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.

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 :

   $F = \Sigma A, B, C, D\ m(1, 3, 7, 11, 15) + \Sigma d(0, 2, 5)$ **15**

3. (a) Realize the following logic equation using only NOR gates :

   $(A + B).(C + D) = (A + B) + (C + D)$ 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.

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**