CBCS SCHEME

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18MCA15

First Semester MCA Degree Examination, Dec.2019/Jan.2020
Computer Organization

Time: 3 hrs. Max. Marks: 100

Note: ***Answer FIVE full questions, choosing ONE full question from each module.***

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

Module-1

1 a. Solve the following numbers in to Equivalent values **(10 Marks)**

i) $DAD_{(16)} = (?)_{10}$
ii) $A35.B_{(16)} = (?)_{8}$
iii) $101101011.1110_{(2)} = (?)_{16}$
iv) $623.77_{(8)} = (?)_{(16)}$
v) $4096.3125_{(10)} = (?)_{(2)}$

b. Compute the steps in Performing (r – 1)'s Complement of Subtraction and solve the following : M = 1000100 N = 1010100 **(10 Marks)**

OR

2 a. Label the Basic theorems and Properties of Boolean Algebra along with the Axiomatic definition of Boolean Algebra State and Prove DeMorgan's Law. **(10 Marks)**

b. Compute the following from POS to SOP F = X(Y + Z) (X + Y + Z) and Interpret F(A, BCD) = F(ABCD) = $\sum$(1, 3, 5, 7, 9) + D(6, 12, 13). Using K-Map. **(10 Marks)**

Module-2

3 a. Describe Basic Logic gates. Define universal gates. State and Describe NAND and NOR as Universal gates. **(10 Marks)**

b. Construct a 4-bit Decimal Adder using Binary Coded Decimal Logic. **(10 Marks)**

OR

4 a. Illustrate the Decoder and Encoder with Truth Table and circuit diagram. **(10 Marks)**

b. Explain Booth algorithm with the following example 5 * –3 . Using 4-Bit numbers. **(10 Marks)**

Module-3

5 a. Define Computer. Label the different characteristics of a computer with the different types. And describe the Functional units of a computer. **(10 Marks)**

b. Describe the interprocess Communication between CPU and Memory. **(05 Marks)**

c. Outline Single Bus Structure and Two Bus Structure with block diagram. **(05 Marks)**

OR

6 a. Define Addressing modes, and Describe different Addressing modes with example. **(10 Marks)**

b. Classify straight line Sequencing and Branching with an example program to find Sum of Array Elements. **(10 Marks)**

Module-4

7 a. Explain the different types of Interrupts. Describe Interrupt Hardware. **(10 Marks)**

b. Describe how Interrupts can be handled? And also explain the methods of controlling Interrupts. **(10 Marks)**

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OR

8 a. Illustrate the I/O Techniques in which CPU is not Continuously involved in Data Transfer. **(10 Marks)**

b. Analyze the Different approaches to Bus Arbitration. **(10 Marks)**

Module-5

9 a. Design DRAM with neat diagram, Explain internal organization of asynchronous dynamic memory chip. **(10 Marks)**

b. Explain the working of Cache memory along with Direct Mapping Technique. **(10 Marks)**

OR

10 Write short notes on :

a. Virtual Memory

b. ROM Cell

c. CISC and RISC

d. BIG – ENDIAN and LITTLE – ENDIAN. **(20 Marks)**

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