CBCS SCHEME

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BMT502

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.	Sketch and explain the integrated RF transceivers with functions of each components.	10	L2	CO1
	b.	Outline the classification of integrated micro system and brief the same.	10	L2	CO1
		OR			
Q.2	a.	With a neat schematic, explain the working of ADXL50 accelerometer.	10	L2	CO2
	b.	Explain the concept of miniaturization and its significance with an illustration of objects at various size scales.	10	L2	CO2
		Module – 2			
Q.3	a.	Illustrate the physical parameter conversion stages in conductometric gas sensor and mention its application.	10	L3	CO2
	b.	Explain the working principle of electrostatic comb drive and show the relevant schematic.	10	L3	CO3
		OR			
Q.4	a.	Summarize the operation of micro mirror array for video projection and explain the functions of each building block.	10	L3	CO3
	b.	With a neat circuit, explain the working of piezoresistive pressure sensor and mention the advantages.	10	L3	CO3
		Module – 3			
Q.5	a.	Explain the stages involved in etching process and outline its classification.	10	L2	CO4
	b.	Explain the process of surface micro machining in silicon micro fabrication with neat sketches.	10	L2	Co4
		OR			
Q.6	a.	Outline the characteristics of polymer and ceramic materials used in micro system.	10	L2	CO4
	b.	Illustrate the steps involved in lift-off process and sketch the stages.	10	L2	CO4

		Module – 4			
Q.7	**a.**	Explain the working of a typical p-n junction diode with V-I characteristics and current expressions.	**10**	**L2**	**CO4**
	b.	Realize the CMOS circuits for the following: i) Inverter ii) NAND gate.	**10**	**L3**	**CO4**
		OR			
Q.8	**a.**	List and explain the examples of op-amp based circuits with application.	**10**	**L2**	**CO5**
	b.	Draw the V-I characteristics of n-channel MOSFET and explain the three regions of operations with circuit and current equations.	**10**	**L3**	**CO5**
		Module – 5			
Q.9	**a.**	Implement PID controller with a relevant circuit and expressions.	**10**	**L2**	**CO5**
	b.	Draw the schematic of digital control system and explain its operation.	**10**	**L3**	**CO5**
		OR			
Q.10	**a.**	Sketch and explain the connections of piezoresistive pressure sensor and derive an expression for gauge factor.	**10**	**L3**	**CO5**
	b.	Explain the role of smart materials vibration control.	**10**	**L2**	**CO5**

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