Code: 9A02501

R9

B.Tech III Year I Semester (R09) Supplementary Examinations, May 2013

ELECTRICAL AND ELECTRONIC MEASUREMENTS
(Electrical & Electronics Engineering)

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks
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1 (a) Explain why PMMC instruments are the most widely used instruments. Discuss their advantages and disadvantages.
   (b) A moving coil instrument has a resistance of 12 Ω and gives a full scale deflection when carrying 50 mA. Show how it can be adopted to measure voltage up to 700 V and current 100 A.

2 (a) Explain the design features of current transformers that help to minimize the errors.
   (b) The ratio error of a given 1000/5 A CT is zero when feeding 5 VA, UPF burden at rated current estimate the iron loss of the transformer at this operating condition if the secondary has 198 turns and minding resistance of 0.02 Ω. Neglect leakage reactance.

3 Describe the constructional details and working principle of the single phase dynamometer wattmeter.

4 Describe the construction and working of a co-ordinate type AC potentiometer. How it can be standardized. Explain how an unknown voltage can be measured with it.

5 (a) Draw the circuit of a Kelvin's double bridge used the measurement of low resistance. Derive the condition for balance.
   (b) State the advantages and disadvantages of Ander son's bridge.

6 (a) Write short notes on determination of B – H loop by method of reversals.
   (b) The coil of a ballistic galvanometer has 115 turn of mean area $25 \times 40\ mm^2$ the flux density is the air gap is 0.12 Wb/m^2 and the moment of inertia is 0.5×10^{-6} Nm/rad. What current must be passes to give a deflection of 100º?

7 Explain the measurement of phase, frequency, current and voltage by using cathode ray oscilloscope.

8 (a) Write brief notes on successive approximation type digital voltmeter.
   (b) What is digital tachometer explain with neat diagram.

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