Reg. No. : | | | | | | | | | | |

Question Paper Code: 33505

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

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. Define Megger.
9. Which are used as detectors in the AC bridges?
10. List the errors in AC bridge methods.

PART - B (5 x 16 = 80 Marks)

11. (a) Illustrate the constructional details and principle of operation of moving coil and moving iron instruments. (16)

Or

(b) With a neat diagram explain the principle and construction of dynamometer type and thermal type instruments. (16)

12. (a) (i) Explain in detail about sources of errors in Electrodynamometer type wattmeter and also explain the various compensation techniques used. (12)

(ii) Write short notes about LPF wattmeter. (4)

Or

(b) Describe basic principle, construction and working of induction type energy meter and also derive the torque equation for the same. (16)

13. (a) With a neat diagram explain in detail about working principle of Crompton type DC potentiometer. (16)

Or

(b) Explain the operating principle of current transformer with a neat diagram. Mention the various causes of error and state the methods of reducing the errors. (16)

14. (a) (i) Demonstrate the construction and working of Wheatstone bridge. (10)

(ii) Compare series type and shunt type ohmmeters. (6)

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) How frequency can be determined using Wein bridge? Give the necessary equations. (16)