Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FIFTH SEMESTER B.TECH DEGREE EXAMINATION(S), MAY 2019

Course Code: AE303

Course Name: ELECTRICAL MEASUREMENTS AND MEASURING INSTRUMENTS

Max. Marks: 100 Duration: 3 Hours

PART A

Answer any two full questions, each carries 15 marks. Marks

1 a) Explain normal law of error and probable error. (4)

b) Five measurements of resistor value gave 49.7, 50.1, 50.2, 49.6 and 49.5 ohms. Assume that random errors are present. Find Arithmetic mean, Standard deviation and probable error. (6)

c) What is eddy current damping? Why is damping required in measuring instruments? (5)

2 a) Differentiate between (8)

i) Accuracy and Precision

ii) Threshold and Resolution

b) Explain controlling torques using spring and gravity. Write expressions for torques. (7)

3 Compare and contrast the working principle and characteristics of moving coil and moving iron instruments. (15)

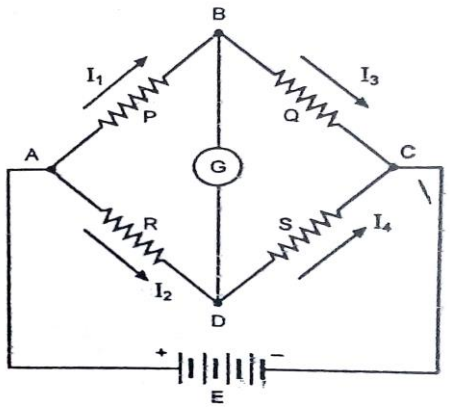
PART B

Answer any two full questions, each carries 15 marks.

4 a) How will you calibrate a voltmeter using potentiometer? (6)

b) Demonstrate measurement of an unknown medium resistance using Wheatstone's Bridge. (5)

c) (4)



The Wheatstone bridge shown when used for determining the value of unknown resistance R, is balanced when P=100 Ω, Q= 10Ω and S= 46 Ω. Determine the value of unknown resistance.

5 a) Explain the principle of operation of Carey Foster Slide Wire Bridge. (8)

b) Explain calibration of wattmeter using potentiometer (7)

6 Describe the working principle of AC potentiometers. Explain Coordinate type and polar type of AC potentiometer. (15)

PART C

Answer any two full questions, each carries 20 marks.

7 a) With block diagrams, describe the working of a general purpose CRO. (12)

b) Elaborate the various functions of Sampling oscilloscopes. (8)

8 a) What is a thermocouple? Explain the working of thermocouple bridges and Watt meters. (12)

b) Elaborate the working of a peak response voltmeter. (8)

9 a) Explain the working of a DSO with a detailed block schematic. (10)

b) With block diagram, explain Distortion meter functions and controls. (10)

****