PRN:		Course Code :	P71PC102

First Year **M. Tech.** End Semester Examination Winter 2024

Embedded System Design 000445

Day and Date: Mon 2 DEC 2024 Max Marks: **50**

Time : 10:30AM To 12:30PM Duration: **02** hrs

Instructions:
1. All questions are compulsory.
2. Assume suitable data wherever necessary and mention it clearly.

			Marks	Bloom's Level	CO
Q.1		**Attempt the following Question.**			
	a)	Compare ARM7TDMI and ARM9TDMI processors based on architecture and performance.	10	2	1
		OR			
	b)	What is PWM, and how is it implemented in the LPC 2148 microcontroller?	10	2	1
Q.2		**Attempt the following Question.**			
	a)	Explain the architecture of the LPC2148 microcontroller, highlighting the role of the ARM7TDMI-S core.	10	3	2
		OR			
	b)	What are interrupts in LPC2148? Discuss how interrupts are managed, including the types of interrupts and their priority	10	3	2
Q.3		**Attempt the following Question.**			
	a)	Discuss the working of a matrix keyboard with a microcontroller. Provide an Embedded C program to detect a key press from the matrix keyboard.	10	5	3
		OR			
	b)	Explain the interfacing of an LED with a microcontroller. Provide a simple Embedded C program to blink an LED.	10	4	3
Q.4		**Attempt the following Question.**			
	a)	Describe the ARM Cortex M0/M0+ architecture. Include a block diagram and explain the key components and their functions.	10	2	4
		OR			
	b)	What are the advantages of using the ARM Cortex M0/M0+ processors? Discuss how these advantages make them suitable for embedded systems.	10	3	4
Q.5		**Attempt the following Question.**			
	a)	Explain the operational modes of a microcontroller. Discuss the significance of these modes in the context of low-power applications.	10	3	5
		OR			
	b)	Discuss the role of the ADC in a microcontroller. How does it facilitate interaction between the analog world and digital systems?	10	3	5

****

ESE