PVP 20

Code: 20EE3401

II B.Tech - II Semester – Regular / Supplementary Examinations
MAY - 2023

MEASUREMENTS AND INSTRUMENTATION
(ELECTRICAL & ELECTRONICS ENGINEERING)

Duration: 3 hours Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.
2. All parts of Question must be answered in one place.

			BL	CO	Max. Marks
UNIT-I					
1	a)	Deduce the expressions for ratio error and phase angle error of current Transformer.	L4	CO4	7 M
	b)	Deduce the expression for torque equation of a PMMC(Permanent Magnet Moving Coil) instrument.	L4	CO4	7 M
OR					
2		Explain construction and working principle of Potential Transformer with neat sketch.	L2	CO2	14 M
UNIT-II					
3	a)	Explain about creeping and its compensation in single phase induction type energy meter.	L2	CO3	7 M
	b)	Explain constructional details of 1-ϕ electrodynamometer type wattmeter with a neat sketch.	L3	CO2	7 M

		OR			
4	a)	Derive torque expression for single phase induction type energy meter.	L4	CO1	7 M
	b)	Illustrate with neat sketch working principle of moving iron power factor meter.	L3	CO4	7 M
		UNIT-III			
5	a)	Explain with neat sketch how Hay's bridge is used for measurement of inductance.	L2	CO2	7 M
	b)	Explain the megger method for the measurement of resistance.	L2	CO6	7 M
		OR			
6	a)	Explain the construction and working of Anderson bridge with suitable diagrams.	L2	CO4	7 M
	b)	A Maxwell bridge is used to measure inductive impedance. The bridge consists at balance are R_1 = 47 kΩ and C_1 = 0.01 µF in arm AB, R_2 = 5.1 kΩ in arm BC, R_3 = 100 kΩ in arm AD. Find the unknown impedance?	L4	CO4	7 M
		UNIT-IV			
7	a)	Illustrate with the help of a neat sketch the working of inductive transducers.	L3	CO3	7 M
	b)	Describe different types of thermistors. Mention advantages and disadvantages of thermistors.	L2	CO5	7 M
		OR			
8	a)	Discuss in detail about measurement of strain using strain gauge.	L2	CO5	7 M

	b)	What is the purpose of thermocouple? Explain about various types of thermocouples.	L4	CO5	7 M
UNIT-V					
9	a)	In detail explain successive approximation digital voltmeter.	L2	CO5	7 M
	b)	Illustrate with the help of a neat block diagram the working of spectrum analyzer.	L4	CO5	7 M
OR					
10	a)	Explain the ramp type digital voltmeter with the block diagram.	L2	CO5	7 M
	b)	Discuss the operation of digital multimeter in detail.	L2	CO3	7 M