BCA 108 N

B.C.A. (PART-I) EXAMINATION, 2024-25

(SECOND SEMESTER)

5801

Paper : III

(New Course)

Digital Circuit and Logic Design

Time : Three Hours]   [Maximum Marks : 75

Note: (i)   Answer **Five** Questions in all.

     (ii)   Question No.-1 is **Compulsory**.

     (iii)   Answer remaining **four** questions, selecting **two** questions from each Section **A** and **B**.

     (iv)   All questions carry equal marks.

1.   Answer all parts of the following :

     (a)   Design and draw the logic diagram of full adder.

     (b)   What is flip-flop ? Explain.

     (c)   State the Boolean distributive law.

     (d)   What is register ? Explain

     (e)   What is multiplexers ?

Section-A

2.   Give difference between the following:

     (i)   SRAM vs DRAM

     (ii)   Register vs Counters

3. Discuss various types of Logic Gates. Also discuss their applications.

4. Draw the master slave JK flip-flop and explain its working.

5. What is Karnaugh Map ? Explain 4-variable K-map with an example.

Section-B

6. (a) Differentiate between asynchronous and synchronous counters.

   (b) Design and explain a half subtractor with truth table and circuit.

7. (a) Convert the following :

   (i) $(1101010)_2$ to hexadecimal

   (ii) $(2F)_{16}$ to decimal

   (iii) $(1101011)_2$ to Octal

   (b) Explain the working of full adder with logic diagram and truth table.

8. (a) Explain SOP and POS forms with example.

   (b) Differentiate between combinational and sequential circuits.

9. Write notes on any two of the following:

   (a) Encoder and Decoder

   (b) Maxterm and Minterm

   (c) Cache Memory

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