

Experimental Training Board has been designed specifically for the study of Discrete Electronic Components. It contains a wide selection of discrete components and A.C. & D.C. Power Supplies. The capabilities of this trainer extend far beyond the experiments described. Although only a finite number of experiments have been described yet other circuits as per individuals requirements can also be designed using the available components and power supplies.

Practical experience on this board carries great educative value for Science and Engineering Students.

### Object

#### \* RC & LC CIRCUITS :

01. Study of RC High Pass Filter
02. Study of RC Low Pass Filter
03. Study of RL Differentiating Circuits
04. Study of Series RC Circuit
05. Study of Series LC Circuit
06. Study of Parallel RC Circuit
07. Study of Parallel LC Circuit

#### \* SERIES & PARALLEL RESONANCE CIRCUIT :

01. Study of Series LCR Resonance Circuit and determination of 'Q'
02. Study of Parallel LCR Resonance Circuit
03. Determination of impedance & reactance of reactive elements and plotting of reactive curves

#### \* GERMANIUM & SILICON DIODES :

01. Characteristics of a germanium diode
02. Characteristics of a silicon diode
03. Application of a diode as a half wave rectifier
04. Application of four diodes as full wave bridge rectifier

#### \* ZENER DIODE :

01. Characteristics of a Zener Diode
02. Application of a Zener Diode as a voltage regulator
03. Determination of line regulation of a zener diode regulator circuit
04. Determination of load regulation of a zener diode regulator circuit

#### \* CLIPPING & CLAMPING CIRCUITS :

01. Study of single level clipping circuits
02. Study of two level clipping circuits
03. Study of clamping circuits

#### \* COMMON EMITTER CONFIGURATION OF A TRANSISTOR :

01. Input characteristics of common emitter configuration
02. Output characteristics of common emitter configuration
03. Study of common emitter amplifier

#### \* COMMON BASE CONFIGURATION OF A TRANSISTOR:

01. Input characteristics of common base configuration
02. Output characteristics of common base configuration
03. Study of common base amplifier

#### \* COMMON COLLECTOR CONFIGURATION OF A TRANSISTOR:

01. Transfer characteristics of common collector configuration

#### \* EMITTER FOLLOWER ( TRANSISTOR ) :

01. Study of emitter follower configuration

#### \* CASCADED AMPLIFIER :

01. Study of two stage cascaded amplifier

#### \* POWER AMPLIFIER

01. Study of class-A power amplifier

#### \* DIFFERENTIAL AMPLIFIER :

01. Study of a differential amplifier and determination of its CMRR



#### \* FEED BACK AMPLIFIER

01. Study of current series feedback
02. Study of current shunt feedback

#### \* SELECTIVE AMPLIFIER :

01. Study of frequency selective amplifier

#### \* FET CHARACTERISTICS & SOURCE FOLLOWER:

01. Study of static characteristics of an FET
02. Application as source follower

#### \* FET CHOPPER & V.V.R. (Voltage Variable Resistor)

01. Application as a Chopper
02. Application as Voltage Variable Resistor (VVR)

#### \* R.C. PHASE SHIFT OSCILLATOR :

01. Study of R.C. Phase Shift Oscillator

#### \* U.J.T. CHARACTERISTICS & RELAXATION OSCILLATOR :

01. Study of UJT Characteristics
02. Application of UJT as relaxation oscillator

#### \* TRIAC CHARACTERISTICS :

01. Terminal Characteristics in Mode I.
02. Terminal Characteristics in Mode III.
03. Measurement of Holding Current  $I_H$ .
04. Gate characteristics in Mode I.
05. Gate characteristics in Mode I.
06. Gate characteristics in Mode III.
07. Gate characteristics in Mode III.
08. Application in power control using D.C. control voltage
09. Application in power control using A.C. control voltage

Note: Specifications are subject to change.

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**\* BISTABLE MULTIVIBRATOR :**

01. Study of bistable multivibrator circuit

**\* MONOSTABLE MULTIVIBRATOR :**

01. Study of monostable multivibrator circuit

**\* ASTABLE MULTIVIBRATOR :**

01. Study of astable multivibrator circuit

**\* SCHMITT TRIGGER :**

01. Study of Schmitt Trigger circuit

**\* BASIC LOGIC GATES :**

01. Study of AND gate
02. Study of OR gate
03. Study of NAND gate
04. Study of NOR gate

**\* LED CHARACTERISTICS & APPLICATIONS :**

01. Study of Characteristics of LED
02. Application of LED in constant current sources

**\* SCR CHARACTERISTICS :**

01. D.C. gate control characteristics
02. Anode current characteristics

**\* DIAC CHARACTERISTICS & APPLICATIONS :**

01. Study of Characteristics of a Diac
02. Application as sawtooth wave & pulse generator
03. Application in Diac Triac Power control circuit

**Features:**

The board consists of the following built in parts :

01. 4V5-0-4V5 A.C. at 500 mA, Power Supply.
  02. 0-5V A.C. at 50mA, Power Supply.
  03. 0-70V D.C. at 50 mA, continuously variable Power Supply.
  04.  $\pm 12$  V D.C. at 250 mA, IC regulated and short circuit protected Power Supply.
  05. 0-20V D.C. at 50 mA, IC Regulated Power Supply.
  06. 5V D.C. at 100mA, IC Regulated Power Supply.
  07. A.C./D.C. Voltmeter, 65mm rectangular dial, with switch selectable ranges of 1V, 10V and 100V.
  08. Two D.C. Ammeters, 65mm rectangular dial, with switch selectable ranges of 50 mA/500mA/5mA/50mA/500mA.
  09. Pulser with Dual Polarity, selectable output.
  10. 1 KHz Sine wave source with variable output level.
  11. LEDs for visual indication of Input & Output status.
  12. Speaker, LED, 8 diodes, 5 Zener diodes, Diac, SCR, Triac, 2 FET, UJT, 7 Transistors, 1 matched transistor pair, 67 resistors, 27 capacitors, 6 potentiometers, Electronic Load, indicator, Audio Transformer.
  13. 12 V, OEN Relay with one change over contacts rated at 6 Amp. for resistive and 3 Amp. for inductive Load at 230V.
  14. Mains ON/OFF switch, fuse and Neon Indicator are provided.
- \* The unit is operative on 230V  $\pm 10\%$  at 50Hz A.C. Mains.
  - \* Adequate no. of patch cords stackable from rear both ends 2mm spring loaded plug length  $\frac{1}{2}$  metre.
  - \* Good Quality, reliable terminal/sockets are provided at appropriate places on panel for connections & observation of waveforms.
  - \* Strongly supported by detailed Operating Instructions, giving details of Object, Theory, Design procedures, Report Suggestions and Book References.

**Other Apparatus Required:**

- \* Sine Square Wave Oscillator
- \* Cathode Ray Oscilloscope 20MHz

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