Roll No .....

CS/EI/IC - 303

B.E. III Semester

Examination, June 2016

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.

Unit - I

1. a) Obtain excess-3 code for $(428)_{10}$.
   b) Perform $(52)_{10}-(89)_{10}$ using 9's complement.
   c) Convert $(43)_8=(?)_{10}=(?)_2$
   d) Minimize the following Boolean expression using Karnaugh map method. $Y = \sum_m(1, 3, 5, 9, 11, 13)$

OR

Explain concept of Prime implicant.

Unit - II

2. a) Design half adder using NAND gates.
   b) Explain types of BCD adders.
   c) Design full substractor using half substractor.
   d) Discuss the working of look ahead carry generator.

OR

Design a full substractor using minimum logic gates. Also design the circuit using all NAND gates.

Unit - III

3. a) Define Bistable, Monostable and Astable multivibrator.
   b) Describe the application of monostable multivibrator.
   c) Draw basic diagram of Schmitt trigger and explain it.
   d) Design a NAND gate, using CMOS logic and explain its working.

OR

How is interfacing TTL to MOS obtained?

Unit - IV

4. a) How many flip flops are required to construct a MOD-128 counter? What is the largest decimal number that can be stored in a mod-64 counter?
   b) What modules counters can be constructed with the use of four flip-flops?
   c) Explain synchronous and asynchronous counters.
   d) Design a 4-bit Johnson counter.

OR

Design a BCD to gray code converter.

Unit - V

5. a) Explain sample and hold circuit.
   b) Describe V-F convertor.
   c) Write short notes on 2-bit simultaneous A/D converter.
   d) Explain with the help of block diagram any one type of analog to digital converter.

OR

With the help of block diagram explain one type of digital to analog converter.

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