SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)
Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai
Accredited by NAAC-UGC with 'A++' Grade (Cycle III) &
Accredited by NBA (B.E - CSE, EEE, ECE, Mech & B.Tech.IT)
COIMBATORE-641 035, TAMIL NADU

A

Reg. No: | | | | | | | | | | | | |

B.E/B.Tech- Internal Assessment – I
Academic Year 2024-2025 (Even)
Fourth Semester
Electrical and Electronics Engineering
23EET206/ Measurements and Instrumentation

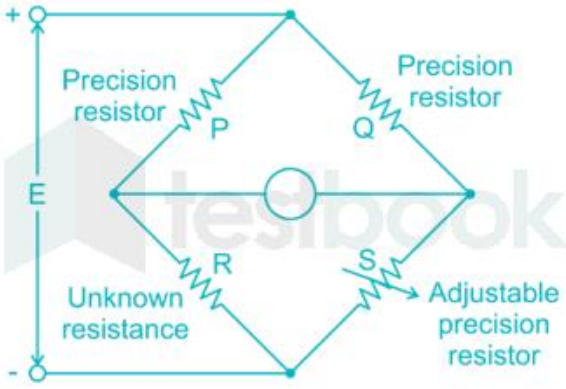
Time: 1 1/2 Hours **Maximum Marks: 50**

Answer All Questions

			CO	Blooms
1.		How measuring instruments are classified?	CO1	REM
2.		List the various errors observed in measurements.	CO1	REM
3.		Recall the term sensitivity in measuring instruments.	CO1	UND
4.		Mention the sources of errors in measurements.	CO1	UND
5.		Find the precision of binary model makes predictions and predict 160 samples belongs to section A 105 of which are correct and 55 which are incorrect.	CO2	REM

PART – B (2*13=26 Marks) & (1*14=14 Marks)

				CO	Blooms
6.	(a)	Outline the block diagram of a measurement system and explain about each functional element in it.	13	CO1	REM
		(OR)			
	(b)	Explain in detail about instrumental errors, their classification and elaborate the measures to reduce the errors.	13	CO1	UND
7.	(a)	Illustrate the categories of systematic errors in the instrument and explain in detail.	13	CO1	REM
		(OR)			
	(b)	Make use of Anderson bridge, and explain how unknown inductance is calculating using balanced condition	13	CO2	APP
8.	(a)	Find the value of R and the resistance measurement range of the bridge if 's' value varies from 1kohm to 8kohm by suitable bridge. P=3kohm and Q=5Kohm, S=6kohm	14	CO1	APP



(OR)

(b) Apply the suitable bridge concept for finding the capacitance of capacitors for an AC bridge to be balanced. Draw the circuit diagram of schering's bridge and derive the expressions for the unknown quantities 14 CO2 APP

Bloom's Taxonomy:

REM – Remember **UND** – Understand **APP**– Apply **ANA**– Analyze **EVA -** Evaluate

CRT - Create

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			CO	Blooms
1.		Classify the analog Instruments based on operating principle.	CO1	REM
2.		Illustrate the term Accuracy and Precision?	CO1	REM
3.		Write the two conditions to be satisfied for balancing AC bridges.	CO1	UND
4.		What type of AC bridge is used for measurement of capacitance? And write its formula.	CO1	UND
5.		List any two limitations of wheat stone bridge.	CO2	REM

PART – B (2*13=26 Marks) & (1*14=14 Marks)

				CO	Blooms
6.	(a)	With aid of block diagram showing the basic functional elements of an general instrument and explain the functions of each block with example	13	CO1	REM
		(OR)			
	(b)	Discuss in detail various types of errors associated in measurement and how these errors can be minimized?	13	CO1	REM
7.	(a)	Explain the operation of Kelvin bridge with neat circuit diagram and also derive the expression for determining unknown resistance.	13	CO1	APP
		(OR)			
	(b)	Explain how inductance is measured in terms of known capacitance using Maxwell's bridge and also derive the equation for balanced condition.	13	CO2	APP
8.	(a)	Define and explain the following static characteristics of an instrument with real time example. Also explain the types of static errors possible in an instrument. a) Accuracy, b) Resolution, c) Sensitivity and d) Linearity.	14	CO1	APP

(OR)

(b)	Explain how unknown resistance is measured in terms of known resistance using wheat stone bridge and also derive the equation for balanced condition with numerical calculations.	14	CO2	APP

Bloom's Taxonomy:

REM – Remember **UND** – Understand **APP**– Apply **ANA**– Analyze **EVA -** Evaluate **CRT -** Create