Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S4 (Hons.) Examinations April 2026 (2024 Admn)

Course Code: HNMTT409
Course Name: MICRO MECHATRONIC SYSTEMS

Max. Marks: 60 Duration: 2 hours 30 minutes

PART A

(Answer all questions. Each question carries 3 marks)

		CO	Marks
1	Discus Shape memory alloy actuation	CO1	(3)
2	Explain how micro-system differs from microelectronics system	CO1	(3)
3	Explain the role of photolithography in MEMS fabrication.	CO2	(3)
4	Expand the term LIGA.	CO2	(3)
5	State the importance of clean room classification in microfabrication.	CO2	(3)
6	Mention the various methods of micro machining	CO2	(3)
7	Explain Scaling law and list the types	CO3	(3)
8	List the applications of MEMS in aerospace industry	CO4	(3)

PART B

(Answer any one full question from each module, each question carries 9 marks)

Module -1

			CO	Marks
9	a)	Explain the construction, working principles, and applications of any two types of microsensors . Please provide relevant Diagrams also.	CO1	(9)
10	a)	Differentiate between die level packaging and device level packaging. Explain with suitable diagrams.	CO1	(9)

Module -2

			CO	Marks
11	a)	Explain bulk and surface micromachining techniques in detail. Compare both processes in terms of materials, process steps, advantages, limitations,	CO2	(9)

and applications.

12	a)	With neat diagram explain the steps in Photolithography	CO2	(9)

Module -3

13	a)	Explain the principle and working of Laser Beam Machining List out its advantages, disadvantages	CO2	(9)
14	a)	Describe clean room design, classification, contamination control methods, and the importance of environmental conditions in microfabrication.	CO2	(9)

Module -4

15	a)	Explain in detail with examples the future of MEMs in the automotive industry.	CO4	(9)
16	a)	Explain the scaling in Geometry	CO3	(9)

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