EX-403

B.E. IV Semester

Examination, June 2013

Digital Electronics Logic Design-I

Time : Three Hours

Maximum Marks : 70/10

Note: i) Attempt any one question from each unit.
ii) Assume any missing data, if any.

Unit - I

1. a) Convert $(0.23)_8$ to Decimal and $(49.21)_{10}$ to octal.
   b) Convert $(152)_{10}$ to Hexadecimal and A43H to decimal.
   c) Add the following numbers
   AB6 + B94
   11011+101011

OR

2. a) Prove the following using De Morgan's law:
   $(A+B)(C+D) = \overline{\overline{(A+B)} + \overline{(C+D)}}$
   Realize the above equation using only NOR gates.
   b) Simplify the Boolean function and realize.
   $A\overline{B}\overline{C} + \overline{A}BC + \overline{A}B\overline{C}$

Unit - II

3. Simplify the following expression into sum of products using k-map.
   $F(A,B,C,D) = \Sigma(1,3,4,5,6,7,9,12,13)$.

OR

4. Construct a 5-to-32 line decoder using four 3-to-8 line decoders with enable and one 2-to-4 line decoder.

Unit - III

5. a) What do you mean by race condition of a flip-flop? How it can be avoided?
   b) Write steps involved in designing a sequential circuit.

OR

6. a) Explain the working of T-flip-flop with its timing diagram.
   b) Explain any one application of master slave flip-flop.

Unit - IV

7. Designs a three-stage MOD-8 synchronous counter using T-flip-flops.

OR

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

Unit - V

9. a) Draw & explain the dual slope A to D converter.
   b) Explain ROM and its working. How is it different from PLA?

OR

10. Write short notes on any two of the following:
    a) Combinational PLDs
    b) D to A converter
    c) RAM.

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