QUESTION BANK

Course : B.Tech. **Branch :** EEE **Year/Semester :** II/II **Academic Year :** 2018-19
Subject : Electrical Measurements
Admitted Batch : 2017 **Regulation:** R16

UNIT – I

1) a) Explain the essential features of Indicating Instruments.
b) Explain about Spring control and gravity control controlling devices.
c) Explain the significance of Eddy current damping in an indicating Instrument.

2) a) Derive the Torque equation for Moving iron Instruments.
b) Explain the various methods of providing damping torque in an indicating instrument.

3) a) Explain the construction and working of Repulsion type Moving iron Instruments.
b) Explain the following terms with respect to Instrument transformers:-
i) Actual Ratio ii) Nominal ratio iii) Ratio correction factor iv) Burden of an instrument transformer.

4) a) Explain the construction and working of a Permanent magnet moving coil meter.
b) Compare between Current transformer and Potential transformer.

5) a) a) Derive the actual ratio of a Current transformer from its equivalent circuit and Phasor diagram.
b) Derive the equation for deflection of a Dynamometer type of instruments which can be used for both DC and AC.

UNIT – II

1) a) Explain with a neat circuit of Dynamometer type Wattmeter and derive the equation for deflection.
b) List the various types of errors in dynamometer type Wattmeter's.

2) a) Explain the working of Induction type single phase Energy meter with a neat diagram.
b) A 50 A, 230V meter on full load test makes 61 revolutions in 37 seconds. If the normal disc speed is 520 revolutions per KWH, find the percentage error.

3) a) Explain how a power measurement range can be extended with a wattmeter in conjunction with an instrument transformer.
b) A single phase KWh meter makes 500 revolutions per KWh. It is found, on testing, as making 40 revolutions in 58 seconds at 5 KW full load. Find out the percentage error.

4) a) Derive the actual ratio of a Current transformer from its equivalent circuit and Phasor diagram.
b) Why secondary of current transformer should never be open when the Primary winding is energized.

5) A)Define LPF and UPF wattmeter's and give their significance.
B) What do you mean by Creeping error in Induction Energy meter and how it can be adjusted?
C) What do you understand by Phantom or Fictitious loading in energy meters and why is it necessary?

UNIT – III

1) a) List out the limitations of AC potentiometers.
b) Explain the procedure for standardizing the potentiometer.
c) Explain the significance of a Potentiometer.
d) What are the applications of self balancing Potentiometers?

2) a) How does an AC potentiometer different from a DC Potentiometer.
b) Explain how the calibration of Voltmeter and Wattmeter can be done using a DC Potentiometer.
3.a) Explain the working of Crompton Potentiometer with a neat diagram.
b) How the unknown emf is measured using Drysdale – Tinsley A.C. Potentiometer?
4) a)Explain how calibration of Voltmeter and Wattmeter can be done using a DC Potentiometer.
b) List the basic requirements of AC potentiometers.
5) a) Explain the working of Gall Co-ordinate type Potentiometer with a neat diagram.
b) Explain how the Voltage and power can be measured using a dc Potentiometer.

UNIT – IV

1) a) From the point of measurement, how can resistances be classified.
b) Discuss the common sources of error in AC bridges. How are they eliminated?
c) How are detectors classified? Explain each one of them briefly.
d) State the applications of Wein Bridge.

2) a) Explain any one method for the measurement of high resistance and explain its advantages over other methods.
b) Deduce the general equation or condition for bridge balance in AC Circuits.
3) a) 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.
b) Explain the working of Carey – Foster slide wire bridge with neat circuit diagram.

4) 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) Explain the importance of Wagner's earthing device.

5) a) Explain how the inductance can be measured by using Maxwell bridge with a neat Diagram.

b) A balanced 5 KHz bridge has the following configuration: Arm AB : R_1 = 4000_ in parallel with C_1 = 0.063μF
BC : R_2 = 2500_ in series with C_2 = 0.63μF
CD : the unknown R and C
DA : Pure capacitance C_4 = 0.305μF
Calculate the unknown R and C. Draw the phasor diagram of the above bridge under balanced condition.

UNIT – V

1) a) How are magnetic materials classified?
b) Explain the AC bridge method for measurement of iron losses in ferromagnetic materials.
2) a) Explain the AC Potentiometer method for measurement of iron losses in ferromagnetic materials.
b) Define the following terms related to magnetic materials:
i) Magnetic field strength ii) Curie temperature.
3) a) Explain the operation of Ballistic Galvanometer with a neat diagram.
b) c) List the precautions needed to be taken in Magnetic testing.
4) a) Give the merits and demerits of ring and bar specimens that are commonly used in magnetic testing of materials.
b) Explain the method for finding out the B-H curve of a magnetic materials using step by step method.
5) a) Explain the determination of Hysteresis loop by method of reversals using a neat diagram.
b) Explain how magnetizing and loss components of no load current of a transformer be determined by using an A.C. Potentiometer.

UNIT – VI

1) a) Explain the working of Dual slope Integrating type Digital Voltmeter with a neat schematic diagram.
b) Explain the basic scheme of Digital multimeter along with its advantages.
2) a) Explain the working of Digital frequency meter with a neat block diagram.
b) Explain the basic block diagram of a Digital voltmeter
3) a) Define resolution and Sensitivity of Digital voltmeter.
b) Explain the working of Linear Ramp type Digital voltmeter with a neat schematic.
4) a) Explain the working of Successive Approximation type Digital Voltmeter with a neat diagram.
b) List out the advantages of Digital Voltmeters.
5) a) List the general specifications of Digital Voltmeters.
B) Explain the working of Digital Tachometer with a neat block diagram.