VIT
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)
CHENNAI

Continuous Assessment Test (CAT) – I - AUG 2024

Programme	:	B.Tech(CSE)	Semester	:	FALL 24-25
Course Code & Course Title	:	BCSE305L&Embedded Systems	Class Number	:	CH2024250100421 CH2024250100422 CH2024250100423 CH2024250100424 CH2024250100425 CH2024250100426 CH2024250100427 CH2024250100428 CH2024250100429 CH2024250100430
Faculty	:	SINDHUJA M DHANUSH R MANMOHAN SHARMA SRIDHAR C KIRAN KUMAR M NITISH KATAL KRITHIKA ALIAS ANBU DEVI M LATHA P SHARON GIFTSY A L SATHEESH KUMAR T	Slot	:	C2+TC2
Duration	:	90 minutes	Max. Mark		50 Mark

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.		Describe the design process for a smart parking system, including sensor placement, data processing, and communication with users. With a neat block diagram, explain the hardware and software architecture and also explain the different phases involved in the above design.	10	L2
2.		Identify a microcontroller that utilizes pipeline architecture for instruction processing. Draw and explain its architecture in detail.	10	L1
3.		Design an automatic irrigation system using an Arduino Uno, a soil moisture sensor, a motor, and a serial monitor. The system continuously monitors the soil moisture level and displays the readings on the serial monitor. When the moisture content drops below a certain threshold, the motor automatically turns on to irrigate the field. The duration of watering is adjusted based on the moisture content, as detailed in Table 1. Table1: Automatic irrigation systems Details	15	L3

Moisture Percentage	ADC Value	Motor running time
0%	1024	60 minutes
25%	768	30 minutes
50%	512	15minutes

Draw the connection diagram and write a program to implement this system.

Design a Traffic Light Control System using Arduino Uno for a 4-Way Intersection

For a four-way traffic light control system, the LEDs will illuminate in a sequence that allows each direction to have its own green light while the other three directions remain red. The yellow light will serve as a transition between red and green phases.

Sequence Logic:

1. **Phase 1: North-South Green, East-West Red**
   - **North-South:** Green light ON for 5 seconds, then Yellow light ON for 1 second, followed by Red light ON for the remainder of the cycle.
   - **East-West:** Red light ON during the North-South Green phase, until the cycle advances to the next phase.
2. **Phase 2: East-West Green, North-South Red**
   - **East-West:** Green light ON for 5 seconds, then Yellow light ON for 1 second, followed by Red light ON for the remainder of the cycle.
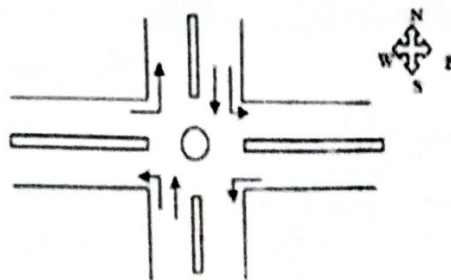   - **North-South:** Red light ON during the East-West Green phase.

Fig.1: Four Way Road Structure.

Draw the connection diagram and write a program to implement this system.

The row for question 4: marks **15**, level **L3**.

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