Code : 9EC-02E

Register Number | E | C | 1 | 3 | 0 | 0 | 6

I Semester Diploma Examination, Nov./Dec. 2013
DIGITAL ELECTRONICS

Time : 3 Hours]

[Max. Marks : 100

Note : (i) Section – **I** is *compulsory*.

(ii) Answer any **two** full questions from Sections – **II, III & IV**.

SECTION – I

1. (a) Fill in the blanks :

    $5 \times 1 = 5$

    (i) In positive logic 5V is considered as _____.

    (ii) The octal equivalent of 101110111$_2$ is _____.

    (iii) Number of flip flops used for Mod-12 counter are _____.

    (iv) In the K-map, if all the 1's in a group are overlapped by other groups, then such group is called as _____.

    (v) In unsaturated logic family the transistor is used in _____ region.

   (b) Realize NAND gate using only NOR gates.

    5

SECTION – II

2. (a) What is ASCII code ? Mention its applications.

    4

   (b) Perform the following operations :

    9

    (i) Convert Decimal 928 into Hexa decimal.

    (ii) Convert Hexa decimal 7AC . 39 to the Binary.

    (iii) Subtract 1101 from 1111 using 2's complement.

   (c) Convert gray code 100110 to its Binary.

    2

3. (a) State and prove Demorgan's theorem.

    (b) Write the expression for the following table using SOP & simply it using Karnaugh map.

      6

      9

A	B	C	D	Y
0	0	0	0	1
0	0	0	1	1
0	0	1	0	1
0	0	1	1	0
0	1	0	0	1
0	1	0	1	1
0	1	1	0	1
0	1	1	1	0
1	0	0	0	0
1	0	0	1	0

4. (a) Write the features of BCD & convert decimal 76 to BCD number.   4

    (b) List the features of TTL family.   5

    (c) Write the logic symbol, expression and truth table for the universal gates.   6

SECTION – III

5. (a) With gate level circuit, Truth Table explain 2 bit magnitude comparator.   8

    (b) Explain the working of full adder with logic diagram and truth table.   7

6. (a) Explain with neat circuit and Truth table the working of Decimal to BCD encoder.   7

    (b) With expression state the Boolean laws   6

      (i) Commutative law

      (ii) Associative law

      (iii) Distributive law

    (c) List the applications of multiplexer.   2

7. (a) Define Priority Encoder.   2

    (b) Explain the working of 1:4 demultiplexer with logic circuit & Truth Table.   7

    (c) Explain the working of 4-bit parallel adder with logic circuit.   6

SECTION – IV

8.   (a)   With logic circuit and Truth table, explain the operation of clocked R S fli
          & mention its disadvantages.

     (b)   What is Race around condition ? In which flip flop it is overcome ?

     (c)   List the applications of flip/flop.

9.   (a)   Explain the working of 4 bit Parallel In Serial Out (PISO) with logic diagra
          Truth Table.

     (b)   Construct 4 bit Ring counter. Explain the working with Truth table & Tir
          diagram.

10. (a)   Compare Synchronous & Asynchronous counter.

     (b)   Realize Mod 6 counter with neat diagram and Truth Table.

     (c)   Construct 4 bit ripple counter & explain its working with Truth Table & Tim
          diagram.

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