panel• Speed Control of DC Shunt Motor by Field current control and Armature voltage control methods & amp; Load Test of DC Motor for Efficiency, DC Shunt Motor Rating: 1HP Voltage Rating: 220V Speed :1500 rpm Insulation: Class B• Heavy Duty Base, Loading arrangement: Mechanical, Brake Drum/Pulley: Aluminum Casted• DC Power Supply: 220V Variable Digital DC Voltmeter: 300V Digital DC Ammeter: 5A (2nos) Digital R.P.M. with Sensor fitted on motor Rheostat: 2A, 200ohm Connecting Patch cords• Diagrammatic representation for the ease of connection• DC Series Generator with DC Drive DC Shunt Motor Rating: 2HP Voltage Rating: 220 V Speed :1500 rpm Insulation: Class B DC Series Generator Rating: 1KW Voltage Rating: 220 V Speed :1500 rpm Insulation: Class B Both Machine are coupled with common base frame, DC Drive 2HP Variable, Digital DC Voltmeter: 300V - 2Nos, Digital DC Ammeter: 10A (2nos), Digital R.P.M. with Sensor fitted on motor, Rheostat: 2A, 200ohm, Connecting Patch cords, Diagrammatic representation for the ease of connection	



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13	Three phase Induction Motor (Complete Set)	<p>Control board should provide of high grade FRP material to provide utmost safety to the students, Aluminum casted Brake Drum/Pulley with heat suppression facility; Setup should be provided with, Squirrel Cage Motor - 1HP, Should on board Digital meters. Wattmeter Voltmeter Ammeter MCB Tachometer Three phase variac</p> <p>BS 10 terminals and specially designed patch cords to be provided to protect from danger. BS10 safety terminals should be in compliance with IS302-1/IEC60335-1, tested from NABL accredited Lab</p> <p>Control Panel should be consist of high grade FRP material for better safety and in compliance with IS302-1/IEC60335-1, tested from NABL accredited Lab</p>	
14	Single Phase Induction Motor Control Trainer	<p>Control board should provide of high grade FRP material to provide utmost safety to the students, Aluminum casted Brake Drum/Pulley with heat suppression facility</p> <p>Should have BS10 safety terminals</p> <p>Should have Mechanical loading arrangement Onboard digital panel meter should be provided</p> <p>Should have tabular spring balance with zero adjustment facility Single Phase, 230V $\pm 10\%$, 50Hz supply</p> <p>1 HP Single Phase Induction Motor (Capacitor start), Voltage rating: 220V Speed: 1440 RPM $\pm 5\%$ Insulation: Class 'B'</p> <p>MCB (SP): 10A; Digital Tachometer: 20,000 RPM</p> <p>Single Phase Variac 10A; BS 10 terminals and specially designed patch cords to be provided to protect from danger.</p> <p>BS10 safety terminals should be in compliance with IS302-1/IEC60335-1, tested from NABL accredited Lab Control Panel should be consist of high grade FRP material for better safety and in compliance with IS302-1/IEC60335-1, tested from NABL accredited Lab</p>	



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15	Watt meters of various ratings (5A-10A)	Technical specifications 2 KW, MI type, (5 - 10) A , (150 – 300 – 600)V Portable type Polycarbonate casing. Good Quality	
16	Ammeter (Analog Type) (0-10A)	1. Designed to measure A.C. current these meters indicate true r.m.s. values 2. Type of meter Moving iron 3. Case Material Poly carbonate 4. Type of scale 90 deg 5. Measuring parameters AC Current 6. No. of Phase (Input) Single Phase support 7. Range of measurement 0 – 5 - 10A 8. Accuracy class 1.5 9. Size of the meter (in mm x in mm) 72 x 72	



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17	Voltmeter (Analog Type) (0-300A)	Voltmeter Designed to measure A.C. voltage, these meters indicate true r.m.s. Values Yes 3. Type of meter Moving iron, Type of scale 90 deg, Measuring parameters AC Voltage, No. of Phase (Input) Single Phase support, Range of measurement 0 -150 – 300 – 600V Accuracy class 1.5, Size of the meter (in mm x in mm) 72 x 72 Volt meter shall pass Dielectric voltage with Stand 2 KV AC Case Material Poly carbonate	
18	Rheostats of various Ratings (2.5A, 5A, 10A)	Rheostats of various ratings (2.5A, 5A, 10A) (set for each one)	



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19	Variance single phase or Dimmer set(0-250v)	Rating in KVA, 1.0 KVA Type of winding Copper, Input Single Phase sine wave (160V-260V), Display Type of Meter analog Volt Meter Mounting Type Floor mounting, Current rating of the Relay/contactors (Amp), Provision of power supply cord /terminal as applicable for input and output, Output Single Phase sine wave (210V-250V) Overall efficiency of ALVC (%) > / = 95% the product shall conform to the acceptance tests	
20	Three phase Dimmer set	Model Portable Enclosed Manual (Air Cooled) Operating voltage. For Single Phase – 240V AC, 50-60 Hz. I- ph. For Three Phase – 415V AC, 50-60 Hz. 3 – ph – 4wire. Current ratings For Air Cooled models. The power Factor is Appx. 0.8 Insulation resistance Not less than 5M ohms at 500V DC.	



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21	DC Power Supply	BK-1502DD 0-15V, 0-2 A	
22	Digital Multi-Meter	3, ½ Digits DC Voltage 0.1mV~1000V DC Voltage 0.1NA~20A	



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23	Soldering Iron With Stand	As per Standard	
24	Bread Board	As per Standard	