Reg. No.												

Question Paper Code	11472

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV/DEC 2022

Seventh Semester

Mechanical Engineering

(Common to Production 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 are the basic functions of control system?	*2,K1,CO1*
2.	What is the basic principle of thermocouple?	*2,K1,CO1*
3.	Define Timing diagram.	*2,K1,CO2*
4.	What are the special function registers in 8051?	*2,K1,CO2*
5.	What is the need for interfacing?	*2,K1,CO3*
6.	Explain the various modes of 8255.	*2,K2,CO3*
7.	What are counters?	*2,K1,CO4*
8.	Draw and explain NOR logic function using ladder diagram.	*2,K1,CO4*
9.	List the properties of a stepper motor.	*2,K2,CO5*
10.	State the characteristics of servomotor.	*2.K1,CO5*

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11.	a)	What is sequential controller? Explain how a microprocessor based controller operates a washing machine.	*13, K2,CO1*
		OR	
	b)	Explain in detail about the following sensors (i) Thermistors. (ii) Bimetallic strips.	*7,K2,CO1* *6,K2,CO1*
12.	a)	Explain the addressing modes of 8085 with minimum four examples in each group.	*13,K2,CO2*
		OR	
	b)	With neat sketch explain the architecture of 8085 Microprocessor.	*13,K2,CO2*

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create

13. a) Design a 7 segment LED display interfacing with 8051. *13,K2,CO3*

OR

b) Explain the Architecture of 8255 PPI. *13,K2,CO3*

14. a) Explain in detail about the following with suitable ladder diagram: *13,K2,CO4*
(i) Latching
(ii) Counters
(iii) Jump control

OR

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

15. a) What are the types of stepper motors? Explain with suitable diagram about permanent magnet stepper motor with its advantages and disadvantages. *13,K2,CO5*

OR

b) (i) What are the differences between stepper motor and servo motor? *7,K2,CO5*

(ii) Illustrate the advantages and disadvantages of stepper motor. *6,K2,CO5*

PART - C (1 × 15 = 15 Marks)

16. a) What are the various stages in designing a mechatronics system? Explain. *15,K2,CO6*

OR

b) Discuss the mechatronics design of an automatic car parking system with suitable diagram. *15,K2,CO6*