

B.E./B.TECH. Degree Examination, December 2020

Third Semester

EE16304-Measurements and Instrumentation

(Regulation 2016)

Time: Three hours

Maximum : 80 Marks

Answer **ALL** questions**PART A - (8 X 2 = 16 marks)**

1. is a measure of reproducibility of the measurements?
a) Accuracy b) Precision c) Time lag d) Error
2. In some energy meters a slow but continuous rotation is obtained even when there is no current flowing through the current coil and only pressure coil is energized is known as.....
a) Crawling b) Shading c) Creeping d) Cogging
3. is an electronic device that records data over time or in relation to location either with a built in instrument or sensor or via external instruments and sensors?
a) Data Logger b) Tape Recorder c) Digital encoder d) Digital Decoder
4. is a device which converts the physical quantity into an electrical quantity.
a) Transformer b) Transducer c) Inductor d) Capacitor
5. Write the expression for unknown inductance and its resistance of Anderson's bridge.
6. Justify that Wheatstone bridge is not suitable for measuring very low resistances.
7. Compare Printers and plotters.
8. Distinguish between active and passive transducer

PART B - (4 X16 = 64 marks)

9. (a) (i) Discuss the various static characteristics of measurement system. **(8)**
(ii) Describe the functional block diagram of an instrument. **(8)**
(OR)
- (b) (i) Explain the types of errors in measurement techniques in detail. **(8)**
(ii) Briefly discuss the various instrument standards **(8)**
10. (a) Describe the working principle and operation of PMMC instrument with neat sketch. **(16)**
Derive the torque equation. Write the advantages, errors and limitation of such instruments.
- (OR)**
- (b) Describe the construction, working principle and operation of a single-phase energy meter with neat sketch. **(16)**

11. (a) (i) Explain the ramp type of Digital voltmeter in detail (8)
(ii) Describe the function of frequency meter with neat sketch. (8)

(OR)

- (b) (i) Determine the loss angle of a dielectric using Schering bridge (8)
(ii) Derive the expression for bridge balance equation of a kelvins bridge. (8)

12. (a) (i) Describe the recording mechanism in magnetic tape recorder. (8)
(ii) Briefly explain the vertical and horizontal deflection system of CRO with block diagram. (8)

(OR)

- (b) (i) Explain the working Principle of LVDT with neat illustrations. (8)
(ii) Briefly describe the working principal of piezo-electric transducer. (8)