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 :

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