

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL-MAY 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.	The true value of a voltage is 100V. The values indicated by a measuring instrument are 104, 103, 105, 103 and 105V. Calculate the Accuracy and Precision of the measurement.	L2	1	2
2.	What is meant by error?	L1	1	2
3.	Write the torque Equation for the moving iron instruments.	L1	2	2
4.	Classify the moving iron instruments.	L2	2	2
5.	Differentiate the principle of dc potentiometer and ac potentiometer.	L2	3	2
6.	Tell me the instrumentation amplifier.	L1	3	2
7.	What are the factors to be considered for selection of transducers?	L2	4	2
8.	Discuss in brief about thermocouple?	L1	4	2
9.	A 3 1/2-digit voltmeter is used for measurement. What is its resolution? How it would display a reading of 12.57V in 100V scale?	L2	5	2
10.	Define Data Logger.	L1	5	2

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

Q.No	Questions	BLT	CO	Marks
11.	a Explain the functional elements of an instrument with a neat block diagram	L1	1	16
	Or			
	b i Discuss the Different types of Standards and Errors of Measurements.	L1	1	9
	i Discuss in detail about the Sources of errors in Measurement Techniques.	L1	1	7
12.	a Describe the Construction and Working of Permanent Magnet Moving coil Instrument. Also Derive the expression for deflection.	L2	2	16
	Or			
	b Describe the constructional and working of an induction type wattmeter. Also derive an expression for the average torque which is proportional to power.	L2	2	16

13.	a	Explain how the inductance is measured in terms of known Capacitance using Maxwell's bridge. Compose the conditions for balance.	L2	3	16
Or					
	b i	Explain the construction of Anderson's bridge. Derive the unknown quantities at balance condition. Also write its advantages and disadvantages.	L2	3	9
	i	Derive the expressions for measurement of unknown capacitance with a neat bridge circuit.	L2	3	7
14.	a	How is an LVDT (Linear Variable Differential Transformer) applied in measurement systems? Explain its construction and working principle in detail, and discuss its advantages.	L3	4	16
Or					
	b i	Demonstrate how a Hall Effect transducer can be applied to measure electric current in practical scenarios. Illustrate its working with a schematic representation and discuss its applications.	L3	4	9
	i	How can smart sensors be applied in real-world scenarios? Explain their working principles and discuss their role in various industries.	L3	4	7
15.	a	Categorize the working principles of different types of Analog to Digital Converters (ADCs). Compare their advantages, limitations, and applications.	L4	5	16
Or					
	b	Analyze the working principle of a digital storage oscilloscope using its fundamental block diagram.	L4	5	16