K24P 4501

Reg. No. : ....

Name : ....

I Semester M.C.A. Degree (C.B.S.S. – Reg./Supple./Imp.) Examination, November 2024
(2021 Admission Onwards)
MCA1C01 : DIGITAL FUNDAMENTALS AND COMPUTER ORGANIZATION

Time : 3 Hours Max. Marks : 60

SECTION – A

Answer **all** questions. **Each** question carries **two** marks.

1. Determine the decimal values for
   a) 00010111_2
   b) 11101000_2
   c) 10101010_2
   d) 11001100_2
2. Differentiate between binary adders and subtractors.
3. What are ring counters ?
4. Differentiate between a synchronous counter and an asynchronous counter.
5. What is an instruction pointer ?
6. What are the various iteration control instructions in 8086 instruction set ?
7. What are the various approaches to implement a control unit ?
8. What are the functions of CPU ?
9. Find the number of RAM modules, with a capacity of 16k × 1, needed to create a memory system with a word capacity of 32k and a word length of 8 bits.
10. What is cache memory ? **(10×2=20)**

P.T.O.

SECTION – B

Answer **all** questions. **Each** question carries **eight** marks.

11. a) Simplify using K-map method : F (A, B, C, D) = Σ (0, 1, 2, 4, 5, 8, 9, 10, 11)

OR

b) What are basic gates ? Justify why are NAND and NOR gates called universal gates ?

12. a) Explain the desirable characteristics of flip flop.

OR

b) What are shift registers ? Explain its types.

13. a) What are various memory addressing modes in 8086 ?

OR

b) Outline the classification of microprocessor.

14. a) Describe the primary components of a processor.

OR

b) Illustrate the steps involved in floating point addition.

15. a) What is random access memory ? Explain its types.

OR

b) What are the approaches for transferring data between peripherals and memory within a computer system ?

(5×8=40)
