

End Semester Examinations - 2015-16 Even Semester - May 2016

14EI2041 Measurements and Instrumentation

Set A

Time : 3 hrs
Total Marks: 100

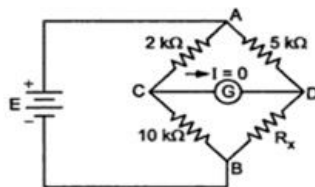
1. a. Explain the working of attraction and repulsion type Moving Iron instrument with neat diagram. (10)
b. Discuss the principle of operation and construction of single-phase induction type energy meter with neat diagram. (10)

OR

2. a. Explain with a diagram the construction of D' Arsonval Galvanometer. (10)
b. A 2mA meter with an internal resistance of $100\ \Omega$ is to be converted to 0 – 150 mA ammeter. Calculate the value of the shunt resistance required. (4)
c. Discuss in detail the different types of systematic errors and the measures taken to minimize these errors. (6)
3. a. Draw and explain the circuit of Kelvin double bridge. Deduce the balance condition and discuss the advantage of the Kelvin double bridge over the conventional Wheatstone bridge for measurement of low resistance. (12)
b. Describe the working of Hay's bridge for measurement of inductance and derive the equations for balance. (8)

OR

4. a. Describe how measurement of capacitance can be done by using Schering bridge. Comment on the dissipation factor. (10)
b. Calculate the value of the unknown resistance of a Wheatstone bridge, assuming the bridge to be in balance condition. (3)



- c. The arms of an a.c Maxwell Bridge is arranged as follows: AB is a non-inductive resistance of 1000 ohms connected in parallel with a capacitor of 0.5 microfarad. BC is non-inductive resistance of 600 ohms, CD is a inductive impedance (unknown) and DA is non-inductive resistance of 400 ohms. If balance is obtained under this condition, find the value of resistance and inductance of the branch CD. (7)

5. a. Describe the construction, working principle, merits and demerits of thermocouple. (10)
b. Explain the principle, characteristics and advantages of LVDT with a neat diagram. (10)

OR

6. a. . How is the speed of a shaft measured using a tachometer generator? (10)
b. Discuss the principle and working of different temperature sensors. Sketch their typical characteristics. (10)
7. a. Explain the circuit of RC phase shift oscillator. Describe how Barkhausen criteria are satisfied in this oscillator. (10)
b. Describe in detail the circuit and working of an Astable multivibrator. (10)

OR

8. a. Draw and explain the principle of Harmonic distortion analyser. (6)
- b. Describe the principle of working of Wien's bridge oscillator. Give its advantages and disadvantages. (10)
- c. Define and explain the term that differentiates square – wave generator and pulse generator. (4)
9. a. Describe the functioning of a basic type of strip chart recorder. Explain the different types of marking mechanisms used in it. (10)
- b. Enumerate with a block diagram, the various elements involved in a digital data acquisition system. (6)
- c. Give an overview of different digital display devices. (4)

Wishing you All the Best
