Reg. No.												

Question Paper Code	12249

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2023

Seventh Semester

Mechanical Engineering

ME8791 – MECHATRONICS

(Regulations 2017)

Duration: 3 Hours Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks, K-Level, CO
1.	What is meant by closed loop control system? Give examples.	*2,K1,CO1*
2.	Summarize an example for a transducer and state its transduction principle.	*2,K1,CO1*
3.	Identify the addressing mode of MOV A,M.	*2,K2,CO2*
4.	List the instruction groups in 8085.	*2,K1,CO2*
5.	What is keyboard interfacing?	*2,K1,CO3*
6.	List the features of 8255.	*2,K2,CO3*
7.	What is ladder programming?	*2,K1,CO4*
8.	What is continuous updating?	*2,K1,CO4*
9.	Extend the properties of a stepper motor.	*2,K1,CO5*
10.	State the characteristics of servomotor.	*2,K1,CO5*

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11.	a)	Interpret the various elements of a closed loop system in automatic water level controller and describe their functions.	*13,K2,CO1*
		OR	
	b)	Explain the static and dynamic characteristics of transducers.	*13,K2,CO1*
12.	a)	With neat sketch explain the architecture of 8085 Microprocessor	*13,K2,CO2*
		OR	
	b)	Explain the Architecture of 8051 Microcontroller	*13,K2,CO2*
13.	a)	Explain the Architecture of 8255 PPI	*13,K2,CO3*
		OR	
	b)	Explain Temperature control interface using 8085	*13,K2,CO3*

14. a) Interpret how logic functions can be formed with ladder diagram. *13,K2,CO4*

OR

b) Explain in detail about the following with suitable ladder diagram:
(i) Shift register *6,K2,CO4*
(ii) Mnemonics *7,K2,CO4*

15. a) What are stepper motors? Explain the working principles of stepper motor in half step mode. *13,K2,CO5*

OR

b) (i) Illustrate the advantages and disadvantages of stepper motor. *7,K2,CO5*
(ii) What are the difference between stepper motor and servo motor? *6,K2,CO5*

PART - C (1 × 15 = 15 Marks)

16. a) Apply the mechatronics systems in the industrial application of pick and place robot. *15,K3,CO6*

OR

b) Discuss the mechatronics design of an automatic car parking system with suitable diagram. *15,K3,CO6*