

# ANALOG ELECTRONICS LAB TRAINER

## SPECIFICATIONS

### The Instrument consists of:-

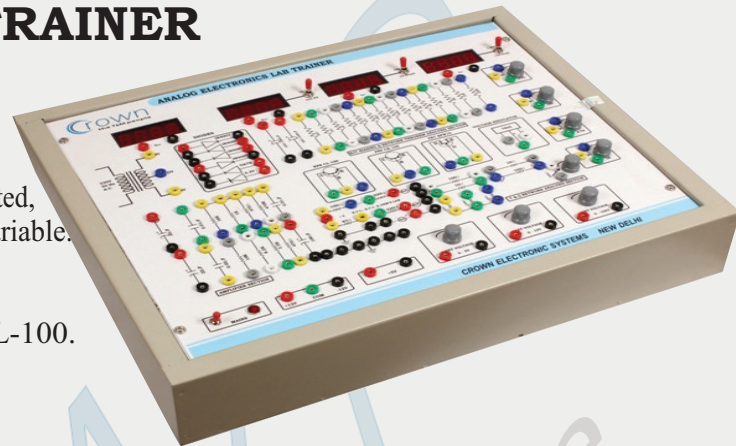
1. Four Digital Meters DC Volt and Current Meter.
2. DC Power Supply 12V/250mA Regulated +5V/250mA Regulated, 0-5V/30mA Variable, 0-10V/30mA Variable, 0-100V/30mA Variable.
3. One Step Down Transformer (9-0-9V/250mA).
4. Five Potentiometers (330Ω, 1K, 4.7K, 10K, 47K).
5. One PNP Transistor CK-100 and one NPN Transistor CL-100.
6. One FET BFW10.
7. +5V Regulator IC 7805.
8. Different types of diodes (In4007, OA79, 6V Zener).
9. 34 Resistance of Different Values.
10. Six Capacitors of Different Values.

### “CROWN” made Analog Electronics Lab Trainer. The instrument has been designed to :

1. Study of Half Wave Rectifier.
2. Study of Full Wave Rectifier.
3. Study of Bridge Rectifier.
4. Study of Shunt Capacitor Filter.
5. Study of Regulated Power Supply using Zener Diode.
6. Study of Transistor Series and Shunt Regulators.
7. Study of Regulated Power Supply using Voltage Regulator IC 7805.
8. Study of PN Junction Diode Characteristics.
9. Study of Zener Diode Characteristics.
10. Study of Transistor Characteristics.
11. Study of FET Characteristics.
12. Verification of K.V.L. and K.C.L.
13. Verification of Ohm's Law.
14. Study of Common Emitter Amplifier.
15. Study of Common Base Amplifier.
16. Study of Common Collector Amplifier.
17. Study of Transistor Biasing Circuits.
18. Two port T and  $\Pi$  n/w Analysis.
19. Verification of Thevenin Theorem.
20. Verification of Norton Theorem.
21. Verification of Maximum Power Transfer Theorem.
22. Verification of Superposition Theorem.
23. Verification of Reciprocity Theorem.
24. Study of Low Pass Filter.
25. Study of High Pass Filter.
26. Study of Band Pass Filter.
27. Study of Band Stop Filter.

### OPTIONAL ACC.

- \* DC-20MHz Dual Trace Oscilloscope.
- \* Function Generator 1Hz to 1MHz.



## CROWN ELECTRONIC SYSTEMS

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## SEMICONDUCTOR AND POWER ELECTRONICS LAB TRAINER

### The Trainer Module Consist of :-

1. DC Regulated Power Supply : - 0-5V/30mA DC  
0-15V /30mADC  
0-30V/30mA DC  
0-100V/30mA DC
2. 4 Digital Meter to Measure Voltage and Current for Various Experiments
3. Different Resistance are fitted inside the panel with Socket
4. Component eg. Diode, Zener Diode, LED, NPN & PNP Transistors, FET, MOSFET, TRIAC, SCR, UJT, DIAC & IGBT are fitted with 2mm socket on board
5. Require Patch Cord & Experimental Circuits are provided .



### The Instrument is designed to study of the following:

1. Study of P-N Junction Diode Characteristics
2. Study of Zener Diode Characteristics
3. Study of LED Characteristics
4. Study of Transistor Characteristics (BJT)
5. Study of FET Characteristics
6. Study of DIAC Characteristics
7. Study of TRIAC Characteristics
8. Study of SCR Characteristics
9. Study of UJT Characteristics
10. Study of MOSFET Characteristics
11. Study of IGBT Characteristics

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## ANALOG & DIGITAL ELECTRONIC TRAINER

### “CROWN ANALOG & DIGITAL ELECTRONIC TRAINER”

is design to perform Various Electronic Experiment Related to Analog, Digital & Communication Lab.

The module consists of the following :

1. DC Regulated Power Supply  $\pm 5V / 500mA$ .
2. DC Regulated Power Supply  $0 - \pm 25 V / 500mA$ .
3. AC Power Supply  $15 - 0 - 15V / 250mA$ .
4. 8 Logic Input with LED Indicator.
5. 8 Logic Output with Indicator.
6. 1 Hz mono shot clock pulse with pulser switch.
7. TTL Clock Pulser having O/P frequencies of 10 Hz , 100 Hz, 1 KHz & 10 KHz selectable by switch.
8. One Seven Segment display with sockets for each segment.
9. Bread board having 1680 tie Point is Mounted on Front Panel.
10. Potentiometer 1k and 10k are mounted front panel.
11. In Built Function Generator with following



### SPECIFICATIONS :-

- \* Variable Frequency 1Hz – 100 KHz ( $\pm 5\%$ ) in Five Ranges.
- \* Variable Out put Amplitude 0-15V Peak to Peak.
- \* Output Wave from (Sine, Square and Transistor) Selectable by functions selector switch.

### **OPTIONAL ACC.**

- \* DC-20MHz Dual Trace Oscilloscope.
- \* Digital Multimeter

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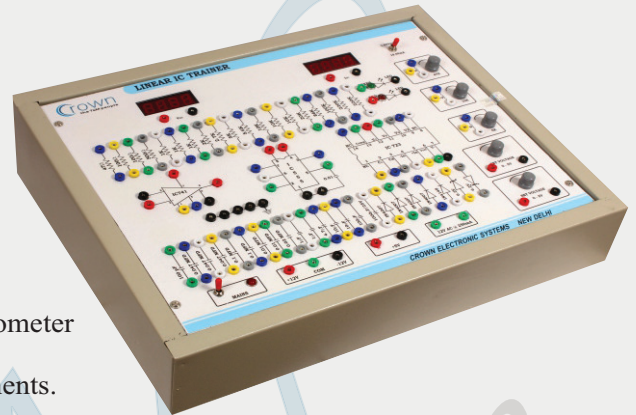
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## LINEAR IC TRAINER

### The Instrument consists of :-

1. DC Regulated Power Supply of : 0 to 5V/ 100mA ( Two Nos.)  
 $\pm 12V/ 250mA$   
 $+ 5V/ 250mA$   
 $12V/250mA$  AC
2. IC 741, IC 723, & IC 555 is mounted on front panel with there Pin no. & socket for connection
3. Various Resistance , Capacitor, Diode, Zener Diode, LED, Potentiometer are fitted on inside of Panel with sockets.
4. Required circuit Diagram & Patch cords are provided with instruments.



### The 'CROWN' made Linear IC Trainer to study the following:-

1. IC 723 as Variable Voltage Regulator
2. Measurement of input bias current of an op-amp.
3. Measurement of output off-set voltage of an op-amp.
4. To eliminate output off-set of an op-amp.
5. Measurement of slew rate of an op-amp.
6. Measurement of closed loop gain.
7. Op-amp as V-I converter.
8. Op-amp as I-V Converter.
9. Op-amp as current amplifier.
10. Clipper Circuit Using op- amp.
11. Clamper Circuit Using op-amp.
12. Op-amp as Schmitt Trigger.
13. Op-amp as Inverting and non Inverting amp.
14. Op-amp as Voltage Buffer.
15. Op-amp as Logarithmic Amplifier.
16. Op-amp as VCCS.
17. Op-amp as Wein Bridge Oscillator.
18. Op-amp as Twin –T Oscillator.
19. Op-amp as Square Wave Generator.
20. Op-amp as Adder and Subtractor.
21. Op-amp as Integrator and Differentiator.
22. L.P.F and H.P.F Using op-amp.
23. Band Pass and Reject Filter Using op-amp.
24. Limiter Using op-amp.
25. Op-amp as comparator.
26. 555 as Astable Multi vibrator.
27. 555 as Monosatable Multi vibrator.
28. 555 as Bistable Multi vibrator.
29. 555 as a Square Wave Generator (2KHz-13KHz).
30. 555 as a Triangular Wave Generator.
31. 555 as V-F Convertor.

### **OPTIONAL ACC.**

- \* DC-20MHz Dual Trace Oscilloscope.
- \* Function Generator 1Hz to 1MHz.

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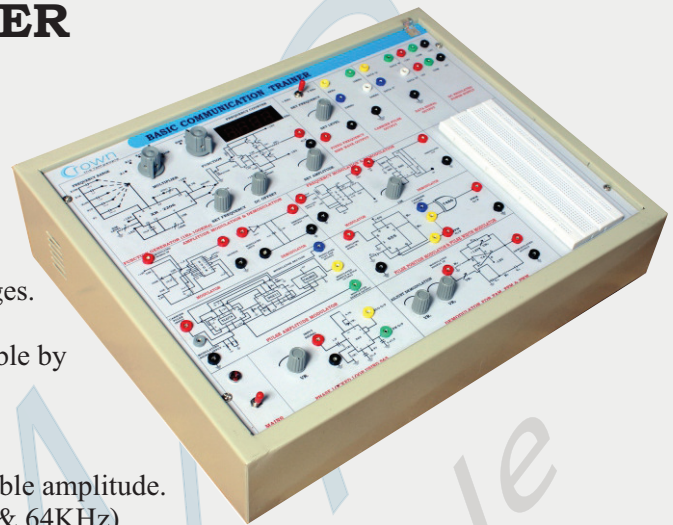
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# BASIC COMMUNICATION TRAINER

## The Instrument consists of :-

1. DC Regulated Power Supply of :  $\pm 12V/ 500mA$   
 $\pm 5V/ 500mA$
2. In Built Function Generator with following :-
  - \* Variable Frequency 1Hz – 100 KHz ( $\pm 5\%$ ) in Five Ranges.
  - \* Variable Out put Amplitude 0-15V Peak to Peak.
  - \* Output Wave from (Sine, Square and Transistor) Selectable by functions selector switch.
  - \* Six digit frequency counter to measure output frequency.
3. Bread board having 840 tie points is mounted on front panel.
4. Fixed Frequency Sine wave Output (1KHz & 2 KHz) with variable amplitude.
5. Fixed Frequency Carrier Pulse Output (8KHz , 16KHz, 32 KHz & 64KHz)
6. Four nos. Digital Data Output with Variable Frequency.
7. Required circuit Diagram & Patch cords are provided with instruments.



## **The 'CROWN' made Basic Communication Trainer to study the following:-**

1. Working & Construction of a Function Generator
2. Study of Amplitude Modulation & Demodulation
3. Study of Frequency Modulation & Demodulation
4. Study of Pulse Amplitude Modulation & Demodulation (Output for flat Top signal, sample & hold signal & Modulated sampled signal)
5. Study of Pulse Position Modulation & Demodulation
6. Study of Pulse Width Modulation & Demodulation
7. Study of Phase Locked Looped IC 565

## **OPTIONAL ACC.**

- \* DC-20MHz Dual Trace Oscilloscope.

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## POWER ELECTRONICS TRAINER

“CROWN” made “POWER ELECTRONIC TRAINER” to study the following :

- 1) Characteristics of SCR, MOSFET, IGBT & POWER TRANSISTOR.
- 2) Triggering of SCR, MOSFET, IGBT & POWER TRANSISTOR.
- 3) UJT trigger circuit for half wave & full wave converter.
- 4) STEP UP & STEP DOWN Chopper Circuits.
- 5) Series resonant inverter.
- 6) Single phase bridge inverter.



The instrument comprises of the following:-

- 1) DC Regulated Power Supply
  - a) 0-10V/50mA
  - b) 0-25V/50mA
  - c) +12V/500mA
  - d) +5V/500mA
- 2) 4No. Digital Meters
  - a) 19.99VDC
  - b) 19.99V-199.9V DC
  - c) 199.9 $\mu$ A - 19.99mA DC
  - d) 1.999mA - 199.9mA DC
- 3) Pulse Generator Circuits
  - a) Variable duty cycle pulse generator for chopper circuits.
  - b) 1KHz +ve & -ve edge pulse generator for series inverter.
  - c) 50Hz +ve & -ve edge pulse generator for series inverter.
  - d) UJT trigger circuit for half wave & full wave converter.
- 4) 3 No. SCR (2P4M), 1 No. MOSFET (IRF840), 1No. IGBT (GP8NC60KD).  
1No. POWER TRANSISTORS (2N3055) & 8No. different resistance.
- 5) Separate circuits for half wave / full wave converters, choppers & inverters.

### OPTIONAL ACC.

- \* DC-10MHz Single Trace Oscilloscope.

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## DISCRETE COMPONENT TRAINER

“CROWN” made DISCRETE COMPONENT TRAINER to determine the construction & working of various Electronic Components.

### SPECIFICATION:

- 1) In built DC Regulated Power Supply  $\pm 12V/250mA$  &  $\pm 5V/250mA$ .
- 2) AC Power Supply 9-0-9V/500mA.
- 3) 4 no. Logic Input with toggle switch.
- 4) 4 no. Digital Output indicator.
- 5) 12 no. Different types of Resistances ( Wire Wound , Carbon Film & Metal Film Resistor).
- 6) 12 no. Different types of Capacitors ( Ceramic, Polyester & Electrolytic capacitor)
- 7) 9 no. Different types of diodes ( Si diode, Ge diode, Zener diode, Photo diode & Light Emitting diode )
- 8) One no. Diac.
- 9) 2 no. PNP & NPN Transistors.
- 10) One no. FET.
- 11) One no. UJT.
- 12) One no. TRIAC.
- 13) One no. SCR.
- 14) One no. MOSFET.
- 15) One no. Thermister
- 16) One no. Solar Cell.
- 17) One no. Speaker.
- 18) Two no. Voltage Regulators ( 7805&7905)
- 19) Two no. Potentiometers ( 1 K $\Omega$  & 10K $\Omega$ )
- 20) One no. Relay.
- 21) One 14 Pin IC Base.

### OPTIONAL ACC.

- \* Digital Multimeter.



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## DIGITAL IC TRAINER

“CROWN” made **DIGITAL IC TRAINER**  
has been designed to perform the following experiments :

1. Study and verify truth tables of Logic Gates (AND, OR, NOT, NAND, NOR, EX-OR GATES USING TTL & CMOS ICs)
2. Verification of Boolean Identities & Demorgan's Theorems.
3. Study and verify truth table of Digital Adder and Subtractor ( Half Adder - Subtractor , Full Adder - Subtractor & 4 Bit Adder & Subtractor Using IC 7483 & 7486).
4. Study of RS, T, D & J-K Flip-Flops and verification of their truth tables.
5. Study of Synchronous, Asynchronous, Decade & Johnson Ring Counters.
6. Study of Left , Right & Programmable Shift Registers and Verification of their truth tables.
7. Study of BCD to 7 SEGMENT Decoder.
8. Study of BCD to DECIMAL Decoder.
9. Study of DECIMAL to BCD Encoder.
10. Study of 8 -1 Line Multiplexer.
11. Study of 1-8 Line Demultiplexer.



Instrument will be supplied along with following Ic's to perform various experiment.  
Kit will be set of IC 7408, 7400, 7432, 7404, 7402, 7486, 7483, 7490, 7493, 7473, 74193, 74138, 74151, 7474, 7476, 74147, 7445, 7446, 74194, 7448 & 7447 (or equivalent as available)

### SPECIFICATION

**INPUT** : 230V AC  $\pm 10\%$ .

**DC OUTPUT** : **A)**  $\pm 5V/500mA$ .  
**B)**  $0 - \pm 25V/500mA$

1. Bread board having 1680 tie points is mounted on front panel.
2. 12 logic input with LED indicator using SPDT switch.
3. 12 nos. Logic output with LED indicator.
4. 1Hz mono shot clock pulse with pulser switch.
5. TTL clock pulser having output frequency's of 10Hz, 100Hz, 1KHz & 10KHz selectable By switch.
6. Three (2 Nos. Common Anode LT542 & 1 No. Common Cathode LT543) Seven segment display connected with sockets for each segment
7. Two Potentiometer of 1Kohm & 1 Mohm.

### **OPTIONAL ACC.**

- \* DC-10MHz Single Trace Oscilloscope.
- \* Digital Multimeter

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## ANALOG COMPONENT TRAINER

“CROWN ANALOG COMPONENT TRAINER” is design to perform Various Electronic Experiments Related to Analog, Digital & Communication Lab.

The module consists of the following :

1. DC Regulated Power Supply 0-30V/250mA,  $\pm 12V / 500mA$ , +5V/1A.
2. AC Power Supply 12 - 0 - 12V/ 250mA.
3. Digital Logic Input - 16 nos.
4. Digital Output Indicator - 16 nos.
5. Logic Probe with High & low Signal Indicator LED's
6. TTL Clock Pulser (10 Hz, 100 Hz, 1 KHz & 10 KHz ) in four steps.
7. 1 Hz Mono shot Pulser.
8. One Seven Segment display (Common anode) with BCD to Seven Segment Decoder
9. 1no. Digital Voltmeter (0-19.99 V DC & 0-199.9 V DC)
10. 1no. Digital Ammeter (0-199.9 mA DC & 0-1.999 A DC)
11. Breadboard having 1680 tie points.
12. Patch cords & probe connector leads.
13. Function Generator (1Hz-100KHz) in six steps with variable Output Voltage (0-15V p-p).



### SPECIFICATIONS :-

- \* Variable Frequency 1Hz – 250 KHz ( $\pm 5\%$ ) in Five Ranges.
- \* Variable Out put Amplitude 0-15V Peak to Peak.
- \* Output Wave from (Sine, Square ,Triangle & TTL) Selectable by functions selector switch.

### **OPTIONAL ACC.**

- \* DC-20MHz Dual Trace Oscilloscope.
- \* Digital Multimeter

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