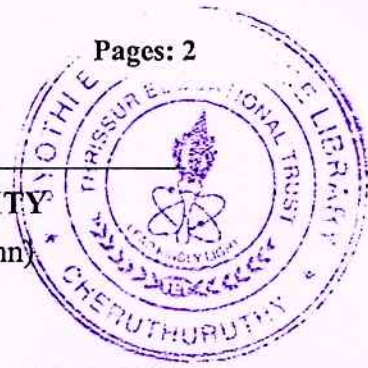


Reg No.: _____

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

- 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

- 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)
