

Roll No.

Total Pages : 03

BT-5/D-24

45172

**COMPUTER ORGANIZATION
AND ARCHITECTURE
PC-CS-307A**

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a) Describe the evolution of computer generations. Mention the key features of each generation. 8
- (b) Explain the digital arithmetic algorithm for binary addition and subtraction. Illustrate with examples. 7
2. (a) What are the various types of memory that comprise hierarchy and how do they differ in terms of speed, capacity and cost ? 8
- (b) What is cache memory ? Explain its purpose and working mechanism. 7

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Unit II

3. (a) Explain the common bus system in a computer. How does it help in connecting the computer's components ? 7
- (b) What is the role of timing and control in a computer system ? Discuss the stages of the instruction cycle. 8
4. (a) Compare hardwired control units and microprogrammed control units. Which is more efficient and why ? 8
- (b) Discuss the difference between horizontal and vertical microprogramming. Give examples of both types. 7

Unit III

5. (a) Describe the general register organization in CPU architecture. What are the advantages of using a general-purpose register set ? 8
- (b) Describe direct addressing mode. How does it differ from indirect addressing mode ? Provide examples for both. 7

6. Discuss Flynn's taxonomy of computer architecture. Explain the differences between SISD, SIMD, MISD, and MIMD. 15

Unit IV

7. (a) Explain the process of CPU-IOP communication. How does this communication improve the efficiency of data transfer in a system ? 8
- (b) Explain, how are priority interrupts handled in a computer system ? 7
8. Discuss the different modes of data transfer: Programmed I/O, interrupt-driven I/O and Direct Memory Access (DMA). 15