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[S3]

SARDAR PATEL UNIVERSITY

B.Sc. (3rd Semester) Examination

Electronics

US03CELE22

Instrumentation & Digital Electronics

Date :- 14 – 6 – 2022   Time :- 12:00 Pm to 2:00 Pm.

Day :- Tuesday   **Total Marks :- 70**

Q1. Multiple Choice Questions   [10]

1. The full form of CRT is_____
   (a) Cathode Ray tube
   (b) Cathode Ray transistor
   (c) Cathode Ray Oscilloscope

2. Error is defined as deviation from_____.
   (a) True value of measured variable
   (b) Average value of measured variable
   (c) Absolute value of measured variable

3. The equivalent hexadecimal number for 11_{10} is _____.
   (a) A   (b) B   (c) C

4. The radix for hexadecimal number system is_____.
   (a) 2   (b) 10   (c) 16

5. The full form of BCD is____
   (a) Binary coded decimal
   (b) Binary coded digit
   (c) binary coded digital signal

6. Excess - 3 code is _____ code.
   (a) Weighted binary code
   (b) Non Weighted binary code
   (c) Gray code

7. Decoding means the conversion from_____
   (a) Binary to decimal
   (b) Decimal to binary
   (c) Decimal to Hexadecimal

8. Demorgan's theorem is break the line____
   (a) Change the number   (b) Change the sign
   (c) Complement the output   [P.T.O.]

9. Add $0111_2 + 0111_2 = $ _____
   (a) 0100   (b)1110   (c)1111
10. AND operator is _____.
   (a) +   (b) .   (c) X

Q2. State whether the following statements are True or False. [08]

1. The delay time for CRO is 200ns.   True/False.
2. The heart of oscilloscope is CRT.   True/False.
3. 1'complement and 2' complement systems are use to represent negative number.   True/False.
4. Octal number system has seven unique symbols.   True/False.
5. Gray code is weighted binary code.   True/False.
6. The code is said to be reflective code when code for 9 is complement of code for 0, 8 for 1, 7 for 2, 6 for 3 and 5 for 4.   True/False.
7. The full form of SOP is product of sum.   True/False.
8. AND gate is universal gate.   True/False.

Q3. Short Questions   [Attempt any Ten]   [20]

1. Define accuracy and precision.
2. List the block of CRO.
3. Convert the following hexadecimal number to binary.
   (I) $8ABC_{16}$ (II) $7BC8_{16}$
4. Convert 456_8 to decimal.
5. Add $ABC5.25_{16}$ and $9DCB.15_{16}$
6. Convert 45_{10} to binary.
7. Convert 1110_2 to Gray code.
8. Write the excess form of 4.
9. Define sequential code.
10. Draw the truth table of OR gate.
11. Prove the Demorgan's theorem.
12. What is Boolean algebra?

Q4.Long Answer Questions [Attempt any four]

I. Explain types of errors in detail. [08]

II. Explain block diagram of CRO. [08]

III. (a) Add – 4 and -5 in two's complement form.

(b) Multiply 1010 by 1011 using computer method. [08]

IV. (a)Divide 0010 1011 by 0110 using computer method.

(b) Explain the weighted and non weighted binary codes in details. [08]

V. (a) Add 25 and 33 in XS3 form.

(b) Add 647 and 999 in BCD form [08]

VI. Explain Universal building blocks. [08]

VII. Explain AND and OR gates using diodes. [08]

VIII. Find the SOP form of $F = \sum m(0,1,2,3,6,7,13,15)$ and implement in
NAND logic. [08]

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