

V.P. & R.P.T.P SCIENCE COLLEGE  
First Internal Test  
US03CELE-22

Date: 07/10/19  
3:00 p.m. to 4:15 p.m.  
Total Marks 25

5 marks

Q1: Multiple choice questions:

1. Error is defined as deviation from
  - (i) True value of measured variable
  - (ii) Average value of measured variable
  - (iii) Absolute value of measured variable
  - (iv) None of the above
2. 1's and 2's complement system is used to represent -----numbers
  - (i) Positive numbers
  - (ii) Negative numbers
  - (iii) Complex numbers
  - (iv) Irrational numbers
3. The code which is used to reduce errors in binary arithmetic is
  - (i) XS3 Code
  - (ii) Gray Code
  - (iii) 8421 code.
  - (iv) 5211 code
4. The universal building blocks are
  - (i) AND and OR
  - (ii) NAND and NOR
  - (iii) AND and NAND
  - (iv) XOR and XNOR
5. Demorgan's theorem is break the line,
  - (i) Change the number
  - (ii) Change the sign
  - (iii) Change the operator
  - (iv) None of the above



3 marks

- Q2(a): The following value were obtained from the measurement of the value of resister:  
147.2  $\Omega$ , 147.4  $\Omega$ , 147.9  $\Omega$ , 148.1  $\Omega$ , 147.1  $\Omega$ , 147.5  $\Omega$ , 147.6  $\Omega$ , 147.4  $\Omega$ , 147.6  $\Omega$   
and 147.5  $\Omega$ . Calculate
- a. The arithmetic mean,
  - b. The average deviation
  - c. the standard deviation
  - d. Probable error of the average of the ten readings.

Q2(b): Define Precision and Accuracy

2 marks

OR

Q2 : Draw the block diagram of Oscilloscope and give function of each block and explain basic working of CRO.

5 marks

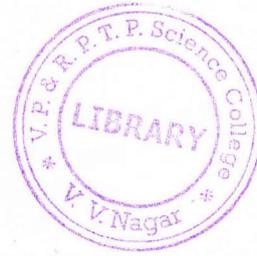
Q3(a): Multiply  $1011_2$  and  $101_2$  using computer method

3 marks

Q3(b): Multiply  $2DD5_{16}$  by  $6A_{16}$

2 marks

OR



- Q3(a) : Subtract  $1A92_{16}$  from  $A7683_{16}$  2 marks  
Q3(b) : Add 28 and -154 using 8-bit 2's Complement method. 3 marks  
Q4(a) : Add 6748 to 5972 in BCD (8421) code 3 marks  
Q4(b) : Add 247.6 to 359.4 in XS3 code 2 marks
- OR
- Q4(a) : Subtract 175 from 267 in XS3 code. 2 marks  
Q4(b) : Add 5085 to 9322 in BCD (8421) code 3 marks
- Q5(a) : Reduce the Boolean expression using Boolean laws  $\overline{A\overline{B}} + \overline{ABC} + A(B + \overline{AB})$  2 marks  
Q5(b) : Find the POS and SOP form of  $Y = \sum m(0,1,3,6,7,8,9,13,15)$ . Which is cheap? 3 marks
- OR
- Q5(a) : Reduce the Boolean expression using Boolean laws  $\overline{ABC} + \overline{A\overline{B}} + \overline{BC}$  2 marks  
Q5 (b) Reduce the expression in SOP form  $F = \sum m(2,3,5,7,8,9,11,12,13,14,15)$  and implement in NAND logic. 3 marks

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