

- d) What do you mean by low, medium and high resistance? Describe one method each for the measurement of low, medium and high resistance with their advantage and disadvantage.

OR

Describe with the help of a neat diagram, a method for the determination of B.H curve of a magnetic sample point out the various of errors and the methods of minimizing them.

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Total No. of Questions : 5]

[Total No. of Printed Pages : 4

**EE/EX - 303**

**B.E. III Semester**

Examination, December 2015

**Electrical Instrumentation**

**Time : Three Hours**

**Maximum Marks : 70**

- Note:** i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.  
ii) All parts of each questions are to be attempted at one place.  
iii) All questions carry equal marks, out of which part A and B (Max.50 words) carry 2 marks, part C (Max.100 words) carry 3 marks, part D (Max.400 words) carry 7 marks.  
iv) Except numericals, Derivation, Design and Drawing etc.

**Unit - I**

1. a) How do accuracy and precision differ from each other?
- b) What are systematic errors?
- c) Explain the working principle of ballistic galvanometer mention. How it is calibrate?
- d) Derive the relation, for measurement of flux by flux meter, from first principle. How is it modified by measurement of large flux. Explain.

OR

With the help of a neat diagram explain the principle of D'arsonal galvanometer. What is the ballistic galvanometer?

**Unit - II**

2. a) How is dynamometer instrument used as a voltmeter?  
b) How is controlling torque provided in PMMC instruments?  
c) What are the difference between moving coil and moving iron instruments?  
d) Draw the circuit diagram of electrodynamicometer type instrument. Explain its working principle.

**OR**

An electrostatic voltmeter has two parallel plates. The moving plate is 10cm in diameter with 10kV between the plates the pull is 0.005N. Find the change in capacitance for movement of 1 mm of the movable plate.

**Unit - III**

3. a) What is meant by phase angle error of CT?  
b) Why does conventional type of potential transformer become expensive for the voltage above 100kV (phase)?  
c) How does current transformer differ from a conventional transformer?  
d) Three equal impedances, each consisting of R and L in series are connected in star and are supplied from a 400 volts, 50Hz, 3-phase, 3 wire balanced supply system. The power input to the load is measured by 2-wattmeter method and the two wattmeters read 3kW and 1kW. Determine the values of R and L connected in each phase.

**OR**

Three similar choking coils each having resistance of  $10\Omega$  and reactance  $10\Omega$  are connected in star across a 440V, 3phase supply. Find line current and reading of each of two wattmeters connected to measure the power.

**Unit - IV**

4. a) Why the rotating system of the energy meter is made as small as possible?  
b) How does the rotating disc of an induction type energy meter carry a small hole?  
c) What is the difference between an energy meter and a wattmeter?  
d) Describe the construction and working principle of three phase energy meter.

**OR**

Explain the term 'standardization' of a potentiometer. Describe the procedure of standardization of DC and AC potentiometers.

**Unit - V**

5. a) What is meant by low, medium and high resistance?  
b) Describe a method for measurement of insulation resistance of a cable.  
c) Why is Kelvin's double bridge superior to the wheatstone bridge for the purpose of low resistance measurement.