VIT
Vellore Institute of Technology

Continuous Assessment Test – I

B.Tech (BCI), B.Tech (BCE), B.Tech (BCB)

Course Name & Code: CSE 2001 COMPUTER ARCHITECTURE AND ORGANIZATION
Class Number: VL2019205001603
Exam Duration: 1 hour 30 minutes

Slot: A1
Maximum Marks: 50

1. What are the functional components of a computer? Specify the inputs and outputs of each component in terms of bus. Write about IAS Architecture in detail.

    (10 Marks)

2. a) Compare and contrast RISC and CISC machines. (5 Marks)

    b) Perform the arithmetic operations $(+93) + (+100)$ and $(-93) + (-100)$ with binary numbers in signed 2's complement representation. Use eight bits to accommodate each number along with its sign. Comment on the result in terms of overflow.

    (5 Marks)

3. Perform the multiplication of $27 \times (-14)$ using Booth's algorithm. Draw the flow chart and explain step by step process for the Booth's algorithm.

    (10 Marks)

4. Compute the total memory traffic in bytes for both instruction fetch and instruction execution for the code that implement the expression $A = (B-C)*D$ on 3, 2, 1 and 0 address machines. Assume opcode occupy one byte, address occupy two bytes and data values also occupy two bytes. The word length is 16 bits.

    (10 Marks)

5. a) Consider a computer that has byte-addressable memory organized in 32-bit words according to Big-endian scheme. A program reads ASCII character entered at a keyboard and stores them in successive byte locations, starting at location 1000. Show the contents of two memory words at locations 1000 and 1004 after the word 'COMPUTER' has been entered.

    (5 Marks)

    b) Consider Register R4 and R5 contain the decimal number 2000 and 3000 before each of the following addressing modes is used of access a memory operand. What is the effective address (EA) in each case? Specify addressing modes used in each instructions?

    i) 12 (R4), ii) (R4, R5), iii) 28 (R4, R5) iv) (R4)+, v) –(R4).

    (5 Marks)