Total No. of Questions :10] *[Total No. of Printed Pages : 2*

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EX - 403

B.E. IV Semester

Examination, December 2012

Digital Electronics Logic Design - I

Time : Three Hours

Maximum Marks : 70/100

Note: (1) Attempt any *one* from each unit.
(2) Assume any missing data, if any.

UNIT - I

1. (a) Convert the $(250.25)_{10}$ to base 4, 8, 16.

   (b) Represent $(8620)_{10}$ in BCD and excess 03 code.

   (c) Show 8 bit addition of the following decimal numbers in 2's complement

   45 and 56

   67 and -98

OR

2. (a) Realize following gates using minimum number of NAND gates :

   AND, OR, NOR, X-OR

   (b) Simplify the following Boolean frictions

   $ABC + \bar{A}BC + AB\bar{C} + A\bar{B}C$

   $BC + A\bar{C} + AB + ACD$

UNIT - II

3. Design BCD to excess-3 code convertor circuit and draw the logic diagram.

OR

4. Design a full adder and derive the expression for output. Realize it with NAND gates.

UNIT - III

5. What is J-K flip-flop? Explain its NAND gate implementation.

OR

6. Design the 4-bit ring counter using D-flip flops.

UNIT - IV

7. (a) Differentiate between synchronous and asynchronous counters?

   (b) Explain a synchronous 4-bit up-down counter.

OR

8. What is shift register? How a word is stored in a serial shift register.

UNIT - V

9. Explain the Binary weighted D/A converter.

OR

10. Write short note on any one of the following :

    (a) PAL and PLA

    (b) RAM and ROM

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