**OR**

(P) Explain any three characteristics of logic families. 6

(Q) State any three boolean laws. 3

(R) Draw k maps for 2, 3 and 4 variables for fundamental products terms. 3

**EITHER**

4. (A) Explain the working of D-flip flop. 6

(B) Explain working of Astable multivibrator. 6

**OR**

(P) Explain working of Monostable Multivibrator. 6

(Q) Explain working of JK flip flop. 6

**EITHER**

5. (A) Explain the working of Ring Counter with neat diagram. 6

(B) Explain SISO Shift Register. 6





Second Semester B. Sc. (Part – I) Examination

## 2S – ELECTRONICS

Digital Electronics

P. Pages : 6

Time : Three Hours] [Max. Marks : 80

**Note :** (1) All questions are compulsory.
(2) Draw neat diagram wherever necessary.

1. (A) Fill in the blanks.

(i) The 1's' compliment of 010 is ——. $\frac{1}{2}$

(ii) According to De Morgan's Theorem $\overline{A+B}$ is equals to ————. $\frac{1}{2}$

(iii) Flip flop is a ———— multivibrator. $\frac{1}{2}$

(iv) PIPO is a parallel in ——— out shift register. $\frac{1}{2}$

(B) Choose correct alternative and rewrite the sentence.

(i) The base of Hexadecimal number system is

(a) 2 (b) 10

(c) 8 (d) 16 $\frac{1}{2}$

(ii) The boolean equation for NOT gate is

(a) $y = A$ (b) $y = \overline{\overline{A}}$

(c) $y = \overline{A}$ (d) $y = AA$ $\frac{1}{2}$

(iii) In D flip flop when ClK = 1 and D = 1 then output of flip flop is

(a) 1 (b) 0

(c) Toggle (d) None of above $\frac{1}{2}$

(iv) Asynchronous counters are also called as

(a) Parallel (b) Ripple

(c) Dual (d) Johnson counter $\frac{1}{2}$

(C) Answer the following in **one** sentence.

(i) State different types of Basic logic gates. 1

(ii) State types of shift registers. 1

(iii) State types of ROM. 1

(iv) State different types of flip flops. 1



**EITHER**

2. (A) Perform the following conversion.

(i) $(25)_{10} = (x)_8$

(ii) $(10100)_2 = (x)_{10}$

(iii) $(12.25)_{10} = (x)_2$ 6

(B) Explain the working of Half Adder. 4

(C) What is 1's' compliment ? Give example. 2

**OR**

(P) Define NAND and NOR gates and draw truth tables and symbols. 6

(Q) Explain Excess-3 and BCD-8421 codes. 4

(R) Perform the following :—

(i) $(101)_2 \times (100)_2$

(ii) $(1100)_2 + (0011)_2$ 2

**EITHER**

3. (A) State and prove De Morgan's theorems. 6

(B) Give the classification of logic families and explain the working of TTL logic (NAND) gate. 6

**OR**

(P) Explain working of Johnson counter. 6

(Q) Explain PIPO shift register. 6

**EITHER**

6. (A) Explain the working of 4:1 multiplexer. 6

(B) Explain the working of BCD to seven segment decoder. 6

**OR**

(P) Explain the working of 1:4 Demultiplexer. 6

(Q) Differentiate between multiplexer and Demultiplexer. 4

(R) What is decoder ? 2

**EITHER**

7. (A) Explain primary and secondary memories. 6

(B) Explain the concept of memory Hierarchy. 6

**OR**

(P) Explain different types of semiconductor memories. 6

(Q) Differentiate between volatile and Non volatile memory. 4

(R) What is primary and secondary memory ? 2