

# CBCS Scheme

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15MT54

Fifth Semester B.E. Degree Examination, Dec.2017/Jan.2018

## Micro and Smart Systems Technology

Time: 3 hrs.

Max. Marks: 80

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

### Module-1

- 1 a. What are motivation factors for miniaturization? (08 Marks)
- b. What are integrated Microsystems? Give classification of integrated micro systems. (08 Marks)

OR

- 2 a. Give comparison between Microsystems and MEMs. (08 Marks)
- b. Explain the applications of smart materials and Microsystems. (08 Marks)

### Module-2

- 3 a. What are sensors and actuator? List salient features of sensors and actuators. (08 Marks)
- b. Explain silicon capacitive accelerometer. (08 Marks)

OR

- 4 a. With a neat diagram, explain piezoresistive pressure sensor. (10 Marks)
- b. List the advantages and application of piezoresistive pressure sensor. (06 Marks)

### Module-3

- 5 a. Describe the process of silicon wafer preparation. (08 Marks)
- b. Explain thin film deposition technique. (08 Marks)

OR

- 6 Explain process steps of photolithography with neat sketches. (16 Marks)

### Module-4

- 7 a. Explain how schottky diode is different from other diodes. Also give its applications. (08 Marks)
- b. Differentiate BJT from MOSFET. (08 Marks)

OR

- 8 a. Explain op-amp based differential amplifier with proper circuit. (08 Marks)
- b. With neat circuit diagram, explain any one signal conditioning circuit for micro system. (08 Marks)

### Module-5

- 9 a. With block diagram, explain the PID controller. (10 Marks)
- b. List out the advantages of PID controller over other controllers. (06 Marks)

OR

- 10 Write Architecture of PLC and compare its features with micro controller based on applications. (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.