

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL-MAY 2025

Seventh Semester

Mechanical Engineering

ME3791 - Mechatronics and IoT

Regulations - 2021

Duration: 3 Hrs

Maximum: 100 Marks

PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)

Q.No	Questions	BLT	CO	Marks
1.	Differentiate between the analog and digital sensors.	L2	1	2
2.	List out the various application of actuator.	L2	1	2
3.	What is the function of a filter in signal conditioning circuits?	L2	2	2
4.	Classify the types of timers in PLC.	L2	2	2
5.	What are the key components of an IoT system?	L1	3	2
6.	Write e the role of sensors and actuators in an embedded system.	L2	3	2
7.	List two common data types in both C++ and Python.	L1	4	2
8.	How can a push button be used to control an LED?	L1	4	2
9.	Mention two components typically found in a vision system for robot navigation.	L2	5	2
10.	How does EBD help improve braking efficiency and stability?	L1	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

Q.No	Questions	BLT	CO	Marks
11.	a Define mechatronics and explain its modular approach in integrating mechanical, electrical, and computer engineering principles.	L2	1	16
	Or			
	b Illustrate the importance of solid-state sensors, piezoelectric sensors, and ultrasonic sensors in mechatronic applications.	L2	1	16
12.	a i Summarize the function of operational amplifier.	L2	2	8
	ii Explain about a non-inverting amplifier.	L2	2	8
	Or			
	b What is a Programmable Logic Controller and explain its main components, working principle with suitable sketch?	L2	2	16
13.	a What is Internet of Things and explain, how does it differ from traditional Internet-connected devices?	L2	3	16
	Or			
	b Explain the architecture of a single-chip microcontroller system with neat diagram.	L3	3	16

14.	a	Explain the architecture of the Linux operating system, detailing its kernel and user space components.	L3	4	16
Or					
	b	Demonstrate the role of Raspberry Pi in promoting computer science education and facilitating DIY electronics projects.	L3	4	16
15.	a	Discuss the key components involved in the actuation and control systems of drones, and how they interact to achieve stable flight.	L3	5	16
Or					
	b	Elaborate the key components and architecture of a centralized water management system, including sensors, actuators, and control systems.	L3	5	16