

Reg. No.:

Name :



VIT

Vellore Institute of Technology
(Deemed to be University under section 3 of UAC Act, 1986)

Continuous Assessment Test I – January 2025

Programme	: B.Tech. (CSE)	Semester	: Winter 2024-25
Course	: Embedded Systems	Code	: BCSE305L
		Class Nbr	: CH2024250501684 CH2024250501686 CH2024250501690 CH2024250501693 CH2024250501705
Faculty	: Mr. Pugazhenthir R, Dr. Dhanush R, Dr. Sritama Roy, Dr. Manigandan M, Dr. Manimaran P	Slot	: G1+TG1
Time	: 90 Minutes	Max. Marks	: 50

Answer ALL the questions

Q.No.	Sub. Sec.	Questions	Marks	BT Level
1.		Describe the design process for a smart stair elevator system in the shopping mall which includes sensor placement, LED indicators, and operational features. With a neat block diagram, Elaborate on the design challenges, memory requirements, hardware/software architecture, and phases in designing a smart stair elevator system.	15	2
2.		With a neat sketch of the functional block diagram/architecture and describe the salient features available in the microcontroller runs on CISC instruction set.	10	2
3.		Write an Arduino program to design an automatic hand sanitizer dispenser and temperature measurement system for a supermarket whose requirements are given below. <ul style="list-style-type: none"> The system should be contactless and check the user presence using an analog photo sensor with a digital output value of less than 150 implies the user presence. Dispense the sanitizer after checking the temperature with the actuator movement to 90° and comes back to 0°. The door opens only if the temperature is within the normal temperature limit. An alarm is sounded if a person is identified with a temperature that is not within the limit. Choose appropriate sensors and actuators for your design. Note: Normal temperature limit: 36.5 to 37.5 C.	15	3
4.		Design an automatic lawn watering system that is scheduled to water the lawn once every 8 hours with the following conditions. <ol style="list-style-type: none"> Need to vary the angle of the watering hose by 1° for every 2 seconds to reach 180° and return to 0° after a complete cycle. For every 8 hours, the watering system should water for 15 cycles (0° to 180° and 180° to 0° motion) and return to 0° after the 15th cycle of watering. Also, check the entrance with an ultrasonic sensor to ensure the visitor's presence. Note that the entrance has a fixed distance of 80cm to differentiate the person's arrival. As	10	3

soon as the sensing system observes a person's arrival it should pause the watering system for 30 seconds temporarily and resume the watering after 30 seconds.

