K23P 3461

Reg. No. : ....

Name : ....

I Semester M.C.A. Degree (CBSS – Reg./Supple./Imp.) Examination, November 2023
(2020 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. Convert the following decimal numbers to binary :

   a) 19

   b) 45

2. Differentiate between multiplexer and demultiplexer.

3. List any two functions of shift registers.

4. What are up-down counters ?

5. What are the functions of bus interface unit ?

6. Explain the features of RISC processor.

7. Explain the basic components of control circuitry within the internal processor.

8. Illustrate the steps involved to multiply 10111 by 1001.

9. What is SIMM ?

10. Define locality of reference.

K23P 3461

SECTION – B

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

11. a) Simplify F = A'B C + A'B'C + ABC' + A'B'C' + ABC using K-Map.

 OR

 b) Write a note on Encoder. Explain 8-to-3-line encoder with the help of truth table.

12. a) Illustrate the implementation of an asynchronous counter with a modulus of twelve using JK flip-flop.

 OR

 b) Compare and contrast D flip flop with R-S flip flop.

13. a) Explain the various arithmetic instructions available in 8086 instruction set.

 OR

 b) i) Elaborate on the basic instruction types in 8086 architecture.

 ii) Explain line sequencing. (4+4)

14. a) Differentiate between hardwired and micro-programmed control units.

 OR

 b) With the help of a neat block diagram, explain floating point division.

15. a) Discuss the role of memory management in computer system.

 OR

 b) Describe the different approaches for mapping data in cache memory.

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