

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE SEM-III Examination-Dec.-2011

Subject code: 130701

Date: 15/12/2011

Subject Name: Digital Logic Design

Time: 2.30 pm -5.00 pm

Total marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

Que. 1 (a) Convert the decimal number 225.225 to binary , octal and hexadecimal. (06)

(b) Explain briefly : SOP & POS , minterm & maxterm , canonical form , propagation delay, fan out (05)

(c) Represent the decimal number 8620 in BCD , Excess-3 , and Gray code (03)

Que.2 (a) Design a combinational circuit whose input is a four bit number and whose Output is the 2's complement of the input number (08)

OR

(a) Simplify the following Boolean function by using Tabulation method. (08)

$$F = \Sigma (0,1,2,8,10,11,14,15)$$

(b) Draw symbol and truth table for four input EX-OR gate. Explain NAND and NOR as an universal gate (06)

Que.3 (a) Design BCD to Excess-3 code converter using minimum number of NAND gates (08)

OR

(a) Simplify Boolean function $F (w,x,y,z) = \Sigma (0,1,2,4,5,6,8,9,12,13,14)$ using K-map and Implement it using (i) NAND gates only (ii) NOR gates only (08)

(b) Explain the working of the Master Slave J K flip-flop (06)

OR

(b) Explain Arithmetic micro operations

Que.4 (a) Explain working of 4-bit binary ripple counter (07)

(b) Draw and explain block diagram of 4-bit bidirectional shift register with Parallel load (07)

OR

Que. 4 (a) What is meant by multiplexer ? Explain with diagram and truth table the Operation of 4-to-1 line multiplexer (07)

(b) What is meant by decoder ? Explain 3-to-8 line decoder with diagram and truth table (07)

Que.5 (a) Explain the procedure followed to analyze a clocked sequential circuit With suitable example (10)

(b) Define : state table , state equation , state diagram , input & output equations (04)

OR

Que. 5 (a) Draw and explain logic diagram of arithmetic logic unit (ALU) (08)

(b) What is the difference between hardwired control and micro program control ?
write advantages and disadvantages of each method (06)

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