K21P 4706

I Semester M.C.A. Degree (C.B.S.S. – Reg./Supple./Imp.) Examination, November 2021
(2020 Admission Onwards)
MCA1C01 : DIGITAL FUNDAMENTALS AND COMPUTER ORGANIZATION

Time : 3 Hours   Max. Marks : 60

PART – A

Answer **all** questions, **each** question carries **two** marks.

1. Write a note on Sum of Product form. How will you implement a POS expression ? Write the steps to convert a Sum Term to Standard POS.   2

2. Write a note on Encoders. Explain about a Decimal to BCD Encoder.   2

3. Differentiate Combinational and Sequential circuits.   2

4. Write a note on Ring Counters.   2

5. What is addressing mode ? Explain about different addressing modes.   2

6. Write the differences between RISC and CISC.   2

7. How an instruction is executed ? Explain.   2

8. Using Booth algorithm multiply 11 * – 6.   2

9. What is Direct Memory Access ?   2

10. What is ROM ? Which are the different types of ROMs ?   2

                                                                         (10×2=20)

PART – B

Answer **all** questions, **each** question carries **eight** marks.

11. a) Explain about Multiplexers and De-Multiplexers. Implement a full adder using 8 : 1 MUX.   8

    OR

    b) Minimize the Boolean expression using Karnaugh map
       f(A, B, C, D) = Σm(1, 3, 7, 11, 15) +d(0, 2, 5) and realize it using NAND gates.   8

12. a) With the help of a block diagram, explain the working of a JK flip flop. How does it eliminate the invalid condition in SR flip flop ? List out its applications.   **8**

                  OR

    b) Implement and explain the working of a 4-bit Parallel-In Serial-Out [PISO] Shift Register.   **8**

13. a) With a neat diagram, explain the architecture 8086.   **8**

                  OR

    b) What is Instruction Set Architecture ? Explain with a diagram.   **8**

14. a) Explain about the multiplication methods of signed and unsigned numbers.   **8**

                  OR

    b) Explain about the processing unit of a computer.   **8**

15. a) What are interrupts ? Explain about different types of interrupts.   **8**

                  OR

    b) Write a brief note on Pipelining and Parallel processing architecture.   **8**

                                                    (5×8=40)