



SCHOOL OF COMPUTER SCIENCE AND ENGINEERING
CONTINUOUS ASSESSMENT TEST - II
WINTER SEMESTER 2024-2025

SLOT: C2+TC2

Programme Name & Branch : B.Tech Computer Science and Engineering
(Common to all branches)
Course Code and Course Name : BCSE310L IoT Architectures and Protocols
Faculty Name(s) : ANANDA KUMAR S, DHEEBA J, SALEEM DURAI M.A,
SELVI M, SRIMATHI C
Class Number(s) : VL2024250501542, 1539, 1546, 1553, 1541
Date of Examination : 18.03.2025
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 - Analyse, 5 - Evaluate, 6 - Create)
- Course Outcomes:
CO2. Assess different Internet of Things technologies and their applications.
CO3. Design basic circuits using sensors interfacing, data conversion process and shield libraries to interface with the real world.
CO4. Build and demonstrate the project successfully by sensor requirements, coding, emulating and testing.

Q. No	Question	M	CO	BL
1.	Assume each appliance in the home is a smart object. The smart objects continuously sense the events in the environment and transmit it to the private cloud for further storage and processing. The users in the house can monitor and access the data which are stored in the cloud using remote method innovation. Design an IoT based cloud integrated application for the above scenario and discuss the features of using private cloud.	10	2	6
2.	Design an IoT-based Smart Security System for Women that helps track the real-time location of the user and sends emergency notifications to both family members and the nearest police station. This system should use suitable pillars of IoT paradigm to ensure seamless and immediate response in case of an emergency. Illustrate neat architecture that supports the collection and transmission of location data, triggering alerts, and ensuring timely intervention and explain it.	10	2	6
3.	Develop an IoT-enabled smart irrigation system that collects real-time agricultural data using Arduino-board. The system should monitor environmental conditions such as soil moisture, temperature, and humidity. Transmit the collected data via Wi-Fi to other connected devices and the internet. Provide facilities for sending these collected data to multiple receivers by storing them in a centralized location and retrieving them based on the request received from different types of users who are using different type of devices. (a) Draw suitable architecture for IoT-enabled smart irrigation system for the above scenario and explain it.	5	3	3



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	(b) Write Arduino code for IoT-enabled smart irrigation system which collects environmental condition and transmit through Wi-Fi.	5		
4.	Design an IoT-based Fire Detection System that monitors various environmental conditions for weather forecasting and smart city applications. The system should include multiple sensors and actuators to measure key parameters. (a) Identify and describe the sensors used for detecting fire-related conditions. Explain how actuators respond to fire detection. Use suitable communication mechanism to send alerts to emergency services and citizens. Illustrate the architecture, including cloud integration for real-time monitoring.	5	3	3
	(b) Write an Arduino code for real-time fire detection and alerting.	5		
5.	Create a Wireless Sensor Network (WSN) model for weather forecasting which consists of five clusters with cluster heads and cluster members. Sensors in a WSN are battery operated so that it cannot be replaced or recharged when it is deployed in a harsh environment. Use suitable energy efficient hierarchical routing protocol to forward information which is collected from the environment to the base station and explain it.	10	4	2
