CBCS SCHEME

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BMT654C

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

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.	Explain different types of control system with a neat diagram and with an example each.	10	L2	CO1
	b.	Explain Automatic Washing Machine system with a neat diagram.	10	L2	CO1
		OR			
Q.2	a.	Define Closed Loop System. Explain the basic elements of closed loop system with a neat diagram.	10	L2	CO1
	b.	Explain Engine Management system with a neat diagram.	10	L2	CO1
		Module – 2			
Q.3	a.	Define Sensor. Explain the classification of sensor.	10	L2	CO2
	b.	Define Strain Gauge. Explain bonded and unbounded strain gauge with a neat diagram.	10	L2	CO2
		OR			
Q.4	a.	With a neat sketch explain the working principle of hall effect sensors mention its applications. Explain one of its applications.	10	L2	CO2
	b.	Define the following terms used to define the performance of a transducer: i) Sensitivity ii) Range and span iii) Repeatability iv) Stability v) Dead band vi) Error vii) Accuracy viii) Resolution ix) Hysteresis error	10	L2	CO2
		Module – 3			
Q.5	a.	Explain with a neat diagram the different types of Analog-to-Digital converters.	10	L2	CO3
	b.	Explain operational amplifiers and its types in detail.	10	L2	CO3

		OR			
Q.6	**a.**	Elucidate filters and its types in detail with the help of the response curves.	**10**	**L2**	**CO3**
	b.	Describe SCADA system in detail.	**10**	**L2**	**CO3**
		Module – 4			
Q.7	**a.**	Explain the different types of DC Motors in detail.	**10**	**L2**	**CO4**
	b.	Elucidate programmable logic controller in detail.	**10**	**L2**	**CO4**
		OR			
Q.8	**a.**	Define Stepper Motor. Explain different forms of stepper motor.	**10**	**L2**	**CO4**
	b.	Explain Timers and Counters in PLC with ladder diagrams.	**10**	**L2**	**CO4**
		Module – 5			
Q.9	**a.**	Briefly explain the applications areas of mechatronics.	**10**	**L2**	**CO5**
	b.	Elucidate the integrated design issues in mechatronics.	**10**	**L2**	**CO5**
		OR			
Q.10	**a.**	Describe the key elements of mechatronics system.	**10**	**L2**	**CO5**
	b.	Elucidate different case studies of mechatronics system with a neat diagram.	**10**	**L2**	**CO5**

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