



I Semester M.C.A.(2 Years Course) Degree
Examination, August/September 2021
(CBCS Scheme) (2020 – 2021 and Onwards)
COMPUTER SCIENCE
1MCA3 : Computer Organization and Architecture

Time : 3 Hours

Max. Marks : 70

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

SECTION – A

Answer **any five** of the following. Each question carries **six** marks : **(5×6=30)**

- Convert the following :
 - $7562_{(10)} = \underline{\hspace{2cm}}_{(16)}$
 - $1110101_{(2)} = \underline{\hspace{2cm}}_{(10)}$
 - $F3A7_{(16)} = \underline{\hspace{2cm}}_{(8)}$
- Construct the basic logic gates using NOR logic gate.
- Differentiate CISC and RISC.
- Explain different instruction formats with an example for each.
- Explain the limitation of Instruction level parallelism.
- DMA has Priority over the CPU when both request a memory transfer. Justify your answer.
- Explain the characteristics of multiprocessors.
- Explain different types of ROM.



SECTION - B

Answer **any four** of the following. **Each** question carries **10** marks. **(4×10=40)**

9. a) Minimize the following expression using K-Map 5

$$Y = \bar{A}\bar{B}\bar{C}\bar{D} + \bar{A}B\bar{C}\bar{D} + A\bar{B}\bar{C}\bar{D} + AB\bar{C}\bar{D} + \bar{A}\bar{B}C\bar{D} + \bar{A}\bar{B}CD$$
- b) Design a combination logic circuit that form the arithmetic sum of three input bits. 5
10. a) Construct a 4-to-1 line multiplexer using logic gates. Explain its working procedure. 5
- b) Implement the following Boolean function using 8 : 1 multiplexer. 5

$$F(A, B, C, D) = \sum m(1, 3, 5, 6)$$
11. Discuss any two addressing modes of any generic microprocessor with an example for each. 10
12. Explain distributed memory MIMD architecture with neat diagram. 10
13. Explain three state – buffer with all supporting diagrams. 10
14. What is multithreading with respect to any generic microprocessor / OS ?
 Discuss multithreaded processor architecture in detail with neat diagram. 10
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