Sub Code:RCA104

Paper Id: 214104 Roll No:

MCA

(SEM I) THEORY EXAMINATION 2019-20

COMPUTER ORGANIZATION AND ARCHITECTURE

Time: 3 Hours *Total Marks: 70*

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in 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 CICS 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-Man f (w, x, y, z) = Σ (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?