R V College of Engineering
Department of Computer Science and Engineering
CIE - I: Question Paper

Course:(Code)	IOT & Embedded Computing (CS344AI)	Semester :	4th semester	
Date : April 2025	Duration : 90 Minutes	Staff : KB/MH/MSS/SDV/NSK/KB Ramesh		
Name:	USN :	Section :	A/B/C/D/E/CD/CY	

sl.no	PART - A	Marks	BT	CO

1	ARM 7 CPU supports 3 stage pipeline and all Data manipulation instructions takes 3 cycles for execution, then how many cycles are needed for executing the following program
	ADD R3,R1,R2
	SUB R4,R1,R2
	MOV R5,R4,LSR #2
	MOV R6,R3,LSL #3
		2	L3	CO2

2	What are the different onboard buses supported by LPC2148?	2	L2	CO1
3	Write the embedded C code to make LPC2148 P0.31 as output and common anode LED connected to P0.31as ON.	2	L2	CO2
4	Write an embedded C code to read a value from Pin P1.19 and check whether it is 0 or 1?	2	L3	CO3
5	In common cathode LED with segment 'a' at LSB and dp at MSB, what is the code for displaying '3'?	2	L3	CO3

PART B

1	With neat Block diagram explain the LPC2148 architecture. List the Peripherals associated and their corresponding applications.	10	L2	CO2
2	a) List the differences between the RISC and CISC architecture. b) Explain the Operating Modes of ARM using the Register organization.	10	L3	CO1
3	Interface 5-digit seven segment display to LPC 2148 and write an embedded C program to display the moving string "IOT BOARD".	10	L3	CO3
4	Design a Bank locker system as per the specifications given below by clearly indicating the interface diagram and embedded C code. Requirements: a) Use LPC 2148 Microcontroller and suitable interfacing components. b) Enter a 4digit key to open the locker, If the key entered was correct open the locker door, driven by stepper motor. c) Provide a Key, to close the door. 　Make suitable assumptions.	10	L4	CO3

5	a) Explain how embedded system are classified. b) Discuss the PINSEL register and how they can be used to configure the GPIO pins to different functionalities. Explain with an example.	10	L3	CO2

Course Outcomes: After completing the course, the students will be able to:-

CO 1	Apply Embedded System and IoT fundamentals and formulate sustainable societal relevant cost effective solutions.
CO 2	Demonstrate the development of software programs using Embedded C, using Microcontrollers and different sensors and peripherals to build embedded system applications.
CO3	Design smart systems using various I/O peripherals, Sensors, embedded protocols like UART,I2C,SPI using modern tools like Keil IDE software for various domains like Healthcare, automation, agriculture, smart cities and others.
CO 4	Indulge in developing Novel multi-disciplinary IoT projects using prototype boards, with effective oral & written communication skills and working in teams.
CO 5	Engage in Lifelong Learning by investigating and executing real world societal problems using engineering tools – Cross compilers, debuggers and simulators, emerging processor and controller-based hardware platforms, IOT cloud infrastructure & protocols.

BT LEVELS	L1	L2	L3	L4	L5	L6	COS	CO1	CO2	CO3	CO4
MARKS		16	34	10				12	24	24	