	RV College of Engineering® Department of Computer Science and Engineering Improvement Test and Quiz Paper		
Course & Code	IOT and Embedded Computing (CS344AI)		Semester: 4th Sem BE
Date : Aug 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	Suggest any one application of Level 5 and Level 6 IOT deployment.	2	L3	CO5
2	Describe an Example of IoT service that uses publish-subscribe communication model. Name the popular application layer protocol for publish-subscribe model used in resource constraint IOT systems.	2	L3	CO5
3	Name the pins provided by RasberryPie to support I2C and SPI interfaces.	2	L2	CO4
4	Evaluate the following statements and indicate whether they are true/false. a) Von Neumann Architecture shares common memory for Data and Instructions b) Harvard Architecture has separate physical memories for Data and Instructions	2	L3	CO1
5	Consider a four-bit ALU which does four bits arithmetic. When the following four-bit numbers are added, what is the status of NZCV flags? 1101 + 1011	2	L4	CO2

Sl.no	PART - B	Marks	BT	*CO
1	Draw the deployment design of the weather monitoring IOT system. Further, show the mapping of IOT Level to Functional Groups for the weather monitoring IoT system.	5	L3	CO5
2	Write the programs to perform the following: (draw interface diagrams) - Interface one LED to GPIO 18, and program for blinking the LED (use RasberryPie and phython)	5	L3	CO4

	- Interface one LDR to D36 and LED to D2, and make the LED on/off based on Light Intensity (use ESP32 and embedded C)			
3	The purpose of the home intrusion detection system is to detect intrusion using sensors (PIR sensor and Door sensor). Design Home Intrusion Detection system using RPie/ESP32 with PIR motion sensor for motion detection and door sensor for detecting opening / closing of the door (for one room). Draw the following (no explanation required) - Process Specification - Domain model - Deployment design - Functional & Operational View specifications	10	L4	CO5
4	a) With a neat diagram explain the architecture of ARM Microcontroller. b) With the neat diagram briefly describe operating modes and register organization of ARM ISA. Mention the use of following Registers: R13,R14,R15,CPSR and SPSR.	5 5	L2 L3	CO1 CO2
5	a) Explain how embedded system are classified. b) Differentiate between RISC and CISC architecture.	5 5	L3 L2	CO2 CO3