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Reg. No. | | | | | | | | | |

I Semester M.C.A. Degree Examination June/July - 2024
COMPUTER SCIENCE
Computer Organization and Architecture
(CBCS Scheme Y2k20)

Time : 3 Hours **Maximum Marks : 70**

Instructions to Candidates :

Answer all the questions.

PART - A

Answer any FIVE of the following questions. **(5×6=30)**

1. Convert $257_{(10)}$ to Binary, Octal and Hexa decimal number system.
2. Explain 4×1 Multiplexer and 1×4 De-Multiplexer with a neat diagram.
3. Explain difference between CISC and RISC.
4. Write a note on error detection and correction code using Hamming Code.
5. Explain the register set connected to common bus in computer organization.
6. With an example, explain the different instruction formats.
7. Explain Stack Organization and its operation.
8. Explain data hazarads in instruction level parallelism.

PART - B

Answer any FOUR of the following questions. **(4×10=40)**

9. (a) Minimize the following expression using K-map and write the equivalent circuit diagram for the minimized expression.

$$F(\omega, x, y, z) = \sum(m_1, m_2, m_5, m_{13}, m_{15}) + \sum d(m_4, m_9, m_{10}, m_{12}, m_{14}).$$ **(6)**

(b) Write a note on Von-Neumann architecture. **(4)**

10. (a) Explain the working of Half Adder and Full Adder. Implement the same using NAND gates only. **(6)**

(b) With an example explain any four addressing modes. **(4)**

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11. (a) With a neat flow chart explain instruction cycle. (6)

    (b) Explain shift instruction with an example. (4)

12. (a) Explain DMA Controller in detail. (6)

    (b) Discuss Internal and External Interrupts. (4)

13. (a) Explain memory hierarchy in computer organization. (6)

    (b) Briefly explain the levels of RAID technology. (4)

14. Write short notes on:

    (a) Flynn's Taxonomy

    (b) Ripple Counter (5+5)