QP CODE: 24800325

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Reg No : .....

Name : .....

M.C.A. DEGREE EXAMINATION, JANUARY 2024

First Semester

Faculty of Technology & Applied Science

Master of Computer Application

CORE - MCACT102 - DIGITAL LOGIC & COMPUTER ORGANIZATION

2020 Admission Onwards

2DC309FC

Time: 3 Hours Maximum: 75 Marks

Part A

*Answer any **ten** questions*

*Each question carries **3** marks*

1. What is BCD code ? Give examples.
2. Illustrate the use of error correcting codes.
3. What is EBCDIC code?
4. Convert the following Boolean expression into standard SOP form AB'C + A'B' +ABC'D
5. What is a flip-flop?
6. List out basic types of shift registers.
7. Discuss the different ways to arrange byte addresses across memory words.
8. Give the purpose of MFC signal.
9. Illustrate I/O interface for an input device.
10. Explain the function of Interrupt Service Routine.
11. Explain vector processors.
12. Differentiate between superscalar and super pipelined systems.

(10×3=30 marks)

Part B

*Answer **all** questions*

*Each question carries **9** marks*

13. a) Perform subtraction using 1's complement method on the binary and explain the steps.
    i) 10101 - 00110
    ii) 00110 - 01001
    iii) 00011 - 01100

OR

b) Explain how to detect and correct errors in the following odd parity Hamming code 0101101.

14. a) Solve the following using K-Map. F(A,B,C, D) = ∑(1,3,9,11,4, 5, 12, 13, 10,14) .

OR

b) Explain the four types of shift registers.

15. a) Draw and explain single bus organization of datapath inside a processor.

OR

b) Explain Booth Algorithm with an example.

16. a) Explain the various memory classifications.

OR

b) Write notes on a)Secondary memory b) ROM.

17. a) Explain in detail the following SIMD parallel structures: Array Processors, Vector Processors.

OR

b) Explain the interconnection structures used in multiprocessors .

(5×9=45 marks)