

# CBCS SCHEME

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16/17MCA14

## First Semester MCA Degree Examination, June/July 2018 Computer Organization

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

### Module-1

- 1 a. Convert the following:
- (i)  $(673.124)_8 = (?)_2$  (ii)  $(1010.011)_2 = (?)_{10}$   
(iii)  $(123.6875)_{10} = (?)_{16}$  (iv)  $(BDA.D4)_{16} = (?)_8$   
(v)  $(3527)_8 = (?)_{16}$  (10 Marks)
- b. Subtract the following:
- (i) Subtract using 2's complement  $(11100)_2$  from  $(10011)_2$  (04 Marks)  
(ii) Subtract using 9's complement  $(3250)_{10} - (72532)_{10}$  (02 Marks)
- c. Obtain 2's complement of  $(10101)_2$ .

OR

- 2 a. What are the two forms of Boolean expression? Explain with examples. (06 Marks)  
b. Find the complement of a given function by using De Morgan's theorem.  
 $F = x'y + xy'$  (04 Marks)  
c. Using k-map simplify the Boolean function.  
 $F(w, x, y, z) = \sum(0, 1, 2, 4, 6, 8, 9, 12, 13, 14)$  (06 Marks)

### Module-2

- 3 a. What is Full adder? Give truth table, logical expression for sum and carry and implementation using Nand gate. (10 Marks)  
b. What is multiplexer? With block diagram and logic diagram, explain 4 to 1 line multiplexer. (06 Marks)

OR

- 4 a. What is flip-flop? Explain the working principle of T-flip flop with logic diagram and truth table. (10 Marks)  
b. Explain BCD Ripple counter with neat diagram. (06 Marks)

### Module-3

- 5 a. With a neat diagram, explain basic operational concept of a system. (10 Marks)  
b. Explain big-endian and little-endian assignment type. (06 Marks)

OR

- 6 a. Explain any 5 types of addressing modes with example for each. (10 Marks)  
b. Write a note on conditional code flags. (06 Marks)

### Module-4

- 7 a. Define bus. Explain single bus architecture. (08 Marks)  
b. Differentiate between memory mapped i/o and i/o mapped i/o. (08 Marks)

OR

- 8 a. What is DMA? List and explain the different ways in which data transfer can be done using DMA. (06 Marks)  
b. What is interrupt? Explain about simultaneous request handling by the processor. (10 Marks)

Module-5

- 9 a. With neat diagram explain SDRAM cell. Explain the read and write operation. Compare static and dynamic RAM. (10 Marks)  
b. What is the use of cache memories? Explain one cache mapping function. (06 Marks)

OR

- 10 a. Explain various types of ROM. (06 Marks)  
b. Explain with diagram the connection of memory to the process. (10 Marks)

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