

(Following Paper ID and Roll No. to be filled in your
Answer Books)

Paper ID : 132854

Roll No.

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B.TECH.

Theory Examination (Semester-VIII) 2015-16

MICRO AND SMART SYSTEMS

Time : 3 Hours

Max. Marks : 100

Section-A

- 1. Attempt all questions. All questions carry equal marks**
(10×2 = 20)

- (a) What is Miniaturization?
- (b) Why micro fabrication is required?
- (c) Differentiate between piezoelectric sensors and pressure sensors.
- (d) Define actuators with examples.
- (e) What is etching? Give its types
- (f) What is the difference between Microsystems and microelectronics?

(1)

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- (g) What is Film Deposition? What is the use of it in micro fabrication?
- (h) Define Lithography and photolithography.
- (i) Define biochemical phenomenon in Microsystems.
- (j) What is the need of modeling of solids in Microsystems?

Section-B

2. **Attempt any five questions. Each question carries 10 marks.** [5×10=50]

- (a) Differentiate between Microsystems and MEMS.
- (b) What are smart materials? Give their examples, uses and applications.
- (c) What is the concept of piezoelectric crystals? Explain piezoelectric inkjet print head.
- (d) Explain the micromachining technology steps in microelectronics.
- (e) Define Bar and Beam. What are the energy methods for elastic bodies?
- (f) What is silicon capacitive accelerometer? Explain in detail.

- (g) Give the case study of a smart structure in vibration control.
- (h) Explain the portable blood analyzer in micro and smart systems.

Section-C

Attempt any two questions. Each question carries 15 marks.

(2×15=30)

- 3. Explain in detail about the scaling effects in Microsystems.
- 4. Explain the models required for coupled electromechanical systems in microelectronics.
- 5. Write short note on
 - (i) Micro mirror array for Video projection
 - (ii) Electrostatic combo drive.