

Electrical

Exam. Code: 0933

Sub. Code: 6350

1078

B. Engg. (Electrical &amp; Electronics Engg.)

3<sup>rd</sup> Semester

EE-302: Electrical Measurement and Instrumentation

Time allowed: 3 Hours

Max. Marks: 50

**NOTE:** Attempt five questions in all, including Q. No. 1 which is compulsory and selecting atleast two questions from each Unit.

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- I. (a) What is the difference between "standard deviation" and "variance"? How do random errors differ from systematic error?
- (b) How is controlling torque provided in PMMC instruments? Explain.
- (c) Explain the difference between polar and coordinate type potentiometer.
- (d) Why is Anderson Bridge preferred over Maxwell Bridge for measuring inductance?
- (e) What is the need of a transducer? Distinguish between active and passive transducers. (5×2)

UNIT-I

- II. What is MKS system of units? What are its advantages over CGS system? How many base and supplementary units exists in SI system? Obtain the dimension of R, L and C in terms of mass, length, time and current? (10)
- III. Derive the expression for torque produced in a moving coil type of instrument and briefly explain its working. (10)
- IV. Describe the construction and working of a coordinate type ac potentiometer. How is it standardized? Explain how an unknown voltage can be measured with it? What are the problems associated with ac potentiometer. (10)

UNIT-II

- V. The arms of an ac Maxwell Bridge are arranged as: -  
AB is a non-reactive resistor of  $1000\Omega$ , in parallel with a condenser of capacitance  $0.5\mu F$ , BC is a non-reactive resistor of  $600\Omega$ , CD is an unknown inductive resistor, DA is a non-reactive resistor of  $400\Omega$ . If balance is obtained under these conditions, find the value of R and L in CD. (10)
- VI. Explain the principle of action of a capacitive displacement transducer having linear characteristics. Give merits, demerits and applications of capacitive transducer. (10)
- VII. Write notes on the following: -  
(a) Primary sensing elements  
(b) Working of logarithmic amplifiers. (2×5)

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