CBCS Scheme

USN | | | | | | | | | | |

16MAR254

Second Semester M.Tech. Degree Examination, June/July 2017
Micro Electro Mechanical Systems

Time: 3 hrs. Max. Marks: 80

Note: *Answer FIVE full questions, choosing ONE full question from each module.*

Module-1

1 Briefly explain the following :
i) MOEMS ii) Bio mems iii) RF mems iv) thermal mems. **(16 Marks)**

OR

2 a. Write a short note on mems packages and design considerations. **(10 Marks)**
b. Briefly explain how the microelectronic fabrication is done. **(06 Marks)**

Module-2

3 a. Explain briefly isotropic and anisotropic etching in bulk machining process. **(10 Marks)**
b. Explain the role piezoelectric materials as a sensing and actuating materials. **(06 Marks)**

OR

4 a. Explain briefly the high aspect ratio machining process. **(08 Marks)**
b. Explain the following principles of sensing and actuation :
i) Beams and cantilever ii) Microplates. **(08 Marks)**

Module-3

5 a. With a neat sketch explain the working of microactuation in micromirror TV projector. **(10 Marks)**
b. Explain the mechanical design of microactuators. **(06 Marks)**

OR

6 a. Briefly explain any two microdevices that functions on the principle of microactuation. **(08 Marks)**
b. List the types of thermal sensors and explain any two with a neat sketch. **(08 Marks)**

Module-4

7 a. Explain sacrificial layer processes with a neat sketch. **(08 Marks)**
b. Write a short notes on compatible materials. **(08 Marks)**

OR

8 a. Explain briefly how the polysilicon surface micromachining takes place. **(10 Marks)**
b. What are the requirements of surface machining. **(06 Marks**

Module-5

9 a. Write a short notes on technologies used for mems characterization. **(06 Marks)**
b. Explain briefly with a neat sketch STM and SEM. **(10 Marks)**

OR

10 a. Explain briefly the atomic force microscopy and magnetic force microscopy with a neat sketch. **(10 Marks)**
b. Explain scanning probe microscopy with a neat sketch. **(06 Marks)**

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