

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV/DEC 2025

Fifth Semester

Electronics and Communication Engineering

CEC340 - MEMS Design

Regulations - 2021

Duration : 3 Hrs

Maximum : 100 Marks

PART - A (ANSWER ALL QUESTIONS) (Marks 10*2=20)

Q.No	Questions	BLT	CO	Marks
1.	Define the term “resonant frequency” in dynamic systems.	L1	1	2
2.	How does crystal orientation affect the mechanical properties of a material?	L1	1	2
3.	What is an inertial sensor and how does a parallel plate capacitor function in it?	L1	2	2
4.	In what way does the permittivity of the dielectric affect a parallel plate capacitor's performance?	L1	2	2
5.	What is a thermal actuator?	L1	3	2
6.	List the uses of inertial sensors.	L1	3	2
7.	Interpret the governing equation of inverse effects of piezoelectricity.	L1	4	2
8.	List the commonly used piezoelectric materials.	L1	4	2
9.	Outline are the challenges in fabricating micro magnetic actuators.	L2	5	2
10.	What does coercivity refer to in magnetic materials?	L1	5	2

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

Q.No	Questions	BLT	CO	Marks
11.	a Explain in detail about flexural beam bending analysis under simple loading conditions.	L2	1	16
	Or			
	b Interpret the Torsional deflections of a cylinder in detail.	L2	1	16
12.	a Explain in detail about interdigitated finger capacitors with neat sketch.	L2	2	16
	Or			
	b Classify the types of capacitive electrode configurations and explain in detail with neat sketches.	L2	2	16
13.	a Explain in detail about the Sensors and actuators based on thermal expansion.	L2	3	16
	Or			
	b With neat diagram explain the bimetallic artificial actuator of thermal sensing applications.	L2	3	16

14.	a	With schematic diagram classify cantilever type piezoelectric microphone.	L2	4	16
		Or			
	b	Compare surface acoustic wave and flexural plate wave with neat diagram.	L2	4	16
15.	a	What is magnetization and nomenclatures and explain about the principles of magnetization and nomenclatures.	L2	5	16
		Or			
	b	Explain about the design and fabrication of magnetic coil.	L2	5	16