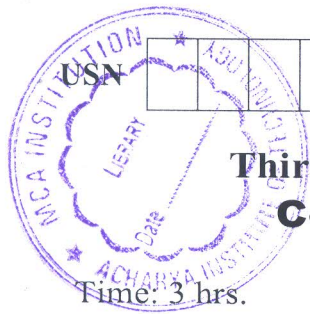


CBCS SCHEME

18MT36



Third Semester B.E. Degree Examination, Jan./Feb. 2023 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 of a computer with neat diagram. (08 Marks)
- b. Explain the different functional units of a digital computer. (06 Marks)
- c. Write the basic performance equation. Explain the role of each of the parameters in the equation on the performance of the computer. (06 Marks)

OR

- 2 a. With relevant figure define the little endian and big-endian assignment. (06 Marks)
- b. Classify basic instruction types with example. (08 Marks)
- c. List the different system used to represent signed numbers perform the following operations on a 4bit signed number using 2's complement representation system i) $(+5) + (-2)$
ii) $(+2) - (-3)$. (06 Marks)

Module-2

- 3 a. Explain any five addressing modes with example. (10 Marks)
- b. Explain briefly basic input/output operation. (05 Marks)
- c. What is stack? Write a routine for safe push operation and pop operation. (05 Marks)

OR

- 4 a. What are assembler directives? Explain assembler directives with example program. (10 Marks)
- b. What is subroutine? Explain with diagram subroutine linkage using link register. (05 Marks)
- c. Explain logical and arithmetic shift instruction. (05 Marks)

Module-3

- 5 a. Define memory mapped I/O and I/O mapped I/O with example. (06 Marks)
- b. Discuss the different schemes available to enable and disable interrupts. (06 Marks)
- c. What is interrupt? Explain transfer of control through the use of interrupt. (08 Marks)

OR

- 6 a. With neat diagram, explain use of DMA controllers in a computer system. (10 Marks)
- b. Explain with diagram interrupt priority schemes. (10 Marks)

Module-4

- 7 a. Explain types of read only memory with diagram. (10 Marks)
- b. Discuss internal organization of $2^m \times 8$ dynamic memory chips. (10 Marks)

OR

- 8 a. Explain the memory hierarchy with neat diagram. (10 Marks)
b. Explain virtual memory organization with neat diagram. (10 Marks)

Module-5

- 9 a. Explain single bus organization of datapath with a neat block diagram. (10 Marks)
b. Explain with neat sketch hardwired control unit organization. (06 Marks)
c. Write a control sequence for execution of the instruction add R4, R5, R6 in three bus organization. (04 Marks)

OR

- 10 a. Write the control sequence for instruction execution for Add (R3), R1 in the execution of a complete instruction. (10 Marks)
b. Draw and explain multiple bus organization. (10 Marks)

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