

# DRONACHARYA COLLEGE OF ENGINEERING

KHENTAWAS, FARRUKHNAGAR, GURGAON, HR

Department: ECE Department

Academic Session: 2020-2021(MAY- AUG, 2021)

Lecture Plan with Assignment questions

Subject with code: Introduction to MEMS (PEC-ECE314G)

Name of Faculty with designation : Dr. Ekta Thakur, Assistant Professor

S.No.	Month	Date & Day	Sem-Class	Unit	Topic/Chapter covered	Write Lecture Wise Questions
1	May	1	VI ECE	I	Overview of MEMS and Microsystems: Introduction Microsystems vs. MEMS, Microsystems and Microelectronics	Q1) Question related to Microsystems ? Q2) Question related to a Microelectronics
2	May	2	VI ECE	I	Multidisciplinary Nature of Microsystems design and manufacture,	Q1) Question related to Nature of Microsystem Q2) Question related to Multidisciplinary
3	May	3	VI ECE	I	Application of MEMS in various industries.	Q1) Question related to Application of MEMS
4	June	4	VI ECE	I	Introduction to Scaling,	Q1) Question related to Scaling
5	June	5	VI ECE	I	MEMS and Miniaturization:	Q1) Question related to MEM Q2) Question related to Miniaturization
6	June	6	VI ECE	I	Scaling laws in miniaturization:	Q1) Question related to Scaling laws Q2) Question related to miniaturization
7	June	7	VI ECE	I	Scaling in Geometry	Q1) Question related to scaling
8	June	8	VI ECE	I	, Rigid Body dynamics,	Q1) Complexity analysis of dynamics Q2) Complexity analysis of rigids
9	June	9	VI ECE	I	Electrostatic forces,	Q1) Complexity analysis of force Q2) Complexity analysis of electrostatic force
10	June	10	VI ECE	I	Electromagnetic forces,	Q1) Complexity analysis of various forces Q2) Numerical
11	June	11	VI ECE	I	, Electricity, Fluid Mechanics,	Q1) Complexity analysis of Fluid Mechanics, Q2) Applications of Stack

12	June	12	VI ECE	I	Heat Transfer	Q1) Complexity analysis of heat transfer Numerical	Q2)
13	July	13	VI ECE	I	Over view of Micro/Nano Sensors,	Q1) Complexity analysis of nano sensors Numerical	Q2)
14	July	14	VI ECE	I	Actuators and Systems.	Q1) Complexity analysis of actuators Q2)numerical	
15	July	15	VI ECE	II	Review of Basic MEMS fabrication modules: Oxidation, Deposition Techn	Q1) Complexity analysis of oxidation Numerical	Q2)
16	July	16	VI ECE	II	Lithography (LIGA),	Q1) Complexity analysis LIGA Applications of LIGA	Q2)
17	July	17	VI ECE	II	Etching. Micromachining:Surface Micromachining,	Q1) Complexity analysis of Surface Micromachining Applications of Etching	Q2)
18	July	18	VI ECE	II	sacrificial layer processes	Q1) Complexity analysis ofsacrificial layer processes Comparison of layer processes	Q2)
19	July	19	VI ECE	II	Stiction; Bulk Micromachining, Isotropic Etching	Q1) Numerical based on Isotropic Etching Q2) Numerical based on Bulk Micromachinin	
20	July	20	VI ECE	II	Anisotropic Etching,	Q1) Numerical based on Anisotropic Q2) Comparison of various operations using linked list and array	
21	July	21	VI ECE	II	Hookes's law	Q1) Numerical	
22	July	22	VI ECE	III	Mechanics of solids in MEMS/NEMS: Stresse	Q1) Numerical based on stresse Q2) Numerical based on Nems	
23	August	23	VI ECE	III	Strain,	Q1) Complexity analysis strain Q2) Numerical	
24	August	24	VI ECE	III	Poisson effect	Q1) Complexity analysis poisson effect Q2) Numerical	
25	August	25	VI ECE	III	Linear Thermal Expansion	Q1) Complexity analysis thermal expansion Q2) Numerical	
26	August	26	VI ECE	III	Bending;	Q1) Numerical Q2) Numerical	
27	August	27	VI ECE	III	Energy methods.	Q1) Numerical Q2) Numerical	
28	August	28	VI ECE	IV	Overview of Finite Element Method	Q1) Numerical based on Finite Element Method Q2) Numerical	
29	August	29	VI ECE	IV	Modeling of Coupled Electromechanical Systems:	Q1) Numerical based onCoupled Electromechanical Numerical	Q2)

30	August	30	VI ECE	IV	Wafer Bonding.	Q1) Comparison of Wafer Bonding.
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