

Paper Id:

214104

Roll No:

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MCA
(SEM I) THEORY EXAMINATION 2019-20
COMPUTER ORGANIZATION AND ARCHITECTURE

Time: 3 Hours

Total Marks: 70

Note 1. Attempt sections in any order as per your convenience. Attempt the questions in any order.

SECTION A

1. Attempt 4 questions brief. 2 x 7 = 14

- a. How does computer organization affect the performance of the computer?
- b. Find 2's and 1's complement of the number -17 and 18.
- c. What is IEEE standard for floating point number?
- d. Find the values of 16 after right shift and left shift operations.
- e. Why Cache memory is faster than main memory?
- f. Differentiate between RISC and CISC architecture.
- g. Consider the equation $(43)_x = (y3)_8$, where x and y are unknown. What are the possible solutions for this equation?

SECTION B

2. Attempt any three of the following: 7 x 3 = 21

- a. Explain the memory hierarchy in detail.
- b. Perform multiplication of two (-7) and (5) number using Booth's algorithm and verify your answer.
- c. Discuss the term hardwired control logic in detail.
- d. Minimize the Boolean expression using K-Map $f(w, x, y, z) = \sum (0, 1, 2, 3, 4, 5, 6, 7, 14, 15)$ and suitable circuit diagram.
- e. How the execution of a complement instruction takes place in Multiple-bus organization explain in detail.

SECTION C

3. Attempt any one part of the following: 7 x 1 = 7

- (a) Explain different type of addressing mode in detail.
- (b) What is 2D and $2^{1/2}$ D memory organization explain in detail with suitable diagram? Explain the difference between these two with suitable example.

4. Attempt any one part of the following: 7 x 1 = 7

- (a) What do you mean by programmed I/O explain in detail with suitable flow chart.
- (b) Explain the features of RISC and CISC processor in detail.

5. Attempt any one part of the following: 7 x 1 = 7

- (a) What is Flynn's Classification and why it is called architectural classification, explain it in detail.
- (b) What is pipeline explain it with example. What are the different types of pipeline?

6. Attempt any one part of the following: 7 x 1 = 7

- (a) What is input-output processor explain in detail with suitable diagram?
- (b) What is serial communication? What is different between I/O processor and serial communication processor?

7. Attempt any one part of the following: 7 x 1 = 7

- (a) What is fast adder? Generate the expression for the 4 bit fast adder.
- (b) What half adder and full adder? Design a logic circuit diagram of full adder using truth table and k-map?