Roll No. ------------------

**MCA-05**

**Computer Organization and Architecture**

2nd Semester Examination 2024 (Dec.)

**TIME: 2 Hours Max Marks: 70**

Note: This paper is of Seventy (70) marks divided into two (02) Sections A and B. Attempt the questions contained in these sections according to the detailed instructions given therein. ***Candidates should limit their answers to the questions on the given answer sheet. No additional (B) answer sheet will be issued.***

**SECTION – A**

**Long-answer - type questions**

**Note: Section ‘A’ contains Five (05) long-answer-type questions of Nineteen (19) marks each. Learners are required to answer any two (02) questions only. (2×19=38)**

1. What is cache memory? Explain the various mapping techniques of cache memory.
2. Explain the concept of accessing input/output device and describe the difference between programmed input/output and direct memory access (DMA) data transfer scheme. Explain with diagram.
3. What do you mean by addressing modes? Explain the various addressing modes with examples.
4. What is system bus? What are the design elements of Bus and explain each design element of Bus?
5. What is Central Processing Unit? What are the building blocks of Central Processing Unit? Briefly discuss the functions of each unit.

**SECTION – B**

**Short – answer – type questions**

**Note: Section ‘B’ contains eight (08) short- answer type questions of Eight (08) marks each. *Learners are required to answer any Four (04) questions only.* (4×8=32)**

1. What is the difference between asynchronous and synchronous counter?
2. Explain the difference between RISC architecture and CISC architecture.
3. What is pipelining? What are the types of pipelining? Explain.
4. Explain the concept of virtual memory and its implementation in computer system.
5. Explain DMA controllers in a computer system, with a neat diagram.
6. Explain the following terms
7. Static RAM and Dynamic RAM
8. Pipelining
9. Direct Mapping
10. Associative mapping
11. What is instruction pipelining explain with example who a pipeline improved the execution speed of instruction.
12. Distinguish between combinational circuit and sequential circuit.