Code No: D5204 **R09**

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]

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