

# CBCS SCHEME

15MT54



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## Fifth Semester B.E. Degree Examination, July/August 2021 Micro and Smart System Technology

Time: 3 hrs.

Max. Marks: 80

**Note: Answer any FIVE full questions.**

- 1 a. Define MEMS. Explain the components of MEMS. (08 Marks)  
b. Define Smart Materials. Explain the applications areas of Smart Materials. (08 Marks)
- 2 a. Explain the difference between Micro Systems and MEMS. (08 Marks)  
b. Write a short note on Integrated Micro systems and Smart structures. (08 Marks)
- 3 a. Define Sensors. Explain the salient features of Sensors. (08 Marks)  
b. With a neat sketch, explain the Piezoresistive Pressure Sensor. (08 Marks)
- 4 a. Briefly explain Electrostatic Comb drive and Magnetic micro relay. (08 Marks)  
b. Explain Silicon Capacitive accelerometer. (08 Marks)
- 5 a. Explain the steps of Photolithography, with a neat sketch. (08 Marks)  
b. Define Etching. Briefly explain Wet Etching. (08 Marks)
- 6 a. Briefly explain Thermal Oxidation of Silicon dioxide. (08 Marks)  
b. Explain briefly Surface Micro Machining Process. (08 Marks)
- 7 a. Explain the working of n – channel MOSFET. (08 Marks)  
b. How the Schottky and Tunnel diode suits for systems? Explain. (08 Marks)
- 8 a. Explain Op – amp based differential amplifier with proper circuit. (08 Marks)  
b. Explain any 2 circuits for conditioning sensed signals. (08 Marks)
- 9 a. Explain the Design Methodology of the controllers. (08 Marks)  
b. With a block diagram, explain PID Controllers. (08 Marks)
- 10 a. Explain the advantages of PID Controllers over other controllers. (08 Marks)  
b. Write a short note on :
  - i) BEL Pressure Sensor.
  - ii) Smart Structure in Vibration Control. (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.