Seventh Semester B.Tech. Degree Examination, February 2017
(2008 Scheme)
08.736 : MEMS (TA)  

Time : 3 Hours
Max. Marks : 100

PART – A

Answer all questions. Each question carries 4 marks.

1. Bring out the advantages of microsensors and microactuators.

2. Give the applications of Microaccelerometers.

3. Prove that electromagnetic domain is not favourable for Microsystems.

4. Explain differences between positive and negative photoresists.

5. Compare wet etching and dry etching.

6. Bring out the advantages of dry oxidation over wet oxidation.

7. List the advantages of RF MEMS devices over conventional RF components.

8. List out the applications of MEMS in Healthcare domain.

9. Bring out the factors in favour of Silicon as a structural material.

10. Explain the phenomenon of shape memory alloys. (10×4=40 Marks)

P.T.O.
PART - B

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

Module – 1

11. Bring out the scaling effect in electrostatic domain and hence. Find the reduction of electrostatics forces generated by a pair of parallel-plate electrodes if
   i) $L$ is reduced by 100
   ii) Width is reduced by 50
   iii) Gap between plates is reduced by 20.

12. With neat sketches bring out the operation of microvalves and micropumps.

13. With neat sketches analyze the operation of silicon capacitive accelerometer.

Module – 2

14. Describe the steps involved in the micro fabrication of a cantilever using bulk micromachining techniques.

15. List out the pros and cons of CVD techniques. Describe any one CVD technique.

16. With neat sketches explain the process of photolithography.

Module – 3

17. Discuss the objectives of Microsystems packaging. Describe the three levels of microsystem packaging.

18. Discuss the Design considerations and geometry for the design of a silicon die for micropressure sensor.

19. Explain the various interfaces in Microsystem packaging.  

   (6×10=60 Marks)