Exam.Code:0930
Sub. Code: 6762

(9)

1059

B.E. (Electronics and Communication Engineering)
Sixth Semester
EC-612: Electronic Measurements and Instrumentation

Time allowed: 3 Hours Max. Marks: 50

NOTE: *Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.*

x-x-x

I. Attempt the following:-

a) Differentiate the error and uncertainty.

b) Using concept of loading effect prove that the error can be reduced to about 1% if the input admittance of ammeter is at least 100 times the output admittance of the source.

c) Name a bridge which can measure low resistance. Discuss its principal.

d) Define the delayed sweep technique of CRO

e) A resistance wire strain gauge uses a soft iron wire of small diameter. The gauge factor is +42. Calculate the Poisson's ratio.

f) Derive the equation of balance of a bridge.

g) Draw the pattern displayed when two Sine wave input signals of equal frequency and amplitude are applied to the CRO in x-y mode.

h) Is VI a data flow programming? Justify.

i) Differentiate with example the active and the passive transducers.

j) Whether LEDs are made of direct or indirect band gap materials? (10x1)

UNIT – I

II. a) Discuss the principle of working and derive the expression for deflection of a Moving Iron type Instrument. How these can be used for AC measurement?

b) Draw the circuit diagram and obtain the balance bridge condition for Wheatstone bridge. What are its applications? (5,5)

III. a) Derive expression of beam deflection depends in a CRO. Explain the detailed Block diagram of a dual-trace CRO.

b) Discuss the working of Spectrum Analyzer. Compare it with CRO and Logic analyzer. (5,5)

P.T.O.

IV. a) Design a multi-range ammeter with range of 0-1 A, .5A and 10A employing individual shunts with Galvanometer with internal resistance 500Ω and full scale deflection of 10mA.

b) What are various types of error in measurements? How these can be minimized? (2x5)

UNIT – II

V. a) What are various types of Inductive Transducers? Discuss their working principle and applications.

b) Discuss the operation of Strain Gauge. Derive expression for Gauge factor. Illustrate its applications. (2x5)

VI. a) Discuss the working principal of Successive Approximation type ADC. Which ADC is most commonly used in Digital Multimeter and why?

b) What is a logarithmic amplifier? What are the advantages of Instrumentation amplifier? (2x5)

VII. a) What are various data types defined in VI? Design a VI to find whether the given number is prime or not.

b) What is polymorphism in Lab VIEW? Differentiate between an array and a cluster with an example. (2x5)

x-x-x