



**Order code - 33528** Electronics could be taught straight from a book if students were able to visualise the function of an experimental circuit. Unfortunately this is rarely the case and until now it has been necessary to laboriously assemble every experiment to be examined. The assembly of each circuit has no didactic value whatsoever other than to provide the student with a circuit on which to perform the experiment. Now, this can be dramatically improved with the 33528 Digital Electronics Overlay Learning System.

#### FEATURES

The 33528 Digital overlay learning system allows the student to assemble even the most involved circuit in less than five minutes, thus leaving enough time for fruitful experimentation.

The 33528 system features wiring templates which fit over a breadboard and guide students to an immediate and rational experimental layout whilst the experiment book relates to the traditional circuit diagram.

The 33528 Digital overlay learning system is ideal for use with omega products of 33506 Digital Lab Station, 33504 Digital Trainer, 33507 Power Project Board, 33501 Digital Lab, and Analogue and Digital Lab, system's.

No add-ons are required. All the necessary equipment including a standardised set of components is included. The thoroughly researched courseware was designed by educators with over 20 years practical teaching experience, with the aim to enforce theory and not confuse students. The professionally produced manuals are referenced to the most widely used theory books, and the schematic diagrams, component listings, and experiment procedure are clearly listed. Each experiment was tested for typical student reaction prior to final editing.

No prerequisites are demanded other than basic arithmetic. The emphasis is on an instrumental understanding rather than a mathematical one. The continuous hands-on exposure ensures the transfer of marketable technological skills in the minimum amount of time.

Note: Specifications are subject to change.

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#### OBJECTS

- 01 Basic logic functions
- 02 Boolean algebra and simplification of logic equations
- 03 De Morgan's theorem
- 04 TTL NAND/NOR gates definitions and operation
- 05 NAND/NOR gates definitions and operation
- 06 The exclusive-OR and its applications
- 07 The full-adder and full-subtractor
- 08 The bistable or flip-flop (FF)
- 09 Binary counters and the binary number system
- 10 Divide-by-n counters and decade counters
- 11 Shift registers and ring counters
- 12 Pulse forming and shaping: the Schmitt trigger
- 13 Integrated circuit timers: the 74122, 74121, and 555
- 14 Decoding and encoding
- 15 Random access memories (RAM): scratch pad memories
- 16 The operational amplifier
- 17 Digital to analogue (D/A) and analogue to digital (A/D) conversion
- 18 Complementary symmetry MOS (CMOS): principles and characteristics
- 19 Complementary symmetry MOS (CMOS): TTL interface

#### PACKAGE CONTENTS

- 01 Wiring templates (62 pieces)
- 02 Experiment manual 1 set
- 03 Component pack 1 set with templates
- 04 Breadboard 1680 Tie points
- 05 Dimensions 170 x 127 x 50mm
- 06 Weight 1.4Kg.

#### COMPONENTS PROVIDED

- 07 (Hard Waver) :  
Templates, Dip Switch 1P 4W/ 2, Dip Switch 1P 8W/1, Switch SPDT /4, Carbon Pot 16mm 470E/2 with knob,
- 08 (Resistor) :  
Resistor  $\pm 5\%$  0.25W, 330E/10, 470E/1, 680E/7, 820E/2, 1K/2, 1K2/10, 1K5/5, 2K2/1, 4K7/2, 5K6/2, 10K/1, 15K/1, 22K/1, 27K/2, 47K/1, 100K/1
- 09 (Capacitors) :  
Disc capacitor 4700pF/1, 0.01uF/2, 0.033uF/1, 0.1uF/1, 0.22uF/1, Electrolytic capacitor 1uF/63V/1, 4.7uF/63V/1, 100uF/25V/1,
- 10 (Semi conductor) :  
LED 5mm/10, Transistor BC107/2, Seven segment Display LT542/1, IC4001/1, 4007/1, 4050/1, 7400/2, 7402/1, 7403/1, 7404/2, 7405/2, 7406/1, 7408/1, 7410/2, 7414/1, 7420/2, 7432/1, 7442/1, 7447/1, 7451/1, 7472/4, 7476/3, 7483/1, 7486/2, 7489/1, 7490/2, 7496/1, 74121/1, 74122/1, LM741/2, NE555/1, Diode 1N4007/1, ZD 4V7/1

#### LIST OF ACCESSORIES :

Wire 24/25 SWG. 1 Meter each 5 Colour