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Roll No

CS/EI - 303
B.E. III Semester
Examination, December 2012
Digital Circuit and System
Time : Three Hours

Maximum Marks : 70/100

- Note :** 1. Attempt one question from each unit.
2. All questions carry equal marks.

Unit-I

1. a) Convert the following codes as directed
- i) $(785.B2)_{16} = ()_{10}$
 - ii) $(1011011.1101)_2 = ()_8$
 - iii) $(110101.101101)_2 = ()_{\text{gray}}$
 - iv) $(751.231)_8 = ()_{16}$
- b) Minimize the following function using Quine & McCluskey method.
- $$F(a, b, c, d) = \sum (0, 2, 7, 9, 10, 14) + \sum_d (1, 8)$$

OR

2. a) Minimize the following function using Boolean algebra.
- $$f_1 = AB\bar{C}D + \bar{B}C + \bar{A}D + C(A + B\bar{D}C)$$
- $$f_2 = (BCD + A)\bar{B} + (\bar{A}C + \bar{B}C)D$$
- b) Minimize the following function using Karnaugh map method.
- $$F(a, b, c, d) = \sum (1, 3, 7, 10, 12, 14) + \sum_d (0, 9)$$

Unit-II

3. a) Design a full adder using minimum logic gates and also discuss the working of parallel adder.

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- b) Discuss the working of look ahead carry generator.

OR

4. a) Design a full subtractor using minimum logic gates. Also design the circuit using all Nand gates.
b) Design a BCD adder using logic gates.

Unit-III

5. a) With the help of circuit diagram explain the working of astable multivibrator.
b) Design a Nand gate using CMOS logic and explain its working.

OR

6. a) With the help of circuit diagram explain the working of schmitt trigger.
b) How is interfacing TTL to MOS obtained.

Unit-IV

7. a) Realize the following function using multivibrator.
 $\Sigma(0, 3, 5, 7, 11, 14)$
b) Design a MOD6 counter using JK flip flops.

OR

8. a) Design a BCD to gray code converter.
b) Design a MOD4 counter using T Flip flop.

Unit-V

9. a) Explain with the help of block diagram any one type of analog to digital converter.
b) Explain the principle working of sample and hold circuits.

OR

10. a) With the help of block diagram explain any one type of digital to analog converter.
b) Explain the principle working of V-F converter.
