

AP-434

B.Sc. (Part-I) Semester-II Examination**2S : ELECTRONICS****(Digital Electronics)**

Time : Three Hours]

[Maximum Marks : 80

- Note :-** (i) **ALL** questions are compulsory.
(ii) Draw neat diagrams wherever necessary.

1. (a) Fill in the blanks :

- (i) The Boolean equation for AND gate is
 $Y = \underline{\hspace{2cm}}$ $\frac{1}{2}$
(ii) The base of octal number system is $\underline{\hspace{2cm}}$
(iii) PROM stands for $\underline{\hspace{2cm}}$ Read Only Memory $\frac{1}{2}$
(iv) Free running multivibrator is also called as $\underline{\hspace{2cm}}$ multivibrator. $\frac{1}{2}$

(b) Choose the correct alternatives and rewrite the sentence :

- (i) According to Boolean Algebra $Y = \overline{\overline{A}}$ is equal to $\underline{\hspace{2cm}}$.

- (a) $Y = 0$ (b) $Y = 1$
(c) $Y = A$ (d) $Y = \overline{A}$

(ii) Monostable multivibrator has :

- (a) One stable state (b) Two stable state
(c) No stable state (d) Three stable states

(iii) RAM and ROM are called as

- (a) Semiconductor memory
(b) Auxiliary memory
(c) Magnetic memory
(d) None of the above

(iv) In D-Flip Flop 'D' stands for :

- (a) Diode (b) Dual
(c) Delay (d) None 2

(c) Answer the following questions in **one** sentence :

- (i) Define Base of a Number system. 1
(ii) Define AND Logic gate. 1
(iii) What is Mod of a counter ? 1
(iv) What is ROM ? 1

EITHER

2. (a) Explain how decimal numbers are converted to its equivalent binary numbers. 6
(b) State different types of gates. Write their truth tables, Boolean equations and symbols. 6

OR

- (p) Explain the working of BCD to decimal Decoder. 6
(q) Explain the working of 4 : 1 multiplexer. 6

EITHER

7. (a) Explain the term volatile and non-volatile memory. 6

- (b) What is Flash Memory ? Explain. 6

OR

- (p) Explain Semiconductor Memory. 6
(q) What is Memory Hierarchy ? Explain. 6

OR

(p) Explain the working of 4-Bit Binary Adder with neat diagram. 6

(q) Perform the following conversion :

(i) $(10110)_2 = (x)_{10}$

(ii) $(1010)_2 = (x)_8$

(iii) $(32)_{10} = (x)_2$ 6

EITHER

3. (a) Using K-map simplify the following equation :

$f(A, B, C) = \Sigma m(1, 3, 5, 7)$ 4

(b) State De Morgan's Theorems. 3

(c) Explain the working of CMOS NAND gate. 5

OR

(p) Explain fan in and fan out. 3

(q) Explain the working of DTL NAND gate. 6

(r) Prove that $A + \bar{A}B = A + B$ 3

EITHER

4. (a) Explain the working of RS Flip Flop. State its disadvantages. 6

(b) Explain JK MS Flip Flop. 6

OR

- (p) What is Multivibrator ? State its types and explain the working of bistable multivibrator. 8
- (q) Explain the working of D Flip Flop. 4

EITHER

5. (a) What is counter ? How are they classified ? Explain the working of Mod 10 asynchronous counter. 7
- (b) Explain the working of SIPO Shift Register. 5

OR

- (p) What is Shift Register ? Explain working of PISO Shift Register. 6
- (q) Differentiate between synchronous and asynchronous counter. 4
- (r) Define Modulus of a counter. 2

EITHER

6. (a) What is Decoder ? Explain 2 to 4 line decoder. 6
- (b) Differentiate between Multiplexer and Demultiplexer. 4
- (c) What is Encoder ? 2