PRN:		Course Code :	UEV402

Second Year **B. Tech** End Semester Examination winter 2024

Sensors & Measurement 000234

Day and Date: Mon 25 NOV 2024 Max Marks: **100**

Time : 02:00PM To 05:00PM Duration: **03** hrs

Instructions: All questions are compulsory.

			Marks	Bloom's Level	CLO
Q.1		**Attempt the following**			
	a)	Describe the different types of errors occurs in measuring instruments.	08	L2	CLO1
	b)	Draw and explain the working of repulsion type MI instrument. State advantages and disadvantages of MI instruments.	08	L2	CLO1
		OR			
	b)	Differentiate between the spring control and gravity control.	08	L4	CLO1
Q.2		**Attempt the following**			
	a)	Derive the balancing condition of Whetstones Bridge with bridge diagram Also write the limitations of it.	08	L3	CLO2
	b)	In a Maxwell',s capacitance bridge, the values at balance: For arm 'ad' resistance R2 = 4,000 Ω; for arm 'bc' resistance R3 = 6,000Ω ; for arm 'cd' resistance R4 = 10,000 Ω ; and capacitance C4 = 1mfd. Calculate the values of R1 and L1 of arm 'ab'. Also calculate the value of storage factor (Q) of coil, if frequency is 1000 Hz.	08	L3	CLO2
		OR			
	b)	State Advantages & Disadvantages of the Maxwell's Bridge. Derive the balancing condition for Maxwell's Inductance Bridge with a diagram of bridge.	08	L1	CLO2
Q.3		**Attempt any two from the following**			
	a)	Demonstrate active and reactive power measurement in three phase circuit using two wattmeters. Derive the equation to calculate total power and power factor.	08	L3	CLO3
	b)	Discuss construction and working of single phase energy meter.	08	L2	CLO3
	c)	Derive the torque equation of MI instrument.	08	L2	CLO3
Q.4		**Attempt any two from the following**			
	a)	Explain the construction and working of LVDT.	08	L2	CLO1
	b)	Explain Resistive position transducer with advantages and applications	08	L1	CLO1
	c)	Construct & explain Peizo-Electric Transducer.	08	L3	CLO1
Q.5		**Attempt any Two of the following**			
	a)	Explain working principles of digital voltmeter.	09	L2	CLO4
	b)	Draw and explain frequency meter.	09	L2	CLO4
	c)	State advantages of digital meters over analog meters. Discuss Resolution & Sensitivity of digital meters.	09	L1	CLO4
Q.6		**Attempt any Two of the following**			
	a)	Describe LCR Meter.	09	L2	CLO4
	b)	Interpret Current Transformer and Potential Transformer.	09	L3	CLO4
	c)	What is capacitive transducer? Explain the construction and working principle of capacitive transducer with diagram.	09	L1	CLO4

Backlog