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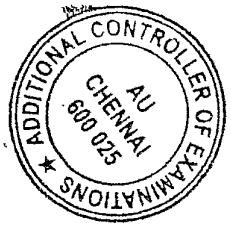
ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)



B.E. /B.Tech / B. Arch (Full Time) - END SEMESTER EXAMINATIONS, NOV / DEC 2024

BIOMEDICAL ENGINEERING
Semester – III

BM5301 SENSORS AND MEASUREMENTS
(Regulation 2019)

Time:3 hrs

Max.Marks: 100

CO1	Describe the purpose and methods of measurements.
CO2	Explain the principle of different sensors and its applications.
CO3	Analyze the characteristics of different transducers.
CO4	Describe the need and function of various signal conditioning circuits.
CO5	Explain different display and recording devices for various applications.

BL – Bloom's Taxonomy Levels
(L1-Remembering, L2-Understanding, L3-Applying, L4-Analysing, L5-Evaluating, L6-Creating)

PART- A(10x2=20Marks)

(Answer all Questions)

Q.No.	Questions	Marks	CO	BL
1	List any two common sources of errors in measurements	2	CO1	L1
2	Define a transducer and classify its types.	2	CO1	L1
3	What are the common materials used in RTDs, and what is their typical temperature range?	2	CO2	L2
4	Mention two biomedical applications of thermistors.	2	CO2	L2
5	Differentiate between photodiodes and phototransistors.	2	CO3	L2
6	Mention two spectrophotometric applications of photoelectric transducers.	2	CO3	L1
7	Differentiate between AC and DC bridges with one example each.	2	CO4	L2
8	What is the purpose of an isolation amplifier?	2	CO4	L2
9	List two differences between a CRO and a DSO	2	CO5	L2
10	What is the principle of operation of a digital voltmeter (DVM)	2	CO5	L1

PART- B(5x 13=65Marks)

(Answer all Questions)

Q.No.	Questions	Marks	CO	BL
11 (a)	Explain the static and dynamic characteristics of a measurement system in detail. Provide suitable examples.	13	CO1	L2
	OR			
11 (b)	Discuss the various types of errors encountered in measurement systems. Suggest methods to minimize these errors	13	CO1	L2
12 (a)	Explain the working principle, construction, and applications of strain gauges. Discuss the gauge factor and its significance	13	CO2	L3
	OR			
12 (b)	Describe the characteristics of RTD and thermistors. Compare	13	CO2	L3