

Roll No

EE/EX-303

B.E. III Semester

Examination, December 2016

Electrical Instrumentation

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.

ii) All questions carry equal marks.

iii) Parts of questions should be attempted at one place only.

1. a) Define the following terms : 6
 - i) Deflecting force
 - ii) Controlling force
 - iii) Damping
- b) Discuss various types of errors in measuring electrical quantities. How these error can be minimized? 8
2. a) Starting from an expression for torque equation of a moving iron instrument, explain how the scale characteristics of such an instrument are controlled. 7
- b) How is the current range of a PMMC instrument extended with the help of shunts? Describe a method of reducing errors due to temperature changes in the shunt connected instruments. Illustrate with an example. 7
3. a) Explain the construction and operation of flux meter in details. 7
- b) Write down the working of electro dynamometer. 7
4. a) Write down the characteristics of potential transformer in details. 7

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- b) Describe one laboratory method of testing of a current transformer with a view to find out the ratio and the phase angle error. 7
5. a) Describe the construction and working of a two element induction type energy meter. 7
- b) Describe the expression for the power factor of a three-phase balanced load with the help of two wattmeter method. What will be the p.f. When the reading of : 7
 - i) Two wattmeter are equal?
 - ii) Two wattmeter are equal and opposite?
 - iii) One wattmeter is zero?
6. a) Describe the construction and working of a polar type potentiometer. How is it standardized? 7
- b) Explain the working of maximum demand meter. 7
7. a) How the resistances are classified as low, medium and high? Explain the method to measure a high resistance. 7
- b) Explain with circuit diagram the Lloyd-Fischer square for measurement of iron loss in a iron specimen. 7
8. Write a short notes on any two of the following : 7 each
 - a) D'arsonval galvanometer
 - b) Tri-vector meter
 - c) Kelvin's double bridge

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