



I Semester M.C.A. (Two Years Course) Examination, July 2023
(CBCS Scheme) (2020-21 and Onwards)
COMPUTER SCIENCE

1MCA3 : Computer Organization and Architecture

Time : 3 Hours

Max. Marks : 70

Instruction : Answer **any five** questions from Section – A and **any four** questions from Section – B.

SECTION – A

Answer **any five** questions. **Each** carries **six** marks. (5×6=30)

1. Explain error detection with odd parity bit and even parity bit.
2. What is an adder ? Give logic diagram and truth table of half adder circuit.
3. Write the differences between CISC and RISC architecture.
4. Discuss about memory reference instructions with suitable example.
5. Explain priority interrupt and discuss any one method with neat diagram.
6. Discuss the different mapping techniques used in cache memories.
7. Explain interrupt driven input output techniques.
8. How parallel operations are implemented effectively in computer system ?

SECTION – B

Answer **any four** questions. **Each** carries **ten** marks. (4×10=40)

9. a) Explain the bus structures in a computer system with a neat diagram. 5
b) Distinguish between multiprocessors and multi computers. 5
10. a) Perform $(1101)_2 - (0011)_2$ using 2's complement. 3
b) Convert the following $(1010.01)_2$ to $(?)_{10}$ 3
c) Prove NAND and NOR are universal gates. 4

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11. a) Briefly explain the different instruction formats with suitable examples. 5
b) Discuss about steps involved in instruction cycle with interrupt enabled. 5
12. a) Explain the basic organization of a micro programmed control unit. 5
b) Describe the data transfer method using DMA. 5
13. What are addressing modes ? Explain the various addressing modes with examples. 10
14. a) What is cache coherence problem ? Discuss about different cache coherence approaches. 5
b) Write short notes on interprocessor communication and synchronization. 5
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