PRN:		Course Code :	ECE302R1

Third Year **B. Tech** End Semester Examination Summer 2023

Mechatronics

Day and Date: Tuesday , 13/06/23 Max Marks: **100**

Time : 10 : 30 – 1 : 30 pm Duration: **03**hrs

Instructions:All questions are compulsory.

			Marks	Bloom's Level	CLO
Q.1		**Attempt the following**			
	a)	Explain the three phases in the design concept of Mechatronics system.	08	L2	CLO1
	b)	With example describe generalized measurement system.	08	L2	CLO1
		OR			
	b)	Explain with block diagram the open loop and closed loop control system.	08	L2	CLO1
Q.2		**Attempt the following**			
	a)	What is Electromechanical Actuator? Explain with neat figure the operation of stepper motor.	08	L4	CLO2
	b)	What is bearing? Explain rolling and magnetic bearing with figure.	08	L4	CLO2
		OR			
	b)	Give the classification of gears.Explain spur and bevel gear with figure.	08	L4	CLO2
Q.3		**Attempt any two from the following**			
	a)	With neat block diagram and response explain PI Controller.	08	L3	CLO3
	b)	What is Offset? In which controller it appears? How and where it is eliminated.	08	L3	CLO1
	c)	Explain pneumatic proportional controller with neat diagram.	08	L3	CLO3
Q.4		**Attempt any two from the following**			
	a)	Explain the principle of operation of PLC.	08	L4	CLO3
	b)	Mention the standardized forms of various PLC programming languages.Explain any two.	08	L4	CLO4
	c)	Explain ladder diagrams with truth table and instruction list for AND,OR and NOT Gates.	08	L5	CLO4
Q.5		**Attempt any two of the following**			
	a)	With neat diagram explain operation and advantages of Numerical control machine.	09	L1	CLO4
	b)	Give the comparison between conventional, NC and CNC system.	09	L1	CLO4
	c)	Explain the construction&principle of computerized numerical control with neat block diagram.	09	L1	CLO4
Q.6		**Attempt any two of the following**			
	a)	Discuss the case study of boat autopilot with schematic diagram.	09	L2	CLO3
	b)	Discuss the approach of mechatronics design for automatic car park system	09	L2	CLO3
	c)	With neat block diagram explain Antilock brake system.	09	L2	CLO3

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