28/Feb/23

1484/III

B.C.A. (PART-II) EXAMINATION, 2022-23

(Third Semester)

9237

(BCA 304 : COMPUTER ORGANIZATION AND ARCHITECTURE)

Paper : IV

Time : Three Hours] [Maximum Marks : 70

Note: (i) Answer **Five** Questions in all.

(ii) Question No.**1** is **Compulsory**.

(iii) Answer remaining **Four** questions, selecting **Two** from each Section **A** and **B**.

(iv) All questions carry equal marks.

1. Answer **all** parts of the following:

(a) Find 2's and 1's complement of the number -17 and 18

(b) How computer organization and architecture effects the performance of a computer?

(c) Explain working of D-Flip flop.

(d) Design a digital circuit that perform two logic operations of exclusive- OR and exclusive-NOR. Show logic diagram

SECTION-A

2. Represent $(-456.1234)_{10}$ in single precision and double precision format.

3. Explain the bus architecture with its types. Discuss also the I/O bus architecture with block diagram.

4. Solve the following:

   (a) $(734)_8 + (325)_8$

   (b) $(810) + (-417)$ Using 2's compliment

   (c) $(10000111)_2 - (1111100)_2$

   (d) $(-9764)_{10} + (-3778)_{10}$

5. What are half adder and full adder? Design a logic circuit diagram of full adder using truth table and K-map?

SECTION-B

6. (a) Draw the instruction word format. Indicate and explain number of bits required with its meaning on each part.

   (b) What do you mean by CPU organization? Explain various types of processor organization.

7. (a) Draw a diagram of bus system using MUX which has four registers of size 4 bits each.

(b) Draw the flowchart for instruction cycle with neat diagram and explain.

8. (a) Explain in detail the principle of carry look ahead adder and design 4-bit CLA adder

(b) Describe in detail immediate, direct, indirect and Register indirect addressing modes with suitable example and diagram if necessary.

9. Write notes on any of two of the following:

(a) Memory hierarchy

(b) DMA controller

(c) Interrupts

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