

--	--	--	--	--	--	--	--	--	--	--

Model Question Paper 2022-23 (CBCS Scheme)
Sixth Semester B.E. Degree Examination (Mechanical Engineering)

INTRODUCTION TO MECHATRONICS

TIME: 03 Hours

Max. Marks: 100

Note: 01. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.
 02. M: Marks, L: Blooms Level, C: Course outcomes

Module-1			M	L	C
Q.01	a	Briefly explain the elements of closed loop control system with an example.	L2	8	CO1
	b	Explain the principle of operation of Hall effect sensors with a neat sketch.	L2	6	CO1
	c	Explain Automatic Car Park system with a neat diagram.	L2	6	CO1
OR					
Q.02	a	Explain the working principle of capacitive type proximity sensor	L2	8	CO1
	b	Distinguish between the Transducers and sensors.	L2	6	CO1
	c	Explain Antilock braking system (ABS) control with a neat diagram.	L2	6	CO1
Module-2					
Q.03	a	Describe signal conditioning. Briefly explain amplification and attenuation of digital signals with examples.	L2	10	CO2
	b	With the help of a block diagram explain the working principle of servomotor.	L2	10	CO2
OR					
Q.04	a	Define filtering. Briefly explain different types of filters used in digital signal processing.	L2	10	CO2
	b	Explain the working principle of Stepper Motor with a block diagram and mention its applications.	L2	10	CO2
Module-3					
Q.05	a	Illustrate with the help of a block diagram briefly explain the architecture of 8085 microprocessor.	L2	10	CO3
	b	Describe the different types of registers used in 8085 microprocessors.	L2	6	CO3
	c	Describe the steps involved in fetch cycle	L2	4	CO3
OR					
Q.06	a	Enumerate different types of buses used in 8085 microprocessor architecture.	L2	10	CO3
	b	Describe the different types of registers used in 8085 microprocessors	L2	6	CO3
	c	What is the primary function of a feedback loop in a control system?	L2	4	CO3

Module-4					
Q.07	a	With the help of a suitable PLC ladder diagram explain the concept of Latching.	L3	6	CO3
	b	Enumerate the selection criteria for PLC system employed in Automation Industry.	L3	8	CO3
	c	Recognize the applications of PLC used in various fields.	L3	6	CO3
OR					
Q.08	a	With the help of Block diagram explain the architecture of PLC system.	L3	6	CO3
	b	Explain how PLC is incorporated to control various activities of Belt conveyor system.	L3	8	CO3
	c	How can latches be used to control the extension and retraction of a pneumatic piston in an automated system?	L3	6	CO3
Module-5					
Q.09	a	With the help of a block diagram explains the architecture of a typical CNC system.	L2	10	CO4
	b	Differentiate between Traditional and Mechatronic approach.	L2	10	CO4
OR					
Q.10	a	Explain the different stages involved in Designing a Mechatronic system.	L2	10	CO4
	b	Briefly Explain the Mechatronic system design approach involved in Pick and Place robot deployed in automobile industry.	L2	10	CO4