Question Paper

Exam Date & Time: 02-Jun-2023 (02:30 PM - 05:30 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

FOURTH SEMESTER B.TECH END SEMESTER EXAMINATIONS, MAY/JUNE 2023

SENSOR TECHNOLOGY [ICE 4304]

Marks: 50 **Duration: 180 mins.**

A

Answer all the questions.

Instructions to Candidates:
Answer ALL questions
Missing data may be suitably assumed

1)		Interpret the following characteristics of sensor with suitable example	(4)
	A)	a) Range b) Span and c) Accuracy. [CO2, PO1,2,3,4, BL3]	
	B)	Illustrate five different laws of thermocouple behaviour. [CO3, PO1,2,3,4, BL4]	(3)
	C)	Show with a diagram how a Laser Doppler Anemometer is working? [CO3, PO1,2,3,4, BL3]	(3)
2)		Demonstrate the working of bolometer and how would you represent the sensitivity of bolometer? [CO4, PO1,2,3,4, BL4]	(4)
	A)		
	B)	Analyse the working of microwave motion detector with its diagram. [CO4, PO1,2,3,4, BL3]	(3)
	C)	Demonstrate the working of sensor that can be utilized to sense acoustic energy. [CO4, PO1,2,3,4, BL3]	(3)
3)		Analyse the working of different types of fiber optic sensor based on construction, operating principles and application. [CO4, PO1,2,3,4, BL4]	(4)
	A)		
	B)	Demonstrate the working of radiation detector that can be used to detect radiation energy. [CO4, PO1,2,3,4, BL4]	(3)
	C)	Infer the working of sensor which can be used for Glucose measurement with suitable schematic. [CO3, PO1,2,3,4, BL3]	(3)
4)		List the types of chemical sensors. Show the working of electrochemical sensors with its schematic. [CO3, PO1,2,3,4, BL4]	(3)
	A)		
	B)	How would a wireless sensor can be used for following application?	(4)
		a) Eco Physiology b) Medical Diagnostics and c) Urban terrain mapping. [CO5, PO1,2,3,4, BL4]	
	C)	Analyse the working of individual block of smart sensor with its scematic.[CO5, PO1,2,3,4, BL4]	(3)
5)		Demonstrate various steps that are used in soft sensor design with its block diagram. [CO5, PO1,2,3,4, BL3]	(4)

A)

B) How a smart sensor can be used for a) Telecommunication and b) finger print recognition application? (3)

[CO5, PO1,2,3,4, BL3]

C) How a soft sensor can be used for predicting product quality and for fermentation process? [CO5, PO1,2,3,4, BL3] (3)

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