

Code: 9A02501

B.Tech III Year I Semester (R09) Supplementary Examinations, May 2012

**ELECTRICAL AND ELECTRONIC MEASUREMENTS**

(Electrical and Electronics Engineering)

Time: 3 hours

Max Marks: 70

Answer any FIVE questions

All questions carry equal marks

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- 1 (a) Describe the construction details of an attraction type moving iron instrument with the help of a diagram. Derive the equation for deflection of spring control used.  
(b) Describe the construction details and working of electro-dynamometer type instrument. Derive the equation for deflection under a.c operation.
- 2 (a) Draw the equivalent circuit and phasor diagram of a current transformer. Derive the expressions for ratio and phase angle errors.  
(b) Describe the errors in electro-dynamometer type wattmeter.
- 3 (a) Derive the expression for deflecting torque in single phase induction type meters.  
(b) Describe a current for testing of a single phase induction type energy meter at different loads and power factors.
- 4 (a) Describe the basic principle of operation of a d.c potentiometer. Explain why potentiometer does not load the voltage source whose voltage is being determined.  
(b) Explain how true zero is obtained Crompton's potentiometer.
- 5 (a) Draw the circuit of a Kelvin double bridge used for measurement of low resistance. Derive the condition for balance.  
(b) Derive the equations for balance in the case of Maxwell's bridge.
- 6 (a) Describe a method of experimental determination of flux density in a specimen of magnetic material using Ballistic galvanometer.  
(b) Describe the method of determining B-H curve of a magnetic material using method of reversals.
- 7 (a) Describe how the following parameters can be made with the use of a CRO.  
(i) Frequency. (ii) Phase angle.  
(b) Describe the details of vertical amplifier used in a CRO.
- 8 (a) Explain in detail about successive approximation type DVM.  
(b) Describe in detail about digital tachometer.

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