LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.C.A. DEGREE EXAMINATION – **COMPUTER APPLICATIONS**

SECOND SEMESTER – **NOVEMBER 2019**

17PCA2MC04 – COMPUTER ARCHITECTURE AND MICROPROCESSOR

Date: 08-11-2019 Dept. No. Max. : 100 Marks

Time: 01:00-04:00

PART – A

ANSWER **ALL** QUESTIONS **10 x 2 = 20**

1. Convert the following
   i. $(168.65)_{10}$ = ( )$_{2.}$
   ii. $(3FC.8)_{H}$ = ( )$_{10}$
2. State and prove De Morgan's law.
3. What are decoders? Give example.
4. What is a flip flop? Mention its features.
5. What are the different fields of instruction format...
6. Mention the features of CISC.
7. Define ROM. Mention its types.
8. Define microprocessor. What are the modes of operation of 8086?
9. List the flag and processor control instructions
10. Differentiate MACRO and PROCEDURE.

PART –B

ANSWER ANY **FIVE** QUESTIONS **5 x 8 = 40**

11.a. Write short note on binary codes.

(OR)

b. Simplify using K-map

i. F(A,B,C,D) = Σ (0,1,3,5,7,9,11,12,13,14,15).
ii. F(A,B,C,D) = Σ (0,1,2,3,4,6,8,9,10,11,12,14)
iii. F(A,B,C,D) = Σ (1,3,7,11,15) + Σ_d (0,2,5,8,).
iv. F(A,B,C) = B' + A'C' d = BC + AB.

12. a. Explain full adder with neat diagram.

(OR)

b. Discuss the operation of clocked RS flip flop. Give its truth table

13. a. Evaluate the equation X = (A + B) * (C + D) using zero , one , two and three Address instructions.

(OR)

b. Illustrate the data transfer and manipulation instructions.

14. a. Explain the components of microcomputer.

(OR)

b. Write short note on program development tools.

15. a. Illustrate MACRO with an example.

(OR)

b. Illustrate shift and rotate instructions with example.

PART – C

ANSWER ANY **TWO** QUESTIONS **2 x 20 = 40**

16. a. Simplify the following using tabulation method

$F(A,B,C,D) = \Sigma (0,1,4,5,10,11,14,15)$

b. Discuss in detail the operation of JK master slave flip flop.

17. a. Illustrate with flow chart the addition and subtraction of signed –magnitude numbers.

b. Explain the bus interface unit of 8086 with neat diagram.

18. a. Explain any ten assembler directives with example for each

b. Explain the following in 8086

i. addressing modes

ii. Program development tools.

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