USN ☐☐☐☐☐☐☐☐☐☐   **18CS34**

Third Semester B.E. Degree Examination, Aug./Sept.2020
Computer Organization

Time: 3 hrs.   Max. Marks: 100

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

Module-1

1   a.   With a neat diagram, analyze the basic operational concepts of a computer. Give the operating steps. **(10 Marks)**

    b.   Analyze Big Endian and Little Endian methods of byte addressing with proper example. **(05 Marks)**

    c.   Explain SPEC rating of computer. **(05 Marks)**

OR

2   a.   What is an Addressing mode? Explain any four types of addressing modes, with suitable example. **(10 Marks)**

    b.   What is a Subroutine? Analyse the use of call (or) Return Instructions in a subroutine with assembly language program code. **(10 Marks)**

Module-2

3   a.   With neat sketches, explain various methods for handling multiple Interrupts requests raised by Multiple devices. **(10 Marks)**

    b.   What is DMA Bus Arbitration? Briefly explain different bus arbitration techniques. **(10 Marks)**

OR

4   a.   Explain Synchronous Bus and Asynchronous Bus with neat Timing diagrams. **(10 Marks)**

    b.   Enumerate the features of Universal Serial Bus. **(05 Marks)**

    c.   Describe how a read operation is performed in a PCI bus. **(05 Marks)**

Module-3

5   a.   With a neat diagram, explain the Internal Organization of 128 × 8 memory chip. **(10 Marks)**

    b.   Describe the working of Static RAM memories. **(05 Marks)**

    c.   Analyze the working mechanism of Asynchronous DRAMS. **(05 Marks)**

OR

6   a.   Analyze how data are written into Read Only Memories (ROM). Discuss different types of Read Only Memories. **(10 Marks)**

    b.   What is Cache memory? Analyze the three mapping functions of Cache memory. **(10 Marks)**

Module-4

7   a.   Design a logic circuit to perform addition and subtraction of two 'n' – bit numbers X and Y. This circuit can be suitably modified to perform Y – X operation. **(08 Marks)**

    b.   Design an 'n' bit carry propagation adder circuit to add 'K' – 'n' bit numbers. **(07 Marks)**

    c.   Subtract – 5 from -7 using Two's complement subtraction. **(05 Marks)**

OR

8 a. Analyze the design of Carry Look Ahead adder circuit suitable logic circuit diagram.
                                                                                        (10 Marks)

   b. Explain Booth Multiplication Algorithm. Apply Booth Multiplication Algorithm to multiply
       the signed number – 5 and 4.   (10 Marks)

Module-5

9 a. Explain the working of single bus organization of data path.   (07 Marks)
   b. Write the sequence of control steps to execute the Instruction Add (R_3) , R_1 on single bus
       architecture.   (05 Marks)
   c. Analyze how does execution of a complete instruction carry out.   (08 Marks)

OR

10 a. What is the purpose of Control unit? With neat sketches, explain the organization of
       Hardwired control unit in detail.   (10 Marks)
   b. What is Pipelining? Explain the five stage Instruction pipeline with timing diagram.
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