

Roll No. ....

Total Pages : 03

BT-3/D-19

33083

DIGITAL ELECTRONICS

CSE-207N

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

1. (a) Differentiate between Minterm and Maxterm. 3
- (b) Discuss fast adder design procedure. 4
- (c) Differentiate between D-type and T-type flip-flop. 4
- (d) Explain EAROM. 4

#### Unit I

2. Explain Quine Mc-Clusky (QM) method of minimization ? Simplify the following expression using QM method, also verify the results by K map method :  
$$F = \sum A, B, C, D m(1, 3, 7, 11, 15) + \sum d(0, 2, 5) \quad 15$$

3. (a) Realize the following logic equation using only NOR gates :  
$$(A + B).(C + D) = (A + B) + (C + D) \quad 5$$
- (b) Explain principle of duality. 5
- (c) Tristate outputs. 5

#### Unit II

4. (a) Describe encoder using logic circuit. Explain encoder with decoder can be used as coder converter. 10
- (b) Explain magnitude comparator. 5
5. (a) Design a 40 : 1 multiplexer using 8 : 1 multiplexers. 5
- (b) Write brief note on adder with look ahead carry. 5
- (c) Design a BCD to Gray code convertor using NAND gates only. 5

#### Unit III

6. (a) What is the difference between race around condition and undefined state ? Explain, how the race around condition is removed in J-K flip-flop ? 9
- (b) Draw and discuss master slave flip-flop. 6

7. Write short notes on the following :

- (a) Sequence generator
- (b) Modulo- $n$  counter
- (c) Universal shift registers.

15

**Unit IV**

8. Explain the following in brief :

- (a) MOSFET RAM cell structure
- (b) Bipolar RAM cell
- (c) Differentiate between PLA and PAL.

15

9. Write short notes on the following :

- (a) Memory expansion
- (b) PROM
- (c) FPGA.

15