12 JAN 2023

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV/DEC 2022
Fifth Semester
Electronics and Instrumentation Engineering
20EIEL501 - MEMS
(Regulations 2020)

Duration: 3 Hours   Max. Marks: 100

PART - A (10 × 2 = 20 Marks)
Answer ALL Questions

		Marks, K-Level, CO
1.	Identify the core elements of MEMS.	2,K1,CO1
2.	Classify different types of strain.	2,K2,CO1
3.	Name the basic types of photoresist.	2,K1,CO2
4.	Summarize the advantages in surface Micromachining.	2,K2,CO2
5.	State the principle of piezo electric effect.	2,K2,CO3
6.	Discover the need of acoustic sensors.	2,K2,CO3
7.	Give the principle of operation of electrostatic sensors and actuators.	2,K1,CO4
8.	Tabulate the advantage and disadvantage of magnetic actuation.	2,K2,CO4
9.	State polymerization.	2,K2,CO5
10.	List the actuators for optical MEMS.	2,K1,CO5

PART - B (5 × 13 = 65 Marks)
Answer ALL Questions

11.	a)	Elaborate in detail about Micro fabrication process.	13,K2,CO1
		OR	
	b)	Explain the basic electrical concept of MEMS.	13,K2,CO1

12.	a)	(i) Compare bulk and surface micromachining.	6,K2,CO2
		(ii) Discuss about anisotropic and isotropic dry etching.	7,K2,CO2
		OR	
	b)	Generalize the procedure for Foundry process.	13,K2,CO2

13.	a)	Narrate about Tactile sensor and its fabrication process.	13,K2,CO3
		OR	
	b)	Elaborate with neat diagram, applications of tactile sensors.	13,K2,CO3

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create   **11637**

14. a) (i) Give short notes on micro motors. 6,K2,CO4
   (ii) Summarize the applications of comb drive devices. 7,K2,CO4

   OR

   b) Explain the operation of magnetic actuators with micro magnetic components. 13,K2,CO4

15. a) Describe about the fabrication process of silicon accelerometer with Parylene. 13,K2,CO5

   OR

   b) (i) Explain in detail about PDMS with case study. 7,K2,CO5
   (ii) Write short notes on su-8. 6,K2,CO5

PART - C (1 × 15 = 15 Marks)

16. a) With neat diagram, explain LIGA process. 15,K3,CO2

   OR

   b) Elaborate the principle of working of thermal sensors and actuators. 15,K3,CO4