

R09

Code No: D5204

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M.Tech II - Semester Examinations, March/April 2011

**DESIGN AND MANUFACTURING OF MEMS AND MICRO SYSTEMS
(DESIGN FOR MANUFACTURING)**

Time: 3hours

Max. Marks: 60

**Answer any five questions
All questions carry equal marks**

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1. a) Give an account of evolution of micro fabrication.
b) List out the application of MEMS in industries. [6+6]
2. a) Explain the working principle of micro accelerometers.
b) Explain various ionization techniques used in MEMS industry. [6+6]
3. a) Discuss the role of electrochemistry in micro fabrication.
b) Explain why atomic structure of matter is considered as a decisive factor in micro systems design. [6+6]
4. a) Discuss the static bending theory applied to Microsystems.
b) Give a detailed note on the application of finite element stores analysis in Microsystems design. [6+6]
5. a) Discuss the phenomenon of incompressible fluid flow in micro conducts.
b) Explain the heat conduction process in multilayered this films. [6+6]
6. a) List out and explain the design considerations of Microsystems.
b) With the help of a suitable sketch explain the process of ion implantation. [6+6]
7. a) Differentiate between bulk micromachining and surface micromachining.
b) Explain various diffusion techniques used in MEMS industry. [6+6]
8. Write short note on any three of the following.
a) Micro fluidics
b) Computational fluid dynamics.
c) LIGA process.
d) Silicon Piezoresistors. [12]
