

A-0831

Total Pages : 4

Roll No.

MCS-602/MIT(CS)-404

**COMPUTER SYSTEM ARCHITECTURE/
COMPUTER ORGANIZATION &
ARCHITECTURE**

(MCA/MSCCS)

Examination, June 2025

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. Describe the role and functions of the Memory Unit in a computer system. How is data stored, retrieved, and managed in memory ? Explain the differences between primary memory and secondary memory.
2. Explain the basic architecture and components of a CPU. Discuss the role of the Control Unit (CU), Arithmetic and Logic Unit (ALU), registers, and buses in the execution of an instruction.
3. Describe the working of a Direct Memory Access (DMA) controller. How does DMA improve the performance of I/O operations ? Explain the steps involved in a DMA transfer.
4. Describe how I/O devices are connected to the CPU and memory in a computer system. Explain the role of I/O controllers and how they manage communication between peripheral devices and the main system. Discuss the use of ports and interfaces for connecting devices.
5. Explain the RISC (Reduced Instruction Set Computing) and CISC (Complex Instruction Set Computing) paradigms. Compare them.

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. Discuss the importance of the binary number system in computers. How is data represented using binary in a computer system ?
2. Explain the architecture and functioning of the Arithmetic and Logic Unit (ALU). Discuss the role of the ALU in executing instructions within the CPU.
3. Explain the concept of subroutines in programming. Discuss how subroutine calls are managed in memory and the role of parameters and return values in subroutine execution.
4. Explain the concept of Register Transfer Language (RTL) specification. How does RTL notation describe the operations that occur during the execution of a machine instruction ?
5. Explain the process of designing a hardwired control unit for a CPU. What are the key components and steps involved in creating the control unit ?

6. Explain the concept of microprogrammed control in CPU design. Discuss the role of control memory and micro-operations in the execution of instructions in a microprogrammed control unit.
7. Describe how a Video Display Unit (VDU) functions as an output device in a computer system. Discuss the different modes of video output.
8. Discuss the role of interrupt handling in an interrupt-controlled I/O system. Provide an example of how an ISR manages data input from a device.
