A–1306

Total Pages : 3 **Roll No. .....**

MCS-602/MIT (CS)-404

(MCA/MSCCS)

Computer System Architecture/Computer Organization & Architecture

Examination February, 2026

Time : 2:00 Hrs. 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) (2×19=38)

***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.

1. Explain the basic components of a computer system using a neat block diagram. Describe the function of each submodule.

2. Describe Programmed I/O, Interrupt-driven I/O, and DMA. Compare their working principles, advantages and limitations.

3. Explain the characteristics of multiprocessors in detail. Discuss memory organization for multiprocessor systems, including shared memory and distributed memory models.

4. Explain the organization of semiconductor memory in detail. Discuss the concept of virtual 'memory with paging.

5. Explain the architecture of a Microprogrammed Control Unit. Discuss the difference between horizontal and vertical microinstructions.

Section–B

(Short Answer Type Questions) (4×8=32)

***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.

1. What are Arithmetic and Logical operations ? Explain the hardware implementation of addition and subtraction using logic circuits.
2. What is instruction set ? Explain its components and importance in a computer system.
3. What are addressing modes ? Describe any four commonly used addressing modes with examples.
4. Describe the instruction cycle in detail, including fetch, decode, and execute phases.
5. Explain RISC and CISC paradigm.
6. Explain pipelining in computer architecture.
7. Explain interconnection networks, their types and characteristics.
8. What is Instruction Level Parallelism ? Explain different techniques used to achieve ILP.

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