Exam.Code:0905
Sub. Code: 33263

2124

B.E. (EEE), First Semester

EEEC-101: Electrical 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. Answer the following:-

a) Define accuracy and resolution in measuring instruments?

b) Explain the principle of operation of thermistor.

c) What is a Meggar? Draw its neat diagram.

d) Draw the diagram of a Cathode Ray Tube. Give its significance?

e) Give differences between ac and dc potentiometers? (5x2)

UNIT - I

II. a) What is the RMKS system of units and how it is different from MKS system of units?

b) Explain with neat diagram the construction and principle of operation of a PMMC instrument. Derive the expression for deflection. (2x5)

III. With the help of neat diagrams, explain the construction of attraction type moving iron instrument. Prove that the deflecting torque in moving iron instrument is proportional to square of the current being measured. (10)

IV. a) What do you think are the permissible Errors in Ammeters and Voltmeters?

b) A Piezoelectric crystal has a dimension of 5mm × 5mm × 1.25mm and has a voltage sensitivity of 0.05 V-m/N. It is used for the measurement of force. Calculate the magnitude of force if the voltage developed is 80V. (2x5)

P.T.O.

UNIT - II

V. Explain how unknown capacitance is measured using Schering Bridge with help of a neat circuit diagram. Derive the expression for unknown capacitance. Draw the phasor diagram. (10)

VI. Two wattmeters are connected to measure the power consumed by a 3-phase balanced load. One of the wattmeters read 1500 Watts and the other 700 Watts. Find power factor of the load,

a) When both the readings are positive, and

b) When the reading of the second wattmeter is obtained after reversing its current coil connection? What are Permeaters? Explain the working of Hopkinson permeater. (10)

VII. Derive the expression for ratio and phase angle error in a current transformer. (10)

x-x-x