

Exam.Code:0933
Sub. Code: 6770

1079
B.E. (Electrical and Electronics Engineering)
Third Semester
EE-302: Electric Measurement and Instrument

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Part.

x-x-x

1. (a) Define resolution and Sensitivity of Digital voltmeter. Compare the Analog and Digital Instruments.
(b) Discuss the common sources of error in AC bridges. How are they eliminated?
(c) Explain the significance of a Potentiometer. What are the applications of self-balancing Potentiometers??
(d) Discuss the importance of calibration of instruments? Distinguish between accuracy and precision.
(e) Explain the principle of logarithmic amplifier and discuss its applications?

(5*2=10)

PART -A

2. (a) Write a technical note on the various sources of measurements errors and their compensation methods.
(b) A voltmeter reads 152 volts for a particular measurement. If the true value of the measurement is 154 volts, determine the percentage static relative error and static correction. Draw the block diagram of a generalized measurement system
- (2*5=10)
3. (a) Explain how the Resistance and Current can be measured using a D.C Potentiometer.
(b) Explain the working of a polar type potentiometer with a neat diagram.
- (2*5=10)
4. With the neat sketches, discuss the construction, working principle and the characteristics phasor diagrams of Induction type energy meters. Also explain the working of series and shunt type ohm meters.
- (10)

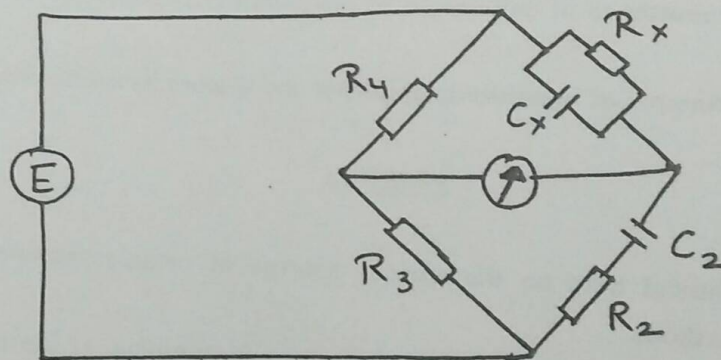
PART-B

5. (a) What is the selection criteria for a transducer? Explain the working principle of LVDT with neat sketch. Mention the advantages and applications of LVDT.

P.T.O.

(2)

- (b) Explain the procedure of measuring a low resistance with the help of Kelvin's double bridge. Derive the necessary relation for finding the unknown resistance under balanced condition of the bridge. (2*5=10)
6. (a) Explain with a neat diagram for the measurement of Inductance using Hay bridge and also derive the relation for inductance under balanced condition using a neat phasor diagram.
- (b) The AC bridge shown below is used to measure the unknown capacitance C_x and resistance R_x . Derive an equation for balance condition of bridge. Determine the value of R_x and C_x if $R_3=R_4$, $R_2=2.5k\Omega$, $C_2=0.2\mu F$ and the frequency of the supply is 1KHz.



(2*5=10)

7. Write short note on the following:

(i) Wagner Earthing Device

(ii) Piezo-electric transducer

(2*5=10)

x-x-x