



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

SLOT: C1+TC1

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) : Prof. Abdul Gaffar H, Prof. Ganesh Shamrao Khekare,
Prof. Narayanan Prasanth, Prof. Sendhil Kumar K.S,
Prof. Senthilnathan

Class Number(s) : VL2024250501540, 45, 48, 49, 50

Date of Examination : 29-01-2025

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
CO1: Identify the hardware and software components, challenges of Internet of Things.
CO2: Assess different Internet of Things technologies and their applications

Q. No	Question	M	CO	BL
1.	Compare the working procedures of REST-based and WebSocket-based communication APIs that are used in the IoT environment. Specify an example scenario that is best suitable to use the respective APIs.	10	1	3
2.	A metropolitan city faces severe traffic congestion, pollution, and road safety issues. To address these challenges, the city mayor has planned to implement an IoT-enabled smart urban traffic management system. As a part of this system, IoT sensors should be embedded in roads, traffic lights, and vehicles to monitor traffic density, vehicle speeds, weather conditions, and accidents in real time. One of the nodes/devices should be a coordinator node to act as a gateway that provides Internet connectivity to the IoT system. Recommend a suitable IoT system level that should be adopted to implement the traffic management system with neat illustration. Justify your suggestion with valid comments. Discuss the functionality of the components used in the IoT system.	10	1	3
3.	Discuss the Bluetooth network and protocol stack with neat illustration. Show how eavesdropping and interference are effectively managed by Bluetooth.	10	2	2
4.	a) State the need for IPv6 and explain its header structure with neat illustration.	5	2	2
	b) Illustrate the features of a protocol that enables IPv6 packets to be efficiently sent within short link layer frames at low-power constrained environments.	5		
5.	Why MQTT is considered a suitable protocol for resource-constrained IoT devices operating in unreliable network environments? Discuss its working principles and QoS levels with neat illustration.	10	2	2
