Roll No. .....

24043

B. Tech. 3rd Semester (IT)

Examination – December, 2018

DIGITAL ELECTRONICS

Paper : EE-204-F

Time : Three Hours] *[Maximum Marks : 100*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt ***five*** questions in all, selecting ***one*** question from each Section. Question No. 1 is ***compulsory.***

1. (a) Draw and give truth table of :

(i) Ex-or Gate

(ii) NOR Gate

(b) What is difference between combinational and sequential circuits ?

(c) Draw and explain 1 bit comparator.

(d) Write a short note on PAL. $5 \times 4 = 20$

SECTION – A

2. (a) Simplify the given expression using the Quinic. Mc Cluskey minimization technique and realize it using basic gates : 15

$$Y(A, B, C, D) = \Sigma m\,(0, 1, 3, 7, 8, 9, 11, 15)$$

(b) What are universal gates ? Derive basic gate from any one universal gate. 5

3. (a) Design the ckt after minimization using k-Map :15

$$f = \Sigma m\,(0, 1, 2, 3, 6, 7, 9, 13) + \Sigma d\,(11, 15)$$

(b) 7 bit Hamming code 1101101 is received. Check whether it is correct or not ? Correct it, if it is incorrect. 5

SECTION – B

4. (a) Explain full adder circuit. 10

(b) Design 16 : 1 multiplexer using 8 : 1 multiplexer.10

5. (a) Implement the following expression using a multiplexer : 6

$$f = \Sigma m\,(0, 2, 4, 6)$$

(b) Explain the function of Demultiplexer in detail with its diagram. 6

(c) Write a short note on priority encoder. 8

SECTION – C

6. (a) Convert a JK flip flop to T fliop flop. 10

(b) What is race around condition and how we can remove it ? 10

7. (a) Design a 3 bit synchronous counter using JK flip flop. 10

(b) Describe the bidirectional shift register with the help of circuit diagram. 10

SECTION – D

8. (a) Draw primitive flow table and non primitive flow table. 10

(b) Write a short note on hazards. 10

9. Write short note on : $10 \times 2 = 20$

(a) PLDs and CPLDs

(b) PLD and CPGA