Question Paper Code : 6487

B.C.A. (Semester-II) Examination, 2018

DIGITAL ELECTRONICS & COMPUTER ORGANIZATION

[BCA-S-107]

Time : Three Hours] **[Maximum Marks : 100**

Note : Answer **five** questions in all. Question **No.1** is **compulsory.** Besides this, **one** question is to be attempted from each Unit.

1. Write short answers of the following : [4x10=40]

   (a) Define LATCH and its working in detail.

   (b) Discuss the function of BUFFER.

   (c) Differentiate between Up Counter and Down Counter.

   (d) Define Synchronous DRAM in detail.

   (e) Define "WORM" in terms of Computer memory.

   (f) Prove X+X=X in boolean Algebra ?

   (g) Define Hit ratio in detail.

(h) Describe Content addressable memory (CAM) in detail.

(i) Discuss the advantages of semiconductor memory.

(j) Define address space in detail.

UNIT-I

2. (a) Explain Exclusive gates in detail with their logic diagram and truth table. [8]

(b) State and prove Universal property of NAND gate with appropriate diagram ? [7]

3. (a) Discuss the utility of SOP and POS techniques in circuit designing. [8]

(b) Explain the different kinds of Magnetic Memory in detail. [7]

UNIT-II

4. Draw the K-Map and Simplify the Boolean expressions given below : [15]

$F(ABCD) = \sum(0,2,3,4,5,6,7,12,13,14,15)$

$F(ABCD) = \pi(2,3,4,5,10,11,12,13,14,15)$

5. Design 8x1 multiplexer and explain its functioning in detail. [15]

UNIT-III

6. (a) Design the boolean logic circuit for half Subtractor and explain its functioning in detail. [8]

(b) How flip-flops are different from Registers ? Discuss the role of Parallel load in shift register ? [7]

7. Discuss 4 bit Bidirectional shift register in detail with suitable diagram. [15]

UNIT-IV

8. (a) Explain the functioning of Master-Slave JK flip-flop with neat diagram. [8]

(b) Discuss the utility of Encoder in detail ? [7]

9. Write short notes on the following : [5x3=15]

(a) Associative Memory

(b) T flip-flop

(c) CD-ROM

----- x -----