



SCHOOL OF COMPUTER SCIENCE AND ENGINEERING
CONTINUOUS ASSESSMENT TEST - I
FALL SEMESTER 2026-2027

Programme Name & Branch : BTECH & CSE, IoT
Course Code and Course Name : BCSE312L and Programming for IoT Boards
Faculty Name(s) : PUSHPA GOTHWAL, SYAMASUDHA VEERAGANDHAM
Class Number(s) : VL2026270102459, VL2026270102461
Date of Examination : 12/08/2026
Exam Duration : 90 minutes
Maximum Marks: 50

General instruction(s):

Answer All Questions

M - Max mark; CO - Course Outcome; BL - Blooms Taxonomy Level (1 - Remember, 2 - Understand, 3 - Apply, 4 - Analyze, 5 - Evaluate, 6 - Create)

CO1. Investigate various challenges and explore open-source hardware prototyping platforms for designing IoT devices

CO2. Understand basic circuits, sensors and interfacing, data conversion process and shield libraries to interface with the real world

Q. No	Question	Module	Marks	CO	BL
1.	A startup must choose between Arduino Uno, ESP32, and Raspberry Pi for developing an IoT-based smart agriculture system. The system requires wireless communication, low power consumption, cloud connectivity, and automatic irrigation. Analyse the application requirements and recommend the most suitable processing board. Justify your recommendation by comparing the available options based on processing capability, communication features, power consumption, scalability, and cost. Draw the IoT architecture of the proposed solution	1	10	CO1	L4
2.	A traffic signal prototype uses three LEDs (Red, Yellow, and Green). The system should repeatedly perform the following sequence: - Green LED ON for 5 seconds - Yellow LED ON for 2 seconds - Red LED ON for 5 seconds Design an Arduino program by appropriately using setup (), loop(), variables, and user-defined functions. Explain the execution flow and justify why the program structure is suitable for continuous operation.	2	10	CO2	L3
3.	A smart greenhouse uses a temperature sensor connected to an Arduino. The sensor data must be transmitted to a computer through UART for real-time monitoring. During testing, incorrect temperature values are displayed on the Serial Monitor. Analyse the possible causes of the communication error and develop the logic for transmitting temperature data using UART. Explain how you would use Serial library functions and the Serial Monitor to identify and debug the problem.	2	10	CO2	L4
4.	A homeowner wants to develop a smart home system that automatically turns ON a fan when the room temperature is high and switches ON a light when it becomes dark. The system should be easy to upgrade by adding more sensors in the future. Analyse the above requirements and design a suitable IoT prototype. Select two sensors, one actuator, and the required software libraries. Explain the hardware connections, circuit design, program flow, and justify why your chosen components are suitable for a scalable smart home system.	3	10	CO2	L4



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| 5. | A farmer plans to deploy an IoT-based irrigation system over a 50-acre farm. The farm has limited internet connectivity, solar-powered energy sources, and water scarcity. The system should monitor soil moisture and weather conditions while automatically controlling irrigation. Analyse the scenario and propose a suitable IoT solution by selecting the processing board, sensors, communication technology, cloud platform, and actuator. Justify each selection based on power consumption, communication range, reliability, and cost. Draw a neat block diagram of the proposed system. |
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