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

Question Paper Code: 93B06

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2024

Third Semester

Biomedical Engineering

19UBM306 - SENSORS AND MEASURING TECHNIQUES

(Regulation 2019)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1.	List different test inputs	CO1 U
2.	Define Static Error	CO1 U
3.	Define strain	CO2 U
4.	What are the 2 types of temperature coefficients	CO2 U
5.	Photo multiplier –state the naming reason	CO3 U
6.	Define Dark Resistance of Photo transducer	CO3 U
7.	List the basic components of measuring Bridge circuit	CO4 U
8.	What is impedance, can we measure impedance using DC Bridge?	CO4 U
9.	List the characteristics of probes used in CRO	CO5 U
10.	What are the advantages of DVM	CO5 U

PART – B (5 x 16= 80Marks)

11.	(a)	(i) With necessary diagram explain the basic functional blocks of a measuring system	CO1- U	(8)
		(ii) List the various types of Instruments	CO1- U	(8)
		Or		
	(b)	Discuss about the types of errors in measurement system and explain how they are corrected	CO1- U	(16)
12.	(a)	(i) Explain in detail different types of Strain gauge with neat diagram	CO2- U	(8)
		(ii) With necessary diagram explain the principle and working of thermocouple	CO2- U	(8)

Or

	(b)	(i) Derive the equation for gauge factor	CO2- App	(8)
		(ii) Explain how LVDT is used for measuring displacement and direction with neat diagrams	CO2- U	(8)
13.	(a)	(i) With necessary diagrams Explain the following transducers (i) Phototube (ii) Photo multiplier (iii) Photovoltaic Cell	CO3- U	(8)
		(ii) What is scintillation counter, how it is used as a transducer for measurement	CO3- U	(8)

Or

	(b)	(i) With neat diagram explain Ultrasound transducer	CO3- U	(8)
		(ii) Write short notes on Nano sensors	CO3- U	(8)
14.	(a)	(i) Which bridge is used for measuring frequency, Explain	CO4- Ana	(8)
		(ii) With neat diagram derive the balancing equation of Wheatstone Bridge and also discuss its limitations	CO4- App	(8)

Or

	(b)	Explain two different types of Schering Bridge for Inductance measurements and Derive their balancing equations	CO4- U	(16)
15.	(a)	Explain Digital Multimeter working and its applications	CO5- U	(16)

Or

	(b)	(i) With necessary diagrams explain the vertical and horizontal deflection system of a CRO	CO5- U	(8)
		(ii) Write short notes on Magnetic Tape Recorders	CO5- U	(8)