

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
Third Semester B.Tech Degree Examination December 2020 (2019 Scheme)

Course Code: EET203

Course Name: MEASUREMENTS AND INSTRUMENTATION

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions. Each question carries 3 marks

		Marks
1	Explain the significance of measurements.	(3)
2	How drift affects the input-output relationship?	(3)
3	The deflection produced by an Electrodynamometer wattmeter is proportional to the power being measured. Justify with necessary equations.	(3)
4	In single phase induction type Energy meter, why shunt magnet flux should be in exact quadrature with the applied voltage. How this is made possible?	(3)
5	Explain any one method to measure the leakage resistance of capacitor.	(3)
6	Construct a bridge circuit to measure the frequency in audio and high frequency oscillators.	(3)
7	What are the principal requirements in magnetic measurements?	(3)
8	With neat circuit explain the characteristics of photodiode.	(3)
9	What is lissajous pattern and how does it vary with phase shift.	(3)
10	List the merits and demerits of LVDT.	(3)

PART B

Answer any one full question from each module. Each question carries 14 marks

Module 1

11(a)	What is controlling force? Explain the various controlling systems used in an indicating instrument?	(6)
11(b)	Explain the various methods for producing damping torque with neat figures.	(8)
12(a)	With neat sketches explain the construction of a PMMC instrument.	(8)
12(b)	“PMMC instruments have uniform linear scale”. Justify.	(6)

Module 2

13	Derive the expression for transformation ratio and phase angle error of a potential transformer using its equivalent circuit and phasor diagram.	(14)
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- 14(a) Explain the various errors in electro-dynamometer type wattmeter. (8)
- 14(b) With neat circuit show that the deflection produced by a wattmeter is proportional to the power consumed in the circuit. (6)

Module 3

- 15(a) Explain how low resistance is measured using kelvins Double Bridge method. Derive the balance equation used. (7)
- 15(b) Explain any one method used for the measurement of earth resistance. What are the factors on which the resistance of earthing system depends? (7)
- 16(a) Explain how relative permittivity can be measured using Schering Bridge. (4)
- 16(b) With neat circuit diagram and phasor explain how capacitance is measured using Schering Bridge. What is dissipation factor and derive its equation. (10)

Module 4

- 17(a) Explain with figure how BH Curve and Hysteresis loop can be determined using step by step method. (8)
- 17(b) List the salient features of thermistors. (6)
- 18(a) What are thermal sensors? Explain any three thermal sensors. With neat circuit show how temperature is measured using thermocouple. List the merits and demerits of using Thermocouple. (9)
- 18(b) What is photovoltaic cell? Explain its construction and characteristics with neat figure. (5)

Module 5

- 19(a) Briefly explain LVDT with neat figures. What are the merits and demerits of LVDT? Also list down any two applications. (10)
- 19(b) Describe Digital Multimeter. (4)
- 20(a) With neat block diagram explain a general purpose oscilloscope. (10)
- 20(b) How frequency and phase is measured using Lissajous pattern. (4)
