



CBCS SCHEME

15MT54

Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020 Micro and Smart System Technology

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. Explain the need of Miniaturization with an example. (05 Marks)
- b. Define Micro system. Explain the microsystem as micro sensor and micro actuator. (06 Marks)
- c. List out different fields of application of micro system. (05 Marks)

OR

- 2 a. What do you mean by smart material system? With the block diagram, explain the components of smart material system. (06 Marks)
- b. Explain Feynman's vision. (04 Marks)
- c. What are the applications of smart material systems? (06 Marks)

Module-2

- 3 a. What do you mean by sensors, actuators and systems? Explain them with their characteristic features. (08 Marks)
- b. Explain the construction and working of Piezo-electric based Inkjet Printhead. (08 Marks)

OR

- 4 a. With the neat sketch, explain construction and working of silicon capacitive accelerometer. (08 Marks)
- b. Write a short note on: Portable blood analyzer. (08 Marks)

Module-3

- 5 a. What are the different types of thin film wafer deposition? Explain any one with neat sketch. (08 Marks)
- b. Explain different types of photoresists, with an example. (08 Marks)

OR

- 6 a. Explain realization of cantilever beam structure by surface micro machining technique. (08 Marks)
- b. Define Etching. Explain DRIE with neat sketch. (08 Marks)

Module-4

- 7 a. Explain BJT along with VI characteristics. (08 Marks)
- b. Write a short note on: i) Schottky Diode ii) Tunnel Diode. (08 Marks)

OR

- 8 a. Explain basic Op-Amp based circuits. (08 Marks)
- b. With the neat sketch explain n-type enhanced MOSFET. (08 Marks)

Module-5

- 9 a. Explain PID controller. (08 Marks)
- b. Explain the vibration control of beam structure, with block diagram. (08 Marks)

OR

- 10 Case study on BEL pressure sensor. (16 Marks)

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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.