Reg. No.												

Question Paper Code	12716

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2024

Fourth Semester

Electrical and Electronics Engineering

20EEPC403 – MEASUREMENTS AND INSTRUMENTATION

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	List the basic functional elements of an instrument.	2	K1	CO1
2.	Compare moving coil with moving iron instruments.	2	K2	CO1
3.	Define creeping in energy meter.	2	K1	CO2
4.	Point out any two applications of current transformer and potential transformer.	2	K2	CO2
5.	List the applications of AC bridge.	2	K2	CO3
6.	Write the necessary balance condition for a Schering bridge.	2	K2	CO3
7.	Compare Printers and Plotters.	2	K2	CO5
8.	Distinguish between LED and LCD.	2	K2	CO5
9.	Write the functions of transducer.	2	K1	CO6
10.	Name any two applications of smart sensors.	2	K2	CO6

PART - B (5 × 13 = 65 Marks)

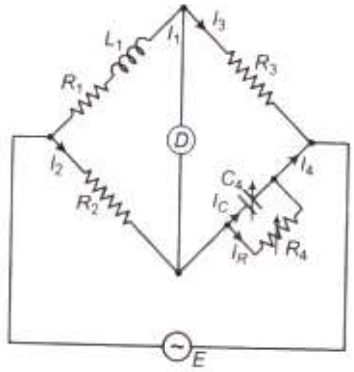
Answer ALL Questions

			Marks	K – Level	CO
11.	a)	Describe the static and dynamic characteristics of measuring instruments with a neat sketch.	13	K2	CO1
		OR			
	b)	Explain in detail about the construction and working principle of various types of digital voltmeter (DVM).	13	K2	CO1
12.	a)	With circuit diagram describe the working of Single phase AC energy meter.	13	K2	CO2
		OR			
	b)	Illustrate the construction and working principle of digital frequency meter and also list out its applications.	13	K2	CO2

13. a) Evaluate the expression for the current through the galvanometer in case of unbalanced Wheatstone bridge and also state its application. *13* K2 CO3

OR

b) A Maxwell's Inductance Capacitance bridge is shown below in figure. It is used to measure an unknown inductance in comparison with capacitance. The various values at balance: R_2 =400ohm; R_3= 600ohm; R_4=1000ohm; C_4=0.5μF.Calculate the value of R_1 and L_1.Calculate also the value of storage Q Factor of the coil if frequency is 1000Hz. *13* K3 CO3



14. a) Explain the principle and working of digital storage oscilloscope with a neat diagram. *13* *K2* *CO5*

OR

b) Elaborate the working principle of data logger and sketch the layout. *13* *K2* *CO5*

15. a) Interpret the working principle of LVDT with neat a sketch and list the advantages of LVDT. *13* *K2* *CO6*

OR

b) With generalized block diagram and explain the function of data acquisition system. *13* *K2* *CO6*

PART - C (1× 15 = 15 Marks)

16. a) Illustrate the different types of interferences and their screening methods to reduce them. *15* *K2* *CO4*

OR

b) Describe in detail about
i) Multiple Earth and Earth loops *8* *K2* *CO4*
ii) Grounding techniques *7* *K2* *CO4*