SARDAR PATEL UNIVERSITY
BSc III Semester Examination
Saturday, 1ˢᵗ December 2012
10.30 am - 1.30 pm
UA03CELE02 : Electronics
Instrumentation & Digital Electronics]

Total Marks: 70

Q.1 Multiple Choice questions.   (10)
(1) Which type of error is said to be human error ?
    (a) Gross error   (b) Systematic error
    (c) Random error
(2) The deviation from the true value of the measured variable is _____.
    (a) Error   (b) Accuracy
    (c) Precision
(3) The expression for arithmetic mean is _____.
    (a) $\dfrac{\Sigma x}{n}$ (b) $\dfrac{-\Sigma x}{n}$

    (c) $\dfrac{n}{\Sigma x}$
(4) Full from of Bit is _____.
    (a) Byte   (b) nibble
    (c) binary digit
(5) The equivalent hexadecimal number for 15 is _____.
    (a) A   (b) F
    (c) C
(6) What is radix for binary number system ?
    (a) 8   (b) 2
    (c) 4
(7) Sequential Code is _____ Code.
    (a) Gray Code   (b) 5211 Code
    (c) 8421 Code
(8) Non weighted binary codes are _____.
    (a) 8421 & 2421   (b) 5211 & 8421
    (c) X53 & Gray
(9) $\bar{1}$ = _____.
    (a) -1   (b) 1
    (c) 0
(10)_____ gates are universal gates.
    (a) NAND & NOR   (b) NOT and NAND
    (c) AND & OR

Q.2 Answer **Any Ten** in brief. (20)
(1) Define Accuracy and Resolution.
(2) In how many ways the instrumental errors can be avoided ?
(3) What is Positive Zero and What is Negative Zero ?
(4) How many types of number systems are there ? Name them.
(5) Subtract 1_2 from 100_2.
(6) Draw the logic diagram for $\overline{A}B + A\overline{B} = Y$.
(7) What is Boolean algebra ?
(8) List the steps to perform BCD addition.
(9) What are the advantages and disadvantages of BCD Codes ?
(10) Add 5 & 6 in XS3 Form.
(11) Define Deflection Sensitivity and Deflection Factor of a CRT.
(12) Draw the truth table and map $C = \overline{A}\,\overline{B} + A\overline{B}$

Q.3 Explain types of errors in detail. (10)
OR
Q.3 Explain block diagram of CRO in detail. (10)

Q.4
(A) Multiply 1010_2 by 1011_2 using computer method. (05)
(B) Explain various number systems in detail. (05)
OR
Q.4
(A) Divide $1110\ 1011_2$ by 0110_2 using computer method. (05)
(B) Add -20 and -15 in two's complement form. (05)

Q.5
(A) Explain weighted binary codes. (05)
(B) Explain Nonweighted binary codes. (05)
OR
Q.5
(A) Explain XS3 addition and subtraction with necessary example. (05)
(B) Explain binary to Gray and Gray to binary conversion with necessary (05)
steps with example.

Q.6
(A) Explain universal building blocks. (05)
(B) Explain AND and OR gates using diodes. (05)
OR
Q.6
(A) Explain AND and OR gates using transistors. (05)
(B) Explain NOT gate using transistor. (05)

@ @ @