



# VIT

Vellore Institute of Technology  
CHENNAI

Reg. Number:

22DCE1138

## Continuous Assessment Test (CAT) – I AUGUST 2024

Programme	:	B.Tech. Computer Science and Engineering.	Semester	Fall Semester 2024-25
Course Code & Course Title	:	BCSE316L: Design of Smart Cities	Class Number	CH2024250101361, CH2024250101357
Faculty	:	Dr. A SWAMINATHAN Dr. VIGNESH U	Slot	B2+TB2
Duration	:	90 Minutes	Max. Mark	50

### General Instructions:

- Write only your registration number on the question paper in the box provided and do not write other information.
- Only a non-programmable calculator without storage is permitted.
- All the scenario-based questions require proper diagrammatic illustration.

### Answer all questions

Q. No	Sub Sec.	Description	Marks
1		<p>Jaipur in India is facing significant challenges in waste management due to rapid urbanization and population growth. In response, the city has implemented a smart waste management initiative to optimize waste collection, boost recycling rates, and minimize the environmental impact of waste disposal. In this context:</p> <ol style="list-style-type: none"><li>1. Incorporate relevant illustrations to explain the concept of Smart Cities and their impact. (2 Marks)</li><li>2. Interpret the key characteristics of Smart Cities involved in this scenario. (4 Marks)</li><li>3. List the importance of Smart Cities in addressing urban challenges. (4 Marks)</li></ol>	10
2		<p>You are tasked with developing a Flood Monitoring System for India, focusing on technology, implementation, and the challenges of using sensor networks for flood monitoring.</p> <ol style="list-style-type: none"><li>a) How do sensor networks employ data analytics and machine learning algorithms to improve the accuracy of flood predictions in India? (3 Marks)</li><li>b) Describe how sensor networks enable the integration of flood monitoring data with emergency response systems in New York to reduce the impact of floods. (4 Marks)</li><li>c) Evaluate the adaptability of the current flood monitoring sensor network to changes in climate patterns or urban infrastructure in India. (3 Marks)</li></ol>	10

		Marks)	
3		Given the principles of sustainable urban planning, how would you redesign an existing urban area that faces challenges such as overpopulation, resource scarcity, and environmental degradation? Identify the key principles you would apply and explain how your redesign would address these challenges while promoting long-term sustainability.	10
4		<p>Analyze Portland's decision-making process for energy sustainability by addressing the following aspects:</p> <ul style="list-style-type: none"> <li>i. Identify the key energy sustainability challenges Portland faces. Provide specific examples of how challenges have shaped policy adjustments or new initiatives. (2 Marks)</li> <li>ii. Evaluate how Portland's decision-making process incorporates smart technologies to enhance energy sustainability. What role do these technologies play in shaping decisions related to energy use and infrastructure? (2 Marks)</li> <li>iii. Examine how Portland involves its residents in the decision-making process for energy sustainability. What mechanisms are in place to ensure community input and list the factors influence decision outcomes? (2 Marks)</li> <li>iv. What role do budget allocations, grants, or incentives play in shaping decisions in financial considerations and funding mechanisms? (2 Marks)</li> <li>v. What metrics or indicators are used to evaluate the success of decisions made, and how does this evaluation influence future decision-making? (2 Marks)</li> </ul>	10
5		<p>Examine the role of energy as a catalyst for sustainable transformation in a city of your choice. In your analysis, consider the following aspects:</p> <ul style="list-style-type: none"> <li>i. How strategic energy initiatives in the city have served as a catalyst for broader sustainability efforts and highlight specific programs or policies that have driven transformative changes in energy use and sustainability. (3 Marks)</li> <li>ii. Analyze the economic and social impacts of energy-driven sustainability initiatives and provide examples of economic benefits and social improvements resulting from energy transformations. (3 Marks)</li> <li>iii. Examine the role of policy and governance in leveraging energy for sustainable transformation with sustainability strategies? (4 Marks)</li> </ul>	10

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