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Total No. of Printed Pages: 1

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MCA (Semester – 1st)
COMPUTER ORGANIZATION AND ARCHITECTURE
Subject Code: MCAPS1104
Paper ID: [20270104]

Time: 03 Hours

Maximum Marks: 60

Instruction for candidates:

1. Section A is compulsory. It carries 16 marks. It consists of 4 questions of 4 marks each.
2. Section B consist of 4 questions of 8 marks each. The student has to attempt any 3 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A

(4 marks each)

- Q1. Describe the role of the instruction cycle in basic computer operations. Outline its main phases.
- Q2. What is Direct Memory Access (DMA) and how does it improve I/O performance in a computer system?
- Q3. Explain the difference between main memory and cache memory. Why is cache memory faster?
- Q4. List and briefly describe any four types of instructions in the 8085 microprocessor's instruction set.

Section – B

(8 marks each)

- Q5. Explain the design and working of a basic computer? Describe the roles of memory reference instructions and timing and control in its operation?
- Q6. Discuss the general register and stack organizations in CPU architecture. Compare their advantages and disadvantages, and explain how each affects data manipulation and storage.
- Q7. Explain how associative mapping works in cache memory. Give an example to illustrate the mapping process?
- Q8. Outline the architecture of the 8085 microprocessor and explain the function of its main registers. Mention any four basic assembly language programming instructions manipulating these registers?

Section – C

(10 marks each)

- Q9. Define the instruction cycle? Describe its main phases, explaining the purpose of each phase. Give an example.
- Q10. a) Explain the role of peripheral devices in a computer system. (4)
b) Describe the different types of input-output interfaces used to connect these devices to the CPU. Discuss the advantages and disadvantages of each type of interface in terms of speed, complexity, and application. (6)
- Q11. Discuss the principles of parallel processing and pipelining in a computer system. Explain how these techniques enhance system performance?