

Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
SEVENTH SEMESTER B.TECH DEGREE EXAMINATION(S), MAY 2019

**Course Code: MR409**

**Course Name: Micro Electro Mechanical Systems**

Max. Marks: 100

Duration: 3 Hours

**PART A**

*Answer all questions, each carries 5 marks.*

		Marks
1	Explain the properties of MEMS materials	(5)
2	Compare dry and wet etching	(5)
3	Explain the advantages and disadvantages of micro ECM.	(5)
4	What are the fundamental elements in micro milling?	(5)
5	Write a review on Acoustic Microsensor with a neat diagram.	(5)
6	Illustrate with a neat working diagram of Microvalves.	(5)
7	Explain Scaling in electricity.	(5)
8	Explain with a neat block diagram of 'MEMS as a micro sensor'.	(5)

**PART B**

*Answer any three full questions, each carries 10 marks.*

9	Explain about microsystem packaging	(10)
10	a) Draw and explain Block diagram of LIGA process	(5)
	b) Explain different steps in LIGA process	(10)
11	a) Explain the working of electrical discharge machining with neat sketch.	(6)
	b) Write the advantages and disadvantages of electrical discharge machining	(4)
12	Explain the fundamentals and applications of micro turning.	(10)
13	Explain the principle of precision grinding process with a neat diagram	(10)

**PART C**

*Answer any two full questions, each carries 15 marks.*

14	a) Write a short note on	(10)
	I. Micro grippers	
	II. Micro motors.	
	b) Explain Thermal Microsensor.	(5)

- 15 Discuss actuation using (15)
- I. Shape memory alloys.
  - II. Piezo electric crystals.
- 16 List and explain various applications of MEMS. (15)
- 17 a) Discuss on Scaling in Electrostatic forces. (7)
- b) Discuss on Scaling in Electromagnetic forces. (8)

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