Total No. of Questions :5]   *[Total No. of Printed Pages : 3*

Roll No ....

CS/EI - 303
B.E. III Semester
Examination, June 2015
Digital Circuit and System
Time : Three Hours

Maximum Marks : 70

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.

ii) All parts of each question are to be attempted at one place.

iii) All questions carry equal marks, out of which part A and B (Max. 50 words) carry 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max. 400 words) carry 7 marks.

iv) Except numericals, Derivation, Design and Drawing etc.

1. a) Convert the number $(210.25)_{10}$ to base 2, 8.

   b) Convert 10111011 in binary into its equivalent gray code.

   c) Explain the difference between a weighted and non - weighted code with example.

   d) Given the logic equation.

   $$F = \overline{A}\,\overline{B}D + AB\overline{C}D + \overline{A}BD + ABC\overline{D}$$

   i) Make a truth table.

   ii) Simplify using k - map.

OR

Simplify the following Boolean function by using Quine Mccluskey method.

$$F(A,B,C,D) = \sum m(0,1,2,3,5,7,8,9,11,14)$$

2. a) What is logic gates?

   b) Draw the circuit diagram for half adder?

   c) Implement EX-OR gate using NOR gates.

   d) Explain the working of look ahead carry generator.

   OR

   Implement a full subtractor using two half subtractors and an OR gate.

3. a) What do you understand by logic families?

   b) What is flip - flop? How many flip -flops are required for storing n bit of information?

   c) Distinguish between PMOS and NMOS logic circuit.

   d) Explain the operation of monostable multivibrater with the help of waveforms.

   OR

   Draw schmitt trigger circuit and explain with waveform.

4. a) What is shift register? Mention some application of shift register.

   b) Give broad classification of semiconductor memories.

   c) Write short note on encoder.

   d) Implement the function

   $$F(A,B,C,D) = \sum(0,1,3,4,7,8,10,13) \text{ Using multiplexer.}$$

   OR

   Design a MOD - 12 binary counter using J-K flip-flop.

5. a) What are the applications of analog to digital converter?

   b) How can we describe the resolution of a digital to analog converter?

   c) Explain the transfer characteristics and various performance parameters of DAC.

   d) Explain voltage to frequency converter with help of block diagram and waveforms.

   OR

   Explain successive approximation techniques for analog to digital conversion.

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