

DELVI

Term-End Examination

June, 2012

BIEE-039 : ELECTRICAL MEASUREMENTS AND INSTRUMENTS.

Time : 2 hours

Maximum Marks : 70

Note : Attempt five questions in all. Q.No,1 is compulsory.

1. Indicate whether the following statements are *True or False.* **2x7=14**
- (a) Air friction damping is used in moving iron instruments.
 - (b) A voltmeter should be of very high resistance so that its range is high.
 - (c) When a PMMC instrument is connected to ac voltage the instrument will indicate zero.
 - (d) The secondary of a CT should never be left open-circuited.
 - (e) A dynamometer type wattmeter has one current coil and one pressure coil circuit.
 - (f) A single phase energymeter (induction type) is found to run fast. It can be slowed down by adjustment of position of brake magnet.
 - (g) In a CRO by changing time base, we change the amplitude of sawtooth wave.

2. Why is a deflecting torque necessary in an indicating instrument ? Name the instruments which are based on different methods of producing deflecting torque. 14

3. With the help of a neat diagram, explain the principle of a moving coil galvanometer. Also derive its torque equation. 14

4. Describe the construction and working of a single phase induction type energymeter with the help of neat diagram. Show that the total number of revolutions made by its disc during a particular time is proportional to the energy consumed. 14

5. Explain with a neat sketch the construction and principle of a dynamometer type single phase power factor meter. How would the accuracy of such an instrument be affected by frequency and wave form variation ? 14

6. How does a current transformer differ from an ordinary power transformer ? Draw its vector diagram and discuss the effect of variation of power factor of the secondary burden upon the performance. 14

7. Describe the functions of the essential components of a CRO with the help of a block diagram. Explain the measurement of phase difference of two sinusoidal signals using CRO. **14**
8. Write short notes on *any four* of the following : **14**
- (a) Errors of Moving Iron Instruments
 - (b) Meggar
 - (c) Digital Multimeter
 - (d) Dynamometer Frequency Meter
 - (e) Tong Tester
 - (f) Maximum Demand Indicator
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