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

Reg. Number:

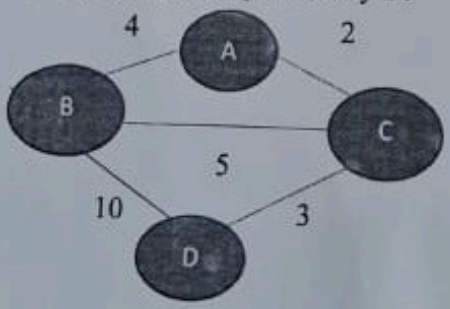
Continuous Assessment Test (CAT) – I - AUGUST 2024

Programme	:	**B.Tech (CSE)**	**Semester**	:	**FS 2024-25**
Course Code & Course Title	:	**BCSE401L Internet of Things**	**Class Number**	:	**CH2024250100448 CH2024250100449 CH2024250100450**
Faculty	:	**Dr. B. Nagajayanthi Dr.V.Berlin Hency Dr. S. Prasanna Bharathi**	**Slot**	:	**D1+TD1**
Duration	:	**90 Minutes**	**Max. Mark**	:	**50**

General Instructions:

- Do not write anything except your registration number in the box provided in the question paper.
- Only non-programmable calculator without storage is permitted.
- Answer ALL the questions using suitable diagrams

Answer all questions

Q. No	Sub Sec.	Description	Marks	Blooms Taxonomy Level
1.	(i)	What is a sensor and an actuator? (2 marks)	10	L3
	(ii)	Provide specific examples as to how you would integrate sensors and actuator to achieve energy efficiency and security in IoT based smart home system. (8 marks)		
2.		Consider a simple graph representing a network of cities and roads. Cities are represented by A, B, C, D. Roads (Edges) and weights are as shown in Figure 1. Each road has a weight that represents the travel distance between cities. Justify and explain as to how you would find the shortest path from City A to City D.  Figure 1. Graph representing cities and roads	10	L4
3.		Apply a suitable modulation technique and send binary data 11010100 in a WLAN network that balances data rate and power efficiency. Elaborate on the processes involved using suitable diagrams.	10	L3
4.		Elaborate on the architecture, significant functionalities and limitations of a low power, adaptive data rate and long-range communication	10	L2

		protocol suitable for IoT applications.		
5.		Consider a car dataset with features such as Car_Type, Color, and Buy_Car. Classify a new car with Car_Type ='SUV' and Color=' Red' using probabilistic machine learning technique. Assume that the features are conditionally independent given the class label.	10	

Table1. Dataset of Car

Car_Type	Color	Buy_Car
Sedan	Red	Yes
SUV	Blue	No
Sedan	Blue	Yes
SUV	Red	No
Sedan	Red	No
SUV	Blue	Yes
Sedan	Blue	No

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