Register No : _____

THE KAVERY ENGINEERING COLLEGE

(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV/DEC 2025

Fourth Semester

Electrical and Electronics Engineering

EE3403 - Measurements and Instrumentation

Regulations - 2021

Duration : 3 Hrs *Maximum : 100 Marks*

*PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)*

Q.No	*Questions*	*BLT*	*CO*	*Marks*
1.	Indicate the role of variable conversion element in measurement system.	L2	1	2
2.	Distinguish between gravity control and spring control.	L2	1	2
3.	How to extend the range of an Ammeter and Voltmeter?	L3	2	2
4.	What is creeping in energy meter?	L1	2	2
5.	Define Q-factor of the coil.	L1	3	2
6.	Interpret the role of instrumentation amplifier.	L2	3	2
7.	Classify the transducers based on energy source and give an example for each type.	L2	4	2
8.	List the advantages of digital transducer.	L1	4	2
9.	Define sample and hold circuit.	L1	5	2
10.	Indicate the advantages of virtual instrumentation over traditional instrumentation.	L2	5	2

*PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)*

Q.No			*Questions*	*BLT*	*CO*	*Marks*
11.	a		Analyze the static and dynamic characteristics of measuring instrument.	L4	1	16
			Or			
	b	i	Classify the types of errors associated in measurement and how these errors can be minimized?	L4	1	8
		ii	An electric current of 3 Ampere is flowing through a resistance of 10 ohms. It was found that the resistance was 0.2% greater than what was specified as rated and the ammeter measurement was 0.5% more than the true value. Determine the relative error in power measurement.	L4	1	8
12.	a		Illustrate the construction and working of permanent magnetic moving coil instrument. Also derive the expression for deflection.	L2	2	16
			Or			
	b	i	Summarize the working of current transformer and indicate its need in measurement.	L2	2	8
		ii	Explain the working principle of Megger.	L2	2	8

13.	a		Illustrate the procedure for measuring a low resistance with help of Kelvin's double bridge. Derive the relation to find unknown resistance.	L3	3	16
			Or			
	b		Explain the working principle of Schering bridge and also derive its balance equations.	L3	3	16
14.	a	i	Discuss the principle of capacitive transducers and analyze factors that varies the capacitance measurement.	L4	4	8
		ii	Outline the measurement of temperature using a suitable transducer.	L4	4	8
			Or			
	b	i	Compare smart sensor with conventional sensors.	L4	4	8
		ii	Outline the construction and working of LVDT with a neat sketch.	L4	4	8
15.	a	i	Examine the working of dual slope type analog to digital converter.	L4	5	8
		ii	Describe the working of Weighted resistor type digital to analog converter.	L4	5	8
			Or			
	b		Draw the functional block diagram of Digital Storage Oscilloscope and describe its operation.	L4	5	16