Question Bank (EMI) 4th SEM Electrical

UNIT-1

1. Define the terms (i) repeatability (ii) Accuracy (iii) precision (iv) static sensitivity (v) Resolution and (vi) Linearity.
2. Explain different types of errors in measurement. and discuss the means adopted to minimise these errors.
3. Describe the different methods of producing controlling torque in an analog indicating instrument. List their advantages and disadvantages.
4. Describe the Various operating forces needed for proper operation of an analog indicating instrument.

UNIT-2

1. Describe the construction and working of PMMC instrument. Derive the equation for deflection if the instrument is spring controlled. Describe the method of damping used in these instruments.
2. Describe the constructional details and working of an electrodynamometer type instrument. Derive the eq^n for deflection under a.c. Operation if the meter is spring controlled. Discuss the shape of the scale
3. Describe the working and constructional details of an attraction type MI instrument. Discuss its advantage and disadvantages.
4. Discuss the following types of errors in MI instruments.

(i) Hysterisis error (ii) Temp. error (iii) Error due to stray magnetic field (iv) Error due to change in freq.

UNIT-3

1. Describe Construction, principle of working of Dynamometer type wattmeter.
2. Describe briefly the errors in Dynamometer type wattmeter and methods of their Correction.

3. Why Compensating coil is used in dynamometer type instruments. Explain it in details.

4. Explain briefly how to reduce the error due to inductance of pressure coil.

UNIT-4

1. Describe the construction and working of a single phase induction type energy meter.

2. Explain the different types of tests that are carried out on single phase induction type energy meter.

3. What is phantom loading? Explain with an example how is it more advantageous than testing with direct loading.

4. Explain how the following adjustments are made in a single phase induction type energy meter.

(i) Lag adjustment (ii) Adjustment for friction compensation (iii) Creeping (iv) Overload compensation (v) Temp compensation.

UNIT-5

1. Describe the constructional details and working of a 1-ϕ and 3-ϕ electrodynamometer type of power factor meter.

2. Describe why phase splitting is not necessary in 3-ϕ electrodynamometer type of power factor meter while in a single phase power factor phase splitting has to be done by using R in one ckt and L in another ckt of the moving coils.

3. Explain the working of a mechanical resonance type frequency meter.

4. Explain the construction, working and theory of a drag cup type tachogenerator.

5. What are the limitations of A.C. Tachometer generators.

UNIT-6

1. Describe with the help of suitable diagrams, how a d.c. potentiometer can be used for determination of an unknown Resistance.

2. Explain the term "standarization" of a potentiometer. Describe the procedure of standarization of a d.c potentiometer.

3. Derive the equations for balance in case of Maxwell's inductance capacitance bridge. Draw the phasor diagram for balance conditions.

4. Derive the general equations for balance for an a.c. bridge. prove that two conditions i.e. for magnitude and phase have to be satisfied if an a.c. bridge is to be balanced.

5. Describe the working of a low voltage schoning bridge. Derive the equations for capacitance and dissipation factor. Draw the phasor diagram of the bridge under balance conditions.

6. What are different types of resistance according to their magnitudes?

7. Draw the ckt diagram ~~of~~ for the mesnt of medium resistance (wheatstone bridge method) and derive the eqns for resistance under balance condition.

8. Explain briefly the construction and working principles of Analog type multimeter.

9. Why Megger is used? Explain the construction and principle of operation of Megger briefly.

UNIT-7

1. Define Transducer.
2. What are different types of transducer. Give examples from each.
3. Differentiate betn active transducer and passive transducer.
4. What is piezoelectric effect?
5. Define Gauge factor (GF)
6. What is Hall effect?
7. Explain the different principles of working of capacitive transducers.

8. Describe the properties of materials used for piezo-electric transducers. Derive the expressions for voltage and charge sensitivities.

9. Explain the construction and principle of working of a linear voltage differential transformer (L.V.D.T). Why is the freq of excitation of primary winding kept very high as compared to the freq of the signal being detected?

10. Describe the construction, principle of working and applications of Hall effect transducers.

UNIT-8

1. Draw the block diagram of a general purpose CRO and explain the functions of the following controls.
(i) Intensity (ii) focus (iii) horizontal and vertical positioning (iv) synchronization.

2. Describe the different parts of a CRT.

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