Code.No: 43216 | R07 | SET-1

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
II.B.TECH - I SEMESTER REGULAR EXAMINATIONS NOVEMBER, 2009
DIGITAL LOGIC DESIGN
(Common to CSE, IT, CSS)

Time: 3hours **Max.Marks:80**

Answer any FIVE questions
All questions carry equal marks

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1. a) Convert the following to require form
   i) $(163.789)_{10} = (\quad)_8$
   ii) $(101101110001.00101)_2 = (\quad)_8$
   iii) $(292)_{16} = (\quad)_2$
   b) Find the difference of $(3250 - 72546)_{10}$ by using 10's complement.
   c) What is meant by self complementing codes. [16]

2. a) Obtain the minimal sum of product expression of given function by using consensus theorem.
   $f = A\overline{B}\overline{C} + \overline{A}BC + BCD + \overline{A}\overline{C}\overline{D}$
   b) Which of the following statements are true? Justify.
   i) If A+B+C = C+D then A+B = D
   ii) If A+B = C then $A\overline{D} + B\overline{D} = C\overline{D}$ [8+8]

3. a) Design a circuit which finds the 2'S complement of a 4 bit binary number. Write HDL program for this design.
   b) Prove that NAND and NOR operations are commutative but not Associative. [8+8]

4. a) Design a BCD to Gray code converter using 8:1 MUXS.
   b) Write a HDL program to model an 8 bit comparator using 2 bit comparators. [8+8]

5. a) Draw a neat circuit diagram of positive triggered D flip flop and explain its operation.
   b) Design a master slave JK flip flop by writing HDL program to describe the flip flop. [8+8]

6. a) Design a 4 bit Ripple counter using T flip flop. Explain using wave forms.
   b) Write HDL program in behaviour model to design a 4 bit shift left register. [8+8]

7. a) Design a Hamming code encode to obtain 11 bit code from the circuit use PLAS.
   b) Write a brief note ion ROMS. [8+8]

8. a) Design an asynchronous sequential circuit with the following excitation requirement and output functions

$$Y_1 = x_1x_2 + x_1\overline{y_2} + \overline{x_2}y_1$$

$$Y_2 = x_2 + x_1\overline{y_1}y_2 + \overline{x_1}y_1$$

$$Z = x_2 + y_1$$

b) Design a hazard tree circuit to implement y = $(x_1 + x_2)(x_2 + x_3)$ [8+8]

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