

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

Date: 05/10/18  
3:00 p.m. to 5:00 p.m.  
Total Marks 50



8 marks

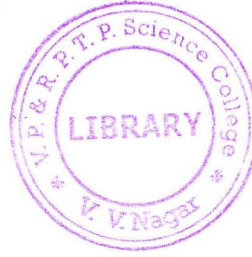
Q1: Multiple choice questions:

1. The full form of CRO is
  - (i) Cathode Ray Oscillator
  - (ii) Cathode Ray Oscilloscope
  - (iii) Cathode ray Tube
  - (iv) None of above
2. 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
3. Subtract  $01_2$  from  $100_2 = \text{-----}$ 
  - (i)  $011_2$
  - (ii)  $101_2$
  - (iii)  $99_2$
  - (iv)  $111_2$
4.  $93_{16} + DE_{16} =$ 
  - (i)  $271_{16}$
  - (ii)  $161_{16}$
  - (iii)  $171_{16}$
  - (iv)  $181_{16}$
5. The Gray code for binary code  $11001101_2$  is
  - (i) 11100010
  - (ii) 10110111
  - (iii) 10101011
  - (iv) 10011011
6. 8421 is
  - (i) weighted binary code
  - (ii) Non weighted binary code
  - (iii) Reflective Code
  - (iv) None
7. The universal building blocks are
  - (i) AND and OR
  - (ii) NAND and NOR
  - (iii) AND and NAND
  - (iv) XOR and XNOR
8. Demorgan's theorem is break the line,
  - (i) Change the number
  - (ii) Change the sign
  - (iii) Change the operator

(iv) None of the above

Q2 : Answer in short: (Any five)

1. Define accuracy and precision.
2. Name different types of errors you know.
3. Convert  $3610_{10}$  to Hexadecimal
4. Convert  $89675_{10}$  to Octal.
5. Define Sequential code.
6. Define reflective code.
7. State utility of De Morgan's theorem.
8. Construct AND, OR and NOT gate using NAND gate.



10 marks

Q3 (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.

4 marks

Q3 (b): Give short note on Gross Error.

4 marks

Q3 : Draw the block diagram of Oscilloscope and give function of each block and explain basic working of CRO.

8 marks

Q4(a) : Multiply  $1001_2$  and  $101_2$  using computer method

3 marks

Q4(b) : Multiply  $94EC_{16}$  by  $A5_{16}$

3 marks

Q4(c) : Subtract  $1A92_{16}$  from  $A7683_{16}$

2 marks

OR

Q4(a) : Multiply  $1010_2$  by  $110_2$  using computer method.

3 marks

Q4(b) : Add 28 and -154 using 8-bit 2's Complement method.

3 marks

Q4(c) : Add  $A8FBDC_{16}$  to  $B78CCF_{16}$

2 marks

Q5(a) : Add 6748 to 5972 in BCD (8421) code

3 marks

Q5(b) : Add 247.6 to 359.4 in XS3 code

3marks

Q5(c) : Subtract 175 from 267 in XS3 code.

2 marks

OR

Q5(a) : Add 5085 to 9322 in BCD (8421) code

3 marks

Q5(b) : Add 347.2 to 87.5 in XS3 code

3marks

Q5(c) : Subtract 27.8 from 57.6 in XS3 code.

2 marks

Q6(a) : Reduce the Boolean expression using Boolean laws  $\overline{AB} + ABC + A(B + \overline{AB})$

3 marks

Q6(b) : Find the POS and SOP form of  $Y = \sum m(0,1,3,6,7,8,9,13,15)$ . Which is cheap ?

5 marks

OR

Q6(a) : Reduce the Boolean expression using Boolean laws  $\overline{ABC} + \overline{A}B + BC$

3 marks

Q6(b): Reduce the expression in SOP form  $F = \sum m(2,3,5,7,8,9,11,12,13,14,15)$

5 marks

and implement in NAND logic.

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