

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***UG/PG DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL-MAY 2026****Seventh Semester****Electrical and Electronics Engineering****OMR353 - SENSORS****Regulations - 2021****Duration : 3 Hrs****Maximum : 100 Marks****PART – A(ANSWER ALL QUESTIONS) (Marks 10*2=20)**

Q.No	Questions	BTL	CO	Marks
1.	What is a systematic error in sensor measurements, and how can it be minimized?	L1	1	2
2.	Why sensor calibration is important for accurate measurements in sensor-based systems?	L1	1	2
3.	Compare RVDT and synchro.	L2	2	2
4.	Define RF beacon, and how is it used in wireless communication or location tracking systems.	L1	2	2
5.	What is a strain gauge factor?	L1	3	2
6.	Give short note on eddy current sensor and how it is used to measure the displacement or conductivity of materials.	L2	3	2
7.	Mention the role of chemical sensor in detecting specific chemical substances.	L1	4	2
8.	What is a photo conductive cell and its response to light exposure?	L1	4	2
9.	List the purpose of an isolation circuit in sensor systems and how does it protect the measurement equipment.	L1	5	2
10.	Specify the uses of capacitive bridge measurement in detecting changes in capacitance in sensor applications.	L1	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

Q.No	Questions	BLT	CO	Marks
11. a	Explain the static and dynamic characteristics of a transducer. How do each of these characteristics affect the performance of a sensor in practical applications.	L2	1	16
	Or			
b	Explain the concepts of Pulse Width Modulation (PWM) and Pulse Position Modulation (PPM).	L2	1	16
12. a	Discuss the working principles and applications of displacement measurement using encoders and resolvers.	L2	2	16
	Or			
b	Explain the working principle, applications, and advantages of LIDAR (Light Detection and Ranging) and LVDT (Linear Variable Differential Transformer) as sensing technologies. Discuss how each is used in measurement and the specific scenarios where they are most effective.	L2	2	16
13. a	Explain the process of converting strain measurements into load measurements, highlighting the role of Wheatstone bridge circuits in strain gauge applications.	L2	3	16
	Or			
b	Explain the working principle of magnetic sensors and describe different	L2	3	16

types, such as Hall effect sensors and magneto resistive sensors. Discuss their applications in industries like automotive and electronics, and highlight their advantages and limitations.

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| 14. | a | Explain how fiber optic sensors are used for pressure measurement. Discuss the types of fiber optic pressure sensors and their applications. Highlight the advantages and challenges of using these sensors for pressure measurement. | L2 | 4 | 16 |
| | | Or | | | |
| | b | Illustrate the working principle of smart sensors, including the role of integrated microprocessors and the importance of data conversion and transmission. | L2 | 4 | 16 |
| 15. | a | Explain about single-channel and multi-channel data acquisition systems with neat sketches. | L2 | 5 | 16 |
| | | Or | | | |
| | b | Describe the basic working principle of an instrumentation amplifier, focusing on how it amplifies differential signals while rejecting common-mode noise. | L2 | 5 | 16 |