ACHARYA INSTITUTE OF TECHNOLOGY
MCA Library
Date
BANGALORE

CBCS SCHEME

USN | | | | | | | | | |

21CS34

Third Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026
Computer Organization and Architecture

Time: 3 hrs. Max. Marks: 100

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

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

Module-1

1 a. With neat diagram, explain the basic operation concept of computer. **(10 Marks)**

b. What do you mean by Big Endian and Little Endian? Explain its representation with example. **(10 Marks)**

OR

2 a. What is Looping? Explain generalized program for looping with example. **(10 Marks)**

b. What do you mean by Addressing Modes? Explain in detail its different types with example. **(10 Marks)**

Module-2

3 a. Explain in brief I/O operation involving in KB and display device with help of program description. **(10 Marks)**

b. Define Interrupt. Explain steps in which ISR handles and also explain its types with example. **(10 Marks)**

OR

4 a. What is DMA? Why DMA? Explain in detail with register in a DMA interface with example. **(10 Marks)**

b. What is Bus Arbitration? Explain in detail centralized and distributed arbitration with example. **(10 Marks)**

Module-3

5 a. Draw the internal organization of a $2M \times 8$ dynamic memory chip and explain working with fast page mode. **(10 Marks)**

b. State and explain the types of Read Only Memory and memory hierarchy with example. **(10 Marks)**

OR

6 a. What is Cache Memory? Explain different mapping function with diagram. **(10 Marks)**

b. What is Virtual Memory? Explain its memory organization and also explain how virtual memory address translation is done with example. **(10 Marks)**

Module-4

7 a. Explain different types of number representation with example and also draw the addition/subtraction logic unit. **(10 Marks)**

b. What do you mean by Hardwired Control? Explain control unit organization with how decoding and encoding functions work. **(10 Marks)**

OR

8 a. Design and explain the 4 bit carry look ahead adder with example. **(10 Marks)**

b. Explain in detail basic organization of a microprogrammed control unit with its microinstructions. **(10 Marks)**

Module-5

9 a. What is Vector Processing? Explain instruction format for vector processor with example. **(10 Marks)**

b. What is Array Processor? Explain attached array processor with host computer with block diagram. **(10 Marks)**

OR

10 a. What is Parallel Processing? Explain processor with multiple functional unit using a neat block diagram. **(10 Marks)**

b. Explain with neat diagram, pipeline for floating point addition and subtraction. **(10 Marks)**

* * * * *