V.P. & R.P.T.P SCIENCE COLLEGE
First Internal Test
US03CELE-02

Date: 04/10/16
3:00 to 4:30 pm
Total Marks 25

Q.1 Multiple choice questions: 3 marks

1. $13_{16} + AB_{16} =$
    - (i) AE_{16}
    - (ii) BE_{16}
    - (iii) AF_{16}

2. The code which is used to reduce errors in binary airthemetic is
    - (i) XS3 Code
    - (ii) Gray Code
    - (iii) 8421 code.

3. The universal building blocks are
    - 1) AND and OR
    - 2) NAND and NOR
    - 3) AND and NAND

Q.2 : Answer in short: (Any two)   4 marks

1. Convert Octal number 4576_8 to Hexadecimal number.
2. Construct AND, OR and NOT gate using NAND gate.
3. Define Weighted code and Non weighted code and give examples.

Q3 : Do as directed :   6 marks

   (i)   Multiply 1001 by 1010 using Computer Method
   (ii)   Multiply $2DD5_{16}$ by $6A_{16}$

                                    OR

Q3 : Do as directed :   6 marks

   (i)   Multiply 1001 by 111 using Computer Method
   (ii)   Add 155 to -122 using 2's complement.

Q4 : Do as directed :   6 marks

   (i)   Add 347.2 to 87.5 in XS3 code

(ii)   Add 1356 to 6573 using BCD code

<div align="center">OR</div>

Q4 : Do as directed :   **6 marks**

(i)   Subtract 175 from 267 in XS3 code.
(ii)   Add 5085 to 9322 using BCD code.

Q5 : (i) State De Morgan's theorem and list its utilities   **6 marks**

(ii) Find the POS and SOP form of $Y = \sum m(0,1,3,6,7,8,9,13,15)$ .Which is less expensive?

<div align="center">OR</div>

Q5 : (i) Reduce the Boolean Expression using Boolean Laws $\overline{\overline{ABC} + \overline{A}\,\overline{B}} + BC$ **6 marks**

(ii) Reduce in SOP form $F = \sum m(2,3,5,7,8,9,11,12,13,14,15)$ and implement in NAND logic.

********************* Best of Luck*********************