Reg. No. :

Question Paper Code: 53505

B.E. / B.Tech. DEGREE EXAMINATION, NOV 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. Compare Ballistic and D'Arsonval galvanometer.

2. How to extend the high range of PMMC ammeter.

3. What is Phantom loading?

4. List various types of error in electro dynamo meter wattmeter.

5. Compare AC and DC potentiometer.

6. Define turn's ratio error in CT.

7. Draw the circuit diagram of megger.

8. What is ground fault?

9. Write the sources and detectors used in AC Bridge.

10. State two applications of vibration galvanometer.

PART - B (5 x 16 = 80 Marks)

11. (a) (i) Explain the working principle of attraction type and repulsion type moving iron
        instruments with necessary diagrams.   (10)

(ii) Compare MI and MC instruments. (6)

Or

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

12. (a) Describe the constructional details of an electro dynamometer type wattmeter. Derive the expression for torque when the instrument is used on ac. (16)

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) Explain in detail about the laboratory grade 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) Sketch the circuit of a series ohmmeter with a zero control. Explain the circuit operation. (8)
(ii) Draw a circuit diagram to show how the insulation resistance of a cable should be measured. Explain. (8)

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

Or

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

53505