



VIT

Vellore Institute of Technology
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CHENNAI

Reg. Number:

21BCCE1808

Continuous Assessment Test(CAT) – I - August 2024

Programme	:	B.Tech (CSE)	Semester	:	Fall 2024-25
Course Code & Course Title	:	BCSE305L Embedded Systems	Class Number	:	CH202425010040 9
Faculty	:	Dr. C. Sridhar	Slot	:	A1+TA1
Duration	:	90 Minutes	Max. Mark		50

General Instructions:

- Write only your registration number on the question paper in the box provided and do not write other information.
- Use statistical tables supplied from the exam cell as necessary
- Use graph sheets supplied from the exam cell as necessary
- Only non-programmable calculator without storage is permitted

Answer all questions

Q. No	Sub Sec.	Description	Marks	Blooms Taxonomy Level
1		Design a digital fan with speed and light intensity control using bottom-up approach.	[10]	L2
2		With a neat sketch of the functional block diagram/architecture, describe the salient features of a microcontroller that runs on CISC instruction set.	[10]	L1
3		Design an automatic lawn water sprinkler system which is scheduled to water the lawn once in every 8 hours with the following condition. i) Need to vary the angle of the sprinkler by 1° for every 2 seconds to reach 180° (4 marks). ii) During returning cycles from 180° to 0° the watering hose should stop for 5 seconds for every 2° step (4 marks). iii) Also, check the entrance with a ultrasonic sensor to ensure visitors presence by calculating the distance. As soon as the sensing system observes person arrival it should pause the watering system for 30 seconds temporarily (7 marks).	[15]	L3
4		Write an Arduino program for controlling the solar panel with the following requirements. The sun is moving from east to west at a rate of 15 degree/hour and the solar panel is also synchronized with the motion of sun to achieve maximum efficiency. i) Design a panel control system which varies the solar panel angle automatically for every 1 hours synchronized with the sun movement (8 marks). ii) Check the temperature of the panel, if it is greater than 90°C turn ON the cooling system using digital interface (5 marks). iii) Also, Display the warning sign by glowing RED LED with the message indicating "solar panel overheating" using serial interface (2 marks).	[15]	L3

***** All the best *****