CBCS SCHEME

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BME515A

Fifth Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026
Mechatronics

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 Mechatronics. Explain briefly Mechatronics design process with a neat block diagram.	10	L2	CO1
	b.	Explain with a block diagram the working of a Automated Washing Machine.	10	L2	CO1
		OR			
Q.2	a.	Define Sensor. Explain with a neat diagram, the working of a hall effect sensor.	10	L2	CO1
	b.	Define Transducer. Explain with a neat diagram the working principle of, (i) Photo diode (ii) Photo resistor (iii) Photo transistor	10	L2	CO1
		Module – 2			
Q.3	a.	Define Solenoid. Explain the working of data loggers with a neat diagram.	10	L2	CO2
	b.	Define Relay. Explain the working of 4 quadrant servo drives with a neat diagram.	10	L2	CO2
		OR			
Q.4	a.	With a neat sketch, explain the working principle of permanent magnet DC motor.	10	L2	CO2
	b.	Explain with a neat diagram the working principle of, (i) Digital to Analog conversion (ii) Analog to Digital conversion	10	L2	CO2
		Module – 3			
Q.5	a.	What is Microprocessor? Explain the different types of registers.	10	L2	CO3
	b.	Explain with a neat layout the Internal Architecture of INTEL 8085A Microprocessor.	10	L2	CO3

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		OR			
Q.6	**a.**	What is Microcontroller? Explain with a block diagram the basic elements of microcontroller.	**10**	**L2**	**CO3**
	b.	Explain briefly the following forms of memory units : ROM, PROM, EPROM, EEPROM, RAM	**10**	**L2**	**CO3**
		Module – 4			
Q.7	**a.**	Define Programmable Logic Controller (PLC). Explain with a block diagram the working of extending and retracting a single acting Pneumatic Piston using latches.	**10**	**L2**	**CO4**
	b.	Explain with a neat diagram the basic structure of Programmable Logic Controller (PLC).	**10**	**L2**	**CO4**
		OR			
Q.8	**a.**	Explain briefly the basic structure of ladder logic diagram.	**10**	**L2**	**CO4**
	b.	Explain with a ladder diagram the working control of a process tank.	**10**	**L2**	**CO4**
		Module – 5			
Q.9	**a.**	Explain the elements of open loop and closed loop control system with a neat block diagram.	**10**	**L2**	**CO5**
	b.	Design a Mechatronic system for Pick and Place Robot.	**10**	**L2**	**CO5**
		OR			
Q.10	**a.**	Explain with a neat diagram : (i) Hydro Dynamic Bearing (ii) Hydro Static Bearing	**10**	**L2**	**CO5**
	b.	Design a Mechatronic system for automatic car parking barrier.	**10**	**L2**	**CO5**

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