

## Electrical And Electronics Engg



### Rectifier

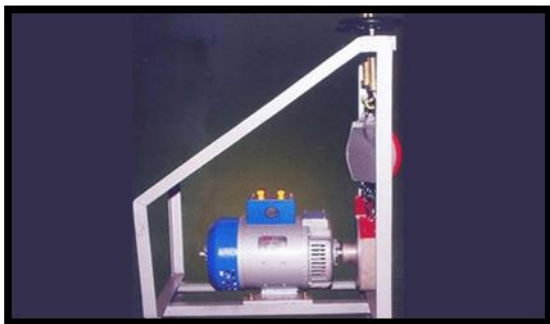
- Cubical panel type
- Voltage 3Ph 440V /(0-300V) DC
- 3Ph Isolation transformer-20KVA
- Thyristor rating Current -300A/PIV - 1500V
- over load protection and necessary panel instruments with Motorized Dimmer stat with automatic control

### DC Panel

- 220V DC 32A, 12 ways Double color powder coated industrial cubical panel with Bus bar and Ammeter shunt and Isolators and indicators

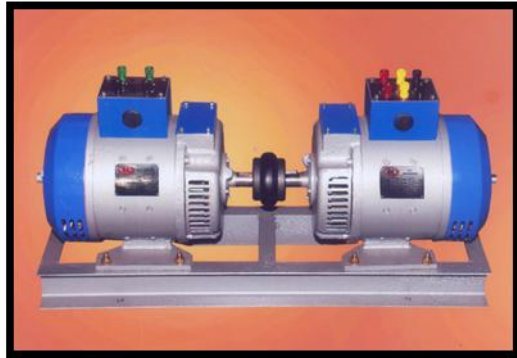
### AC Panel

- AC distribution panel 3Ph 63A/ 1Ph 32A, 12ways Double color powder coated industrial cubical panel with Bus bar and MCB and indicators



### DC Motors

- D.C Motor 5 HP, 220V, 1500 RPM
- Foot ,Mounted type with bed and frame
- Pony brake arrangement & Aluminum brake drum belt Dial type spring balances.



### D.C Generator

- 5HP D.C. shunt Motor , 220V, 1500RPM,
- 3HP D.C. shunt Generator 3 KW, 220V, 1500 RPM, Foot, Mounted type, Base Plate and Flexible Coupling

### D.C Alternator

- D.C. Shunt motor 5HP,220V, 1500 rpm
- field current 0.8A, Armature current 11A,
- 3 KVA, 3ph, 415V,1500 RPM, field current 1.5A Armature current 4A



### AC Motors

- 5HP , 440V, 8A
- loading arrangement with starter



### AC Starters

- Suitable for 5Hp motors(DOL ,Star Delta, Rotor Resistance Starter)



### DC Starter

- Suitable for 5Hp motors(2 point,3point,4 point Starter)



### **Auto Transformer**

- Single Phase Transformer 230v/15A
- Three Phase Transformer 415v/15A



### **Transformers**

- Single phase Transformers(230/110V)
- Three Phase Transformer(415/230V)
- Any range to be ready



### **Rheostat**

- Single tube & Double Tube(any Range)



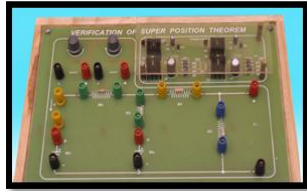
### **Load**

- Single & Three Phase Resistive Load
- Single & Three Phase Inductive Load
- Single & Three Phase capacitive Load



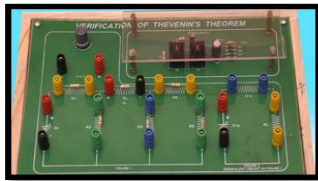
### **Tachometer**

- Analog Tachometer Range: up to 10,000
- Digital Tachometer Range: up to 50,000



### **Super Position Therom**

- To find voltage across Load resistance in a circuit having 2 Voltage Sources
- and to verify the Super Position Theorem
- Provision to connect resistances, voltmeter and ammeters
- Built in Power Supplies and wooden closed cabinet



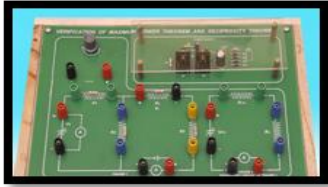
### **Thevenins Therom**

- Provision to connect resistances, voltmeter and ammeters
- Built in Power Supplies and wooden closed cabinet



### **Norton's Therom**

- To find out the current and voltage drop across one resistance in a complex circuit using Norton's equivalent current source and parallel resistance
- Provision to connect resistances, voltmeter and ammeters
- Built in Power Supplies and wooden closed cabinet



### **Maximum power Transfer Therom**

- To find the load resistance to transfer maximum power at the output using the Thevenin's equivalent and to verify Maximum Power Transfer Theorem
- Provision to connect resistances, voltmeter and ammeters
- Built in Power Supplies and wooden closed cabinet

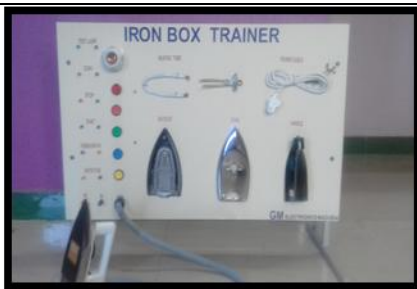


### **Ceiling Fan Trainer**

- Identification of parts
- Checking the connection of ceiling fan
- Including the checking of coil resistance, fan capacitor
- Checking the working with regulator
- Panel mounting with stand

### **Second ceiling fan used for**

- Test the winding and capacitance

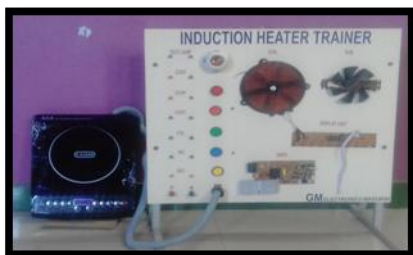


### **Iron Box Trainer**

- Identification of parts
- Checking the working of Iron box
- Checking the working of bimetallic strip

### **Second Iron box used for**

- Dismantling, checking the condition, assembling and testing



### **Induction Heater Trainer**

- Identification of parts
- Studying the connection of coil, two numbers of PCB and one number senso
- Panel mounting with stand

### **Second Induction heater used for**

- Dismantling, checking the condition, assembling and testing

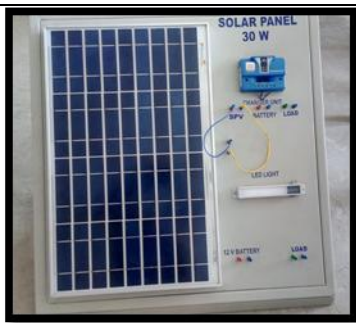


### **Mixer Grinder Trainer**

- Identification of parts
- Checking the connection of the motor with control switches
- Mounting identification of other parts of mixer

### **Second Mixer Grinder used for**

- Dismantling, checking the condition, assembling and testing
- Testing the mechanical parts and electrical control wiring in the switches



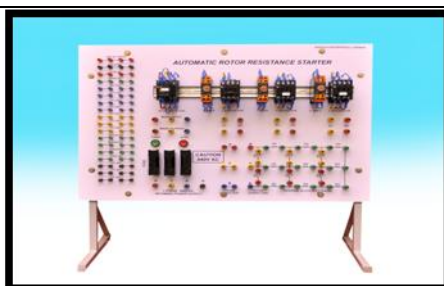
### **Solar panel**

- 30W solar panel
- Charge controller
- 12V, 7Ah battery
- DC load, LED lamp
- Provision to measure solar panel voltage, solar panel current, connection for load



### **Automatic Star-Delta starter**

- 3 nos. of 440V, 16 A Contactors Main / Star / Del
- 1 no. AC Timer (for automatic operation)
- Start / Stop / Push Button Switches
- Switch for manual delay operation (semi automatic)
- Control wiring termination, Powder Coated MS Stands, Acrylic back cover



### **Automatic Rotor Resistance Starter**

- Start and Stop Switches
- 4 nos. of 3 phase 16A Contactors
- 3 Timers
- Provision to wire external resistances in the rotor circuit



### Dynamic Braking

- One 3 phase, 440V, 16 Amps Main Contactor
- One 230V DC, 12A Contactor for connecting DC
- AC Timer, Rectifier for DC Power Supply, Variac to be connected externally
- On/Off Push Switches



### Jogging Forward & Reverse

- 1 no. 3 phase 16 A Contactor, 1 no. of Control relay
- 3 Phase input proper termination
- Stop, Start and Jog Push Buttons, Fuses and Power Terminations
- Control wiring termination
- Wooden casing



### Thermal Overload Relay

- one no. 3 phase, 16A Main Contactor
- one no. 2-4.5A Overload relay
- Provision to connect 3 phase load externally
- (The Institute should provide the Load)
- 3 phase input, Fuses
- Wooden casing



### Transformer Oil Test

- Input voltage 230V, Single Phase
- Output 0-60KV
- Test cup, Transparent hood, interlocking switch
- HT On switch starting at zero voltage
- Tripping Current: 2.5mm gap – 10/20mA
- Sample Transformer Oil



### Fully Controlled Bridge

- Single Phase Full Bridge Power Circuit
- Firing Circuit consists of Phase angle control circuit using TCA 785
- Triggering circuit from the output of TCA 785 using Pulse Transformers
- Vary the conduction angle and plot the output voltage, RL Load
- 24V,2A Power Supply for the Power Circuit
- Necessary DC Power Supplies for the control circuits



### SCR Commutation

- Natural Commutation – 24V AC Power Supply, DC Triggering
- Current commutation – 24V DC Power Supply, Pulse Triggering, RLC
- Complementary Commutation – Main SCR and Auxiliary SCR, 2 nos. of DC Triggering
- Resonant Commutation – 24V DC Power Supply, Pulse Triggering, Discharge
- Voltage Commutation – 2 nos. of SCRs as on and off switches,



### SMPS

- IC based PWM Controller
- Mains voltage to 12V DC Voltage conversion
- 32 KHz Oscillator
- Power MOSFET as switch
- Fly back converter with Isolation transformer
- Output circuit, Feedback circuit





### Step Up Chopper

- PWM IC controller based Step up Chopper
- Output voltage Vs duty cycle
- Load characteristics without feedback
- Load characteristics with feedback
- Output voltage Vs Input voltage with feedback
- Necessary Power Supplies and Wooden box



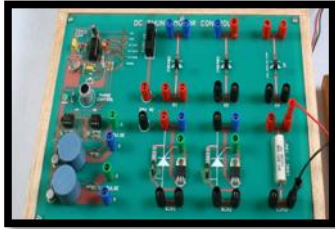
### Step Down Chopper

- PWM IC controller based Step down Chopper
- Output voltage Vs duty cycle
- Load characteristics without feedback
- Load characteristics with feedback
- Output voltage Vs Input voltage with feedback
- Necessary Power Supplies and Wooden box



### DC Chopper

- Ramp Generation Circuit
- Level Translation Circuit
- Comparator Circuit to produce PWM Signal
- Monostable circuit for triggering Aux. SCR
- Chopper Power Circuit using Main SCR and Aux. SCR with inductance
- Triggering circuit for 2 SCRs with Pulse Transformer



### **DC Shunt Motor**

- Phase angle control using TCA 785
- Control Scheme to vary the phase angle of the Half Bridge
- Trigger circuit for SCRs and with Pulse transformers
- Half Bridge Power Circuit to drive the PMDC 24V Motor
- Small 24V PMDC Motor
- Necessary DC Power Supplies



### **Parallel Inverter**

- Single Pulse 50 cycles generation
- Monostable Time delay circuit both half cycle
- Parallel Inverter configuration
- 24V AC output, Lamp Load



### **Transformer Winding machine**

- Hand Operated with Counter
- Bobbin Adjustment
- Coil Stand
- Forward & reverse Gear Change  
Table Top Model



### **Pole changing Motor**

- 3hp, 415V, 50Hz
- 24/36 slot Providing
- 2pole/4 pole operation
- 1400/2800 Rpm Speed