Q. Code:945057

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

B.E. / B.TECH. DEGREE EXAMINATIONS, MAY 2024

Fifth/Seventh-Semester

OE18703 - SENSING TECHNIQUES

(Regulation 2018 / 2018A)

TIME: 3 HOURS **MAX. MARKS: 100**

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO 1	To identify various fundamentals of sensing principles.	**2**
CO 2	To apply design concepts to interface sensors with various electronic components.	**3**
CO 3	Design and applications of various photo sensors.	**3**
CO 4	Apply the gesture sensing techniques to design sensors.	**3**
CO 5	Differentiate various temperature and chemical sensors based on its applications.	**4**

PART- A (10 x 2 = 20 Marks)

(Answer all Questions)

		CO	RBT LEVEL
1.	Classify the materials based on the density of the charge.	**1**	**2**
2.	Differentiate between thermistor and resistance temperature detector.	**1**	**3**
3.	What are excitation circuits?	**2**	**2**
4.	Define CMRR.	**2**	**1**
5.	Mention the types of thermal accelerometers.	**3**	**3**
6.	State the various data transmission methods involved in sensors.	**3**	**2**
7.	Define false positive and false negative detection.	**4**	**1**
8.	Classify photoresistor based on its manufacturing process.	**4**	**3**
9.	List out the components of biosensor.	**5**	**2**

10.	State the characteristics of accelerometers.	**5**	**1**	

PART- B (5 x 14 = 70 Marks)

		Marks	CO	RBT LEVEL
11. (a)	Analyze the different characteristics of sensors.	**(14)**	**1**	**3**
	(OR)			
(b)	Discuss how heat energy is transferred and relate it to sensor modeling.	**(14)**	**1**	**3**
12. (a)	Explain the radiometry and photometry with necessary sketches and equations.	**(14)**	**2**	**3**
	(OR)			
(b)	Discuss various types of noise present in sensors.	**(14)**	**2**	**3**
13. (a)	With neat sketches discuss how microwave-based motion detectors help in detecting motion.	**(14)**	**3**	**3**
	(OR)			
(b)	Explain the operation of piezoelectric accelerometer and piezoelectric cables with necessary sketches.	**(14)**	**3**	**3**
14. (a)	Discuss how images are captured using CMOS image sensors.	**(14)**	**4**	**3**
	(OR)			
(b)	Discuss how a phototransistor is used as a sensor to detect the light energy with suitable sketches	**(14)**	**4**	**3**
15. (a)	Analyze how taste and smell similar to humans can be determined by a sensor.	**(14)**	**5**	**3**
	(OR)			
(b)	Describe the operation of the dynamic heat exchange sensor with a neat sketch.	**(14)**	**5**	**3**

PART- C (1 x 10 = 10 Marks)

(Q.No.16 is compulsory)

		Marks	CO	RBT LEVEL
16.	Analyze the various effects in generation of electric charges and discuss how sound,light and heat relates with sensors.	**(10)**	**1**	**4**

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