



PRESIDENCY UNIVERSITY

BENGALURU

End - Term Examinations – May / June 2026

Date: 27-05-2026

Time: 01:00pm – 04:00pm

School: SOCSE	Program: ISE	
Course Code: CIT3403	Course Name: Embedded Systems for IoT	
Semester: VI	Max Marks: 100	Weightage: 50%

CO - Levels	C01	C02	C03	C04	C05
Marks					

Instructions:

- (i) Read all questions carefully and answer accordingly.
- (ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2marks.

10Q x 2M=20M

1.	Explain the role of timers in 8051.	2 Marks	L2	C01
2.	List any four features of 8051 microcontroller.	2 Marks	L1	C01
3.	Define Embedded C and mention two advantages.	2 Marks	L2	C02
4.	Define I/O interface.	2 Marks	L2	C02
5.	What is the function of the pinMode() function in Arduino?	2 Marks	L1	C03
6.	What is PWM (Pulse Width Modulation) in Arduino?	2 Marks	L2	C03
7.	What are the two types of Bluetooth networks?	2 Marks	L1	C04
8.	What is the function of ADC in GPS receiver architecture?	2 Marks	L2	C04
9.	Explain the role of embedded systems in smart healthcare devices.	2 Marks	L2	C05
10.	Define an embedded system and give two examples.	2 Marks	L2	C05

Part B

Answer the Questions.

Total Marks 80M

11.	a.	Explain the architecture of the 8051 microcontroller with a neat block diagram.	8 Marks	L2	C01
	b.	Explain the programming of parallel ports in 8051 with suitable examples.	8 Marks	L3	C01
	c.	Explain memory interfacing in embedded systems using Embedded C.	4 Marks	L3	C02
Or					
12.	a.	Describe the pin configuration of the 8051 microcontroller with a neat diagram.	8 Marks	L2	C01
	b.	Explain the addressing modes of the 8051 microcontroller with examples.	8 Marks	L3	C01
	c.	Explain the need for Real-Time Operating System (RTOS) in embedded systems.	4 Marks	L4	C02

13.	a.	Explain the basic components of an IoT device.	8 Marks	L2	C03
	b.	Describe the purpose of Arduino shields in IoT development.	8 Marks	L2	C03
	c.	Define IoT devices and explain how they differ from traditional computers.	4 Marks	L2	C03
Or					
14.	a.	Discuss the types of Arduino boards and their applications in IoT systems.	8 Marks	L2	C03
	b.	Explain how sensors and actuators can be integrated with Arduino.	8 Marks	L3	C03
	c.	Explain the structure of an Arduino program setup() and loop().	4 Marks	L3	C03

15.	a.	Explain the Exclusive Pair communication model and its advantages in IoT communication.	8 Marks	L4	C04
	b.	Compare REST API and WebSocket API used in IoT communication.	8 Marks	L4	C04
	c.	Explain the role of Raspberry Pi GPIO pins in IoT device communication.	4 Marks	L3	C04
Or					

16.	a.	Explain the architecture of ZigBee networks and mention its key features.	8 Marks	L2	C04
	b.	Explain the working of Ethernet Shield and Wi-Fi Shield in Arduino-based IoT devices.	8 Marks	L4	C04
	c.	Describe the roles of coordinator, router, and end device in a ZigBee network.	4 Marks	L2	C04

17.	a.	Discuss the importance of embedded systems in IoT-based smart traffic management systems.	8 Marks	L2	C05
	b.	Explain the steps involved in the complete design of an embedded system.	8 Marks	L2	C05
	c.	List any two challenges in the modern agriculture industry.	4 Marks	L2	C05

Or

18.	a.	Discuss the importance of embedded systems in IoT application development.	8 Marks	L2	C05
	b.	Explain how IoT and embedded systems are used in smart agriculture applications.	8 Marks	L4	C05
	c.	List any four IoT challenges in healthcare.	4 Marks	L2	C05