



K21P 0846

Reg. No.: .....

Name : .....

I Semester M.C.A. Degree (CBSS – Regular) Examination, November 2020  
(2020 Admission)

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 different types of number systems. 2
2. List the basic gates. Explain each. 2
3. Using a diagram explain the working of J-K flip flop. 2
4. Explain about synchronous counters. 2
5. What is Instruction Set Architecture ? 2
6. Define the term "Performance" of a computer. 2
7. State sequential multiplication algorithm. 2
8. How an instruction is executed ? Explain. 2
9. List and explain different bus standards. 2
10. What are secondary storage devices ? List any 6 secondary storage devices. 2  
(10×2=20)

PART – B

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

11. a) Using K map Minimize the Boolean expression  $f(A, B, C, D) = \sum m(1, 5, 6, 7, 9, 15) + d(2, 3, 11, 13)$  and realize it using Logic gates. 8

OR

P.T.O.



b) Explain :

- a) Multiplexers and DeMultiplexers.
- b) Encoders and Decoders.

12. a) Implement and explain the working of a 4-bit Parallel-InSerial-Out [PISO] Shift Register.

OR

b) Design a mod-12 asynchronous counter.

13. a) What is addressing mode ? Explain about different addressing modes.

OR

b) With a neat diagram, explain the architecture 8086.

14. a) Explain about single precision floating point representation with an example.

OR

b) With the help of an example explain Booth algorithm.

15. a) Elaborate the various cache memory mapping techniques with an example for each.

OR

b) What is Direct Memory Access ? Explain two types of bus arbitration schemes.

(5x8=40)

PART - B