USN | | | | | | | | | | **18EC35**
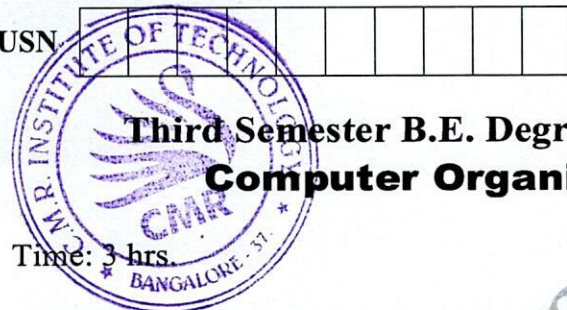
Third Semester B.E. Degree Examination, Dec.2024/Jan.2025
Computer Organization and Architecture

Time: 3 hrs.   Max. Marks: 100

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

Module-1

1 a. Explain the basic operational concept between the processor and memory with a neat block diagram. **(08 Marks)**
   b. Explain how to measure the performance of the computer. **(08 Marks)**
   c. Write a note on types of computers. **(04 Marks)**

OR

2 a. List out and explain the three systems used for representing signed numbers and also brief about the modular number system concept. **(08 Marks)**
   b. Write short notes on Big-endian and little-endian assignment. **(08 Marks)**
   c. Write a note on processor clock. **(04 Marks)**

Module-2

3 a. What is addressing mode? Explain any five types of addressing modes with an example. **(10 Marks)**
   b. What are assembler directives? Explain about the various directives used in the program with example. **(10 Marks)**

OR

4 a. Explain the concept of stacks and queues. **(08 Marks)**
   b. With an example explain shift and rotate instructions. **(08 Marks)**
   c. Explain subroutine linage with an example using linkage register. **(04 Marks)**

Module-3

5 a. Showing the possible register configuration in I/O interface, explain program controlled input/output. **(10 Marks)**
   b. With a neat diagram, explain DMA controller operation with its interface registers. **(10 Marks)**

OR

6 a. Define exceptions. Explain the different types of exceptions. **(08 Marks)**
   b. Explain the registers involved in a DMA interface to illustrate DMA. **(08 Marks)**
   c. Explain the concept of vectored interrupt. **(04 Marks)**

Module-4

7 a. With figure, explain internal organization of $2M \times 8$ dynamic memory chip. **(10 Marks)**
   b. Define cache memory. Explain various types with neat diagram. **(10 Marks)**

OR

8 a. Explain with block diagram the operation of SD RAM. **(08 Marks)**
   b. What is virtual memory? Explain its organization with neat diagram. **(08 Marks)**
   c. Write short notes on magnetic hard disk. **(04 Marks)**

Module-5

9 a. Explain with neat diagram, single bus organization of data path inside a processor. **(10 Marks)**
   b. Discuss the organization of hardwired controlled unit. **(10 Marks)**

OR

10 a. With a block diagram, describe the organization of a micro programmed control unit. **(10 Marks)**
    b. Explain multiple bus/three bus organization, with a neat diagram. **(10 Marks)**

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