

# CBCS SCHEME

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15MT54

## Fifth Semester B.E. Degree Examination, Dec.2018/Jan.2019 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. Discuss what is miniaturization in brief. (04 Marks)  
b. What is micro fabrication? Explain. (04 Marks)  
c. List the differences between Microsystems and MEMS. (08 Marks)

OR

- 2 a. Define smart materials, structures and systems. (04 Marks)  
b. What is integrated Microsystems? Explain. (04 Marks)  
c. Write down the applications of smart materials and microsystems. (08 Marks)

### Module-2

- 3 a. List the salient features of sensors, actuators and systems. (08 Marks)  
b. Explain the brief construction and functions of silicon capacitive and piezoresistive pressure sensors. (08 Marks)

OR

- 4 a. Discuss the micrometer array for video projection. (08 Marks)  
b. Explain electrostatic comb-drive and magnetic micro relay. (08 Marks)

### Module-3

- 5 a. What is lithography? Explain in brief. (08 Marks)  
b. Explain the two techniques of thin film deposition. (08 Marks)

OR

- 6 a. Explain the surface and bulk micromachining. (08 Marks)  
b. Briefly explain the specialized materials used for Microsystems. (08 Marks)

### Module-4

- 7 a. How the Schottky and tunnel diode suits for systems? Explain. (08 Marks)  
b. Explain the construction and functions of MOSFET and CMOS circuits. (08 Marks)

OR

- 8 a. Explain the practical signal conditioning circuits for Microsystems. (08 Marks)  
b. Discuss the two circuits for conditioning sensed signals. (08 Marks)

### Module-5

- 9 a. Explain digital and micro controller for MEMS. (08 Marks)  
b. Discuss the circuit implementation process in MEMS. (08 Marks)

OR

- 10 a. Explain the integration of pressure sensor and smart structure in vibration control. (08 Marks)  
b. How do you design an electronic circuit? Explain by considering an example. (08 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.