

CBCS Scheme

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16MST423

Fourth Semester M.Tech. Degree Examination, June/July 2018 Smart Materials and Structures

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. List the applications of smart materials and smart structures. (08 Marks)
b. What are smart structures? Explain the types of smart structures. (08 Marks)

OR

- 2 a. Explain the piezoelectric effect. (08 Marks)
b. Explain Bernoulli-Euler Beam model. (08 Marks)

Module-2

- 3 a. Explain one-way and two-way memory effects. (08 Marks)
b. Explain magnetoreological working principle. (08 Marks)

OR

- 4 a. List the applications of MR and ER fluids. (08 Marks)
b. Explain Bingham model. (08 Marks)

Module-3

- 5 a. Explain parallel Damped vibration Absorber. (08 Marks)
b. Explain Twisted and Braided fiber optic sensors with neat sketch. (08 Marks)

OR

- 6 a. Explain the Gyroscopic vibration absorber with neat sketch. (08 Marks)
b. Explain the control strategies and limitations. (08 Marks)

Module-4

- 7 a. Explain physical and mechanical properties of MEMS. (08 Marks)
b. Explain microelectronic integration. (08 Marks)

OR

- 8 a. List the applications of MEMS. (08 Marks)
b. Explain stiffness and compliance. (08 Marks)

Module-5

- 9 a. Explain Micro-mechanical silicon diaphragms. (08 Marks)
b. Explain semiconductor crystal structures. (08 Marks)

OR

- 10 a. Explain capacitive pressure sensors with neat labelled diagram. (08 Marks)
b. List the application of optical MEMS. (08 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and/or equations written eg, 42+8 = 50, will be treated as malpractice.

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