Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–III • EXAMINATION – SUMMER 2013

Subject Code: 130701   **Date: 27-05-2013**
Subject Name: Digital Logic Design
Time: 02.30 pm - 05.00 pm   **Total Marks: 70**
Instructions:
  1. **Attempt all questions.**
  2. **Make suitable assumptions wherever necessary.**
  3. **Figures to the right indicate full marks.**

Q.1 **(a)** Convert the decimal number 250.5 to base 3, base 4, base 7and base 16.   **07**
     (b) Perform the subtraction with the following decimal numbers using 1øs   **07**
         compliment and 2øs compliments. (a) 11010-1101 , (b) 10010-10011

Q.2 **(a)** Simplify the following Boolean functions to a minimum numbers of literals.   **07**
         (a) xyz+xøy+xyzø and (b)(A+B)ø(Aø+Bø)ø
     (b) Obtain the truth table of the function F= xy+xyø+yøz   **07**
                      OR
     (b) Implement the Boolean functions.   **07**

Q.3 **(a)** Implement the Boolean functions. (a) xyz+xøy+xyzø (b) (A+B)ø(Aø+Bø)ø and   **07**
         (c) F= xy+xyø+yøz with logic gates.
     (b) Show that the dual of the exclusive-OR is equal to its compliment.   **07**
                      OR
Q.3 **(a)** Obtain the simplified expression in sum of product for the following Boolean   **07**
         functions. (a) F= Û(0,1,4,5,10,11,12,14) and
         (b) F= Σ (11,12,13,14,15).
     (b) Implement the functions F=Σ (1,3,7,11,15) with donøt care conditions d=Σ   **07**
         (0,2,5) Discuss the effect of donøt care conditions.

Q.4 **(a)** Explain half and full adders in detail.   **07**
     (b) Design and implement BCD to excess 3 code converter.   **07**
                      OR
Q.4 **(a)** What is the difference between serial and parallel transfer? What type of   **07**
         registers are used in each case?
     (b) Design a synchronous BCD counter with JK flip flops.   **07**

Q.5 **(a)** Explain a 4 to 1 line multiplexer in detail.   **07**
     (b) Explain PLA in detail.   **07**
                      OR
Q.5 **(a)** Explain scratchpad memory in detail.   **07**
     (b) Explain D type positive edge triggered flip flop.   **07**

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