

Reg. No. :

--	--	--	--	--	--	--	--	--	--	--

Question Paper Code: 31055

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2015.

Third Semester

Electronics and Instrumentation Engineering

01UEI305 - ELECTRICAL MEASUREMENTS

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. List the various types of error in moving iron meter.
2. How to extend the high range of PMMC ammeter.
3. What is LPF wattmeter?
4. List various types of error in electro dynamo meter wattmeter.
5. Draw the phasor diagram of PT.
6. Define turn's ratio error in CT.
7. Draw the circuit diagram of megger.
8. Write the basic principle of measurement of resistance in ammeter voltmeter method.
9. Define Q factor of coil.
10. Draw the circuit diagram of Schering bridge.

PART - B (5 x 16 = 80 Marks)

11. (a) (i) With neat sketch, explain construction and operation of moving coil instruments. (10)
(ii) The deflection of a galvanometer is zero with no current and 7mm with a steady state current of $5.6\mu\text{A}$. Its first maximum deflection, after a step function of voltage which produces a steady state current is applied is 112mm . The maximum deflection in the next cycle is 84mm . Determine (1) current sensitivity (2) the logarithmic decrement (3) relative damping. (6)

Or

- (b) (i) With diagram, explain construction and operation of D'Arsonval galvanometer. (8)
- (ii) Draw the circuit diagram of rectifier type of voltmeter and explain its working. (8)
12. (a) (i) Explain in detail about construction and working of single phase electro-dynamometer type wattmeter. (8)
- (ii) With a neat circuit diagram explain in detail about phantom loading method of measurement of power. (8)

Or

- (b) (i) Explain in detail about construction and working of single phase energy meter with phasor diagram. (8)
- (ii) Write short note on various types of errors in single phase energy meter and how it can be corrected. (8)
13. (a) With a neat diagram explain in detail about working principle of Crompton type DC potentiometer. (16)

Or

- (b) Explain in detail about the construction and working of Drysdale AC potentiometer. (16)
14. (a) Explain how low resistance can be measured using Kelvin double bridge method. Write the expression for the determination of unknown resistance. (16)

Or

- (b) Each of the arms of a laboratory type Wheatstone bridge has guaranteed accuracy of 0.1%. The ratio arms are both set at 1000 ohm and the bridge is balanced with standard arm adjusted to 3154 ohm. Determine the upper and lower limits of the unknown resistance, based upon the guaranteed accuracies of the known bridge arms. (16)
15. (a) Derive an expression for measurement of inductance using Anderson's bridge with phasor diagram. (16)

Or

- (b) With a neat diagram explain principle of working of vibration galvanometer and write the expression for the same. (16)