

	RV College of Engineering® Department of Computer Science and Engineering CIE - II: Test and Quiz Paper		
Course & Code	IOT and Embedded Computing (CS344AI)	Semester: 4 th Sem BE	
Date : July 2024	Duration:120 minutes	Max.Marks:(10+50)=60 Marks	Staff : KB, SDV, MSS, MH
USN :	Name :		Section : A/B/C/D/CD/CY

NOTE: Answer all the questions from Part-A (10 M) and Part-B (50 M)

Sl.no	PART - A	Marks	BT	CO
1	Indicate the value to be loaded into match Register MR0, so that timer counter T0TC reaches the MR0 value after 5 milliseconds. Assume the PCLK = 10MHz, CCLK=40MHz, T0TC=0, Pre-scaler Register=0 (Show the calculations)	2	L3	CO3
2	Calculate the delay produced by the following program run on LPC2148. Given PCLK = 15MHz. Write the answer in milli-seconds. Justify your answer. <pre>void delay(void) { T0MCR = 0X04; T0TC = 0X00; T0MR0 = 75000; T0TCR = 0X01; while(T0TC != T0MR0); T0TCR = 0X02; }</pre>	2	L3	CO3
3	Given PCLK=15MHz, Required baud rate=9600, Compute the values of DLM:DLL. (Assume DivVal=0, MulVal=1). Show the calculations	2	L3	CO3
4	What are the different types of communication models used in IoT.	2	L2	CO4
5	List any four most commonly used sensors in IoT and mention any two applications of PWM in IoT	2	L2	CO4

Sl.no	PART - B	Marks	BT	*CO
1a.	Generate the 200KHz, 25% duty cycle waveform using LPC 2148 PWM channel. Assume PCLK = 15MHz. Make suitable assumptions, and explain clearly the calculations and the working of the program.	5	L3	CO3
1b.	Generate the 10KHz square waveform using LPC 2148 GPIO pin P0.1. Use timers to calculate the timings and assume PCLK = 60MHz. Explain the working of the program.	5	L3	CO3
2a.	Design an activity LED (one which is blinking once in 10 seconds to indicate the system/product is working) using interrupts and timers, with suitable comments.	5	L3	CO3
2b.	Discuss the Features and Applications of serial protocols I2C and SPI.	5	L2	CO3
3a.	Define IoT and Explain the functional blocks of IoT with the help of neat block diagram.	5	L2	CO3
3b.	Suggest (With brief description) any one-use case of IOT pertaining to following domains: Energy, Retail, Logistics, Agriculture, Cities.	5	L4	CO4
4a.	Design an IOT Level 2 deployment application for weather monitoring and Device control in the house using ESP32 and Thing speak cloud platform, with suitable block diagram, interfacing, flowcharts and brief description. The proposed system consists of single node that monitors the room temperature and humidity using DHT 11 sensor, and based on the temperature / humidity, device(fan) should be turned on using a Relay. The controller also sends the sensor data to the cloud, where it will be displayed on the dash board.	5	L6	CO4
4b.	Design an IOT Leve2 deployment application for Smart Parking using RaspberryPie with IR sensors and Cloud with Mobile Application to show the parking slots status. Draw the block diagram, interfacing, flowchart and brief description.	5	L6	CO4
5	Interface LDR and LED bulb to LPC 2148 and write an embedded C program to read the data from LDR and suitably turn on/off the LED bulb and also send the suitable message to computer using UART interface. Clearly show the connections between LPC 2148 and Computer Serial Port and explain the UART initialization steps, clearly showing the registers used and the baud rate calculations.	10	L3	CO3

BT LEVELS	L1	L2	L3	L4	L5	L6	COS	CO1	CO2	CO3	CO4
MARKS		14	31	5		10				41	19