

Code: EE4T2

II B.Tech - II Semester – Regular Examinations - JUNE 2014

**ELECTRICAL MEASUREMENTS AND
INSTRUMENTATION
(ELECTRICAL & ELECTRONICS ENGINEERING)**

Duration: 3 hours

Marks: 5x14=70

Answer any FIVE questions. All questions carry equal marks

1. a) Briefly explain the working of Permanent Magnet Moving Coil Instrument with neat sketch and also give the deflecting and controlling torque equations. 10 M
b) Explain the importance of voltmeter multipliers. 4 M

2. The power flowing in a 3 phase, 3 wire balanced load system is measured by two wattmeter method. The reading of wattmeter A is 7500 W and of wattmeter B is -1500 W.
(a) what is the power factor of the system?
(b) If the voltage of the circuit is 400 V, what is the value of capacitance which must be introduced in each phase to cause the whole of the power measured to appear on wattmeter A. The frequency is 50 Hz. 14 M

3. a) Explain about the Permanent Magnetization and Demagnetization of cores of a current transformer. 7 M

- b) Discuss the effect of secondary open circuit in a current transformer. 7 M
4. a) Explain the working of a single phase Moving Iron type power factor meter with a neat sketch. 7 M
- b) Explain the working of a of DC Crompton's potentiometer with a neat sketch. 7 M
5. a) Explain how the loss of charge method is useful for measurement of high resistance. 7 M
- b) In a measurement of resistance by substitution method a standard $0.5 \text{ M}\Omega$ resistor is used. The galvanometer has a resistance of $10 \text{ K}\Omega$ and gives the deflection as follows:
Find the unknown resistance.
- (i) With standard resistor, 41 divisions,
 - (ii) with unknown resistor, 51 divisions. 7 M
6. a) Explain how a Schering bridge is used for measurement of capacitance. 7 M
- b) Give the advantages & disadvantages of Hay's bridge. 7 M
7. a) Explain the working and operation of a Linear variable differential transformer with a neat sketch. 10 M

b) Mention the advantages & disadvantages of Thermocouples. 4 M

8. a) Give the advantage of digital voltmeters over analog voltmeters. 4 M

b) Explain the working of successive approximation type DVM using neat sketch. 10 M