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Reg. No. : .....

Name : .....

Seventh Semester B.Tech. Degree Examination, November 2013
(2008 Scheme)
08.736 : Elective – IV : MEMS (TA)

Time : 3 Hours Max. Marks : 100

PART – A

Answer **all** questions. **Each** question carries **4** marks.

1. Distinguish between wet and dry etching.
2. List different stacked die configurations.
3. Why do the properties become size dependent at the nanometer scale ?
4. List the applications of MEMS in industry.
5. Explain LIGA process.
6. Explain Paschen's effect.
7. Discuss the role of electrochemistry in microfabrication.
8. Differentiate between bulk micro machining and surface micro machining.
9. What are the applications of micromotors ?
10. List the characteristics of ideal substrate. **(10×4=40 Marks)**

PART – B

Answer **any two** questions from **each** Module. **Each** question carries **10** marks.

MODULE – I

11. Explain the principle of thermally actuated microvalve with figure.
12. What is scaling ? Explain scaling in electromagnetic forces.
13. Explain the working principles of micro linear motor with figure.

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MODULE – II

14. What are the different types of polymers used in the MEMS ? Mention its uses in the construction of MEMS.

15. Explain the working of LB film microsensor with its structure.

16. Estimate the time required to dope a silicon substrate by ion implantation with boron ions at 100 keV. The required maximum concentration of the dopant is $20 \times 10^{20}/cm^3$ at a depth of 0.2 mm beneath the substrate surface.

MODULE – III

17. Explain the design considerations of a silicon die for a micropressure sensor.

18. Discuss the interfaces issues associated with various kinds of microsystems.

19. What are the essential technologies that are necessary for packaging microsystem product ? Explain each of them with figures. **(6×10=60 Marks)**
