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

Reg. Number:	

Continuous Assessment Test (CAT) – I - January 2025

Programme	:	B.Tech.(CSE)	Semester	:	Winter 24-25
Course Code & Course Title	:	BCSE313L & Fundamentals of Fog and Edge Computing	Class Number	:	CH2024250501981
Faculty	:	Dr. V. Sakthivel	Slot	:	D1
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.

Answer all questions

Q. No	Sub Sec.	Description	Marks
1.		How can the integration of fog and edge computing in an IoT-based healthcare system improve service quality and efficiency? Discuss the potential benefits and challenges of implementing such a system. Additionally, illustrate a hierarchical system architecture that includes both hardware and software components to optimize real-time data processing and decision-making in healthcare environments.	15
2.		In a smart healthcare system with interconnected IoT-enabled medical devices across multiple hospitals, the hierarchical structure of fog and edge computing plays a crucial role in aggregating and analyzing patient data at various levels (hospital, regional and national). i. Discuss how this approach can enhance predictive diagnostics, optimize resource allocation, and improve emergency response while maintaining a balance between local autonomy and centralized oversight. (10 marks) ii. How should the hierarchy be designed to ensure real-time decision-making at the point of care while enabling large-scale health analytics and policy planning? (10 marks)	20
3.		A hospital uses IoT-enabled patient monitoring devices that continuously send health data to the cloud for analysis. However, delays in processing critical alerts, security concerns, and network congestion impact patient care. To enhance real-time decision-making, the hospital integrates Fog-Edge Computing (FEC). How does FEC improve **Security, Cognition, Agility, Latency and Efficiency (SCALE)** in this healthcare scenario? Provide a brief explanation for each. (**5 *3 marks = 15 marks**)	15

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