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Printed Pages : 2

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BT-3 / D-17
DIGITAL ELECTRONICS
Paper–CSE-207 N

Time allowed : 3 hours] *[Maximum marks : 75*

Note : *Attempt **five** questions in all, selecting at least **one** question from each unit. All questions carry equal marks.*

Unit–I

1. Explain Quine Mc-Clusky (QM) method of Minimization? Simplify the following expression using QM method also verify the results by K map method. 15

   $F = \sum w, x, y, z$ m(0, 1, 2, 3, 7, 8, 10, 11, 15)

2. (a) Write the small note on the following:

   (i) CMOS/TTL compatibility

   (ii) Tristate gate. 10

   (b) Realize the following logic equation using only NAND gates: 5

   $AB + CD = \overline{\overline{AB} \cdot \overline{CD}}$

Unit–II

3. (a) Design a 2-bit comparator using gates. 4

   (b) Design a 1:40 De-multiplexer using BCD to binary decoder. 6

   (c) Design a 4-bit adder circuit with ADD control lines. 5

4. (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

5. (a) Explain the operation of twisted ring counter and give its state diagram. 6

   (b) Draw the state diagram of J-K flip flop. 4

   (c) Design a 3 bit synchronous counter using J-K flip flop. 5

6. Write short note on the following:

   (i) Asynchronous up/down counter

   (ii) Modulo-n counter.

   (iii) Universal shift registers. 15

Unit–IV

7. Explain the following in brief:

   (i) ROM

   (ii) EPROM

   (iii) EAPROM 15

8. Write short note on the following:

   (i) Memory decoding

   (ii) PAL using ROM

   (iii) FPGA 15

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