Model Question Paper-1/2 with effect from 2022-23 (CBCS Scheme)

USN | | | | | | | | | | |

Fourth Semester B.E. Degree Examination

Subject Title: MICRO ELECTRO MECHANICAL SYSTEMS

Subject Code: 21MT654

TIME: 03 Hours **Max. Marks: 100**

Note: 01. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

		Module -1	*Bloom's Taxonomy Level	CO's	Marks
Q.01	a	Define MEMS. Explain the applications of MEMS.	L1, L2	CO1	7M
	b	With a Flow chart Explain Microsystem versus MEMS.	L2	CO1	7M
	c	Discuss the need of Miniaturization Process	L2	CO1	6M
		OR			
Q.02	a	Define Smart materials. Explain the Structure of Smart Materials.	L1,L2	CO1	7M
	b	Explain the applications of Smart Materials.	L2	CO1	7M
	c	Classify and Explain integrated micro systems.	L2	CO1	6M
		Module-2			
Q. 03	a	Explain the desirable features of Sensors.	L2	CO2	10M
	b	Explain Piezo resistive pressure sensor with neat sketch.	L2	CO2	10M
		OR			
Q.04	a	With a neat sketch explain Portable blood analyzer	L3	CO2	10M
	b	Explain principle operation of micro mirror array for video projection and piezoelectric based inkjet print head.	L2	CO2	10M
		Module-3			
Q. 05	a	Briefly explain silicon wafer preparation.	L2	CO3	10M
	b	With a neat sketch explain thin film deposition techniques.	L3	CO3	10M
		OR			
Q. 06	a	With a neat sketch explain Lithography.	L3	CO3	10M
	b	Sketch and Explain Bulk Micro machining	L3	CO3	10M
		Module-4			
Q. 07	a	Explain the operation of Schottky Diode and Tunnel Diode with VI Characteristics.	L2	CO3	10M
	b	Explain the three modes of Operations of a MOSFET with relevant equations.	L2	CO3	10M

OR					
Q. 08	a	Implement Inverter NAND gate using CMOS Logic Circuits and outline the Operations using truth table of operations.	L2	CO4	10M
	b	with a standard symbol for an Operational Amplifier, discuss the input-output relation of ideal Op-amp.	L3	CO4	10M
Module-5					
Q. 09	a	Explain the design methodology of PID controller.	L2	CO4	10M
	b	Sketch and Explain Digital Controller	L3	CO4	10M
OR					
Q. 10	a	Explain the advantages of PID Controllers and its applications	L2	CO4	10M
	b	Briefly Explain integration of Pressure sensor and smart structure in vibration control.	L2	CO4	10M

*Bloom's Taxonomy Level: Indicate as L1, L2, L3, L4, etc. It is also desirable to indicate the COs and POs to be attained by every bit of questions.