



Fifth Semester B.E./B.Tech. Degree Examination, June/July 2025
Micro and Smart System Technology

Time: 3 hrs.

Max. Marks: 100

*Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
 2. M : Marks , L: Bloom's level , C: Course outcomes.*

Module – 1			M	L	C
Q.1	a.	Define Smart Material and explain smart material with neat block diagram.	10	L1	CO1
	b.	Classify and explain integrated micro systems.	10	L2	CO1
OR					
Q.2	a.	Explain Micro Sensor using schematic diagrams.	10	L2	CO1
	b.	Define Miniaturization. Discuss the need for miniaturization.	10	L1	CO1
Module – 2					
Q.3	a.	Explain the principle of operation of piezoresistive pressure sensor.	10	L2	CO2
	b.	Discuss the working operation of conductive gas sensor.	10	L2	CO2
OR					
Q.4	a.	Explain the operation of an electrostatic comb-drive with neat diagram as an actuator and sensor.	10	L2	CO2
	b.	Define Relay. Discuss different types of relay features and explain the operation of magnetic micro relay, with a neat diagram.	10	L2	CO2
Module – 3					
Q.5	a.	With a neat diagram, explain the key process involved in photolithography.	10	L3	CO3
	b.	Discuss Thin Film deposition in fabrication.	10	L3	CO3
OR					
Q.6	a.	Explain the basic steps involved in the wet etching process.	10	L2	CO3
	b.	Discuss some properties of silicon as a material for micromachining and explain FCC structure of silicon, with a diagram.	10	L2	CO3
Module – 4					
Q.7	a.	Explain the operation of diode and Tunnel diode, with a neat I-V characteristics.	10	L2	CO4
	b.	Explain the operation of bipolar junction transistor with a basic structure, symbol and its output characteristics.	10	L2	CO4
OR					
Q.8	a.	Using schematic describe an n-channel enhancement MOSTET.	10	L3	CO4
	b.	Draw the CMOS logic circuits : i) Inverter ii) NAND Gate.	10	L3	CO4
Module – 5					
Q.9	a.	Explain with block diagram of digital control controller.	10	L2	CO5
	b.	Explain the outcomes of smart structure in vibration control.	10	L2	CO5
OR					
Q.10	a.	With a neat block diagram, explain the design methodology of PID controller.	10	L3	CO5
	b.	Describe the features of piezoresistive pressure sensor.	10	L3	CO5
