



VIT

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

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

SLOT: F1+TF1

Programme Name & Branch : BTECH – Computer Science and Engineering
Course Code and Course Name : BCSE313L – Fundamentals of Fog and Edge Computing
Faculty Name(s) : Prof. Ramanathan L/Prof. Naveenkumar L/
Prof. Badrinath N /Prof. Kauser Ahmed P/
Prof. Justin Gopinath A/Prof. Munusamy S.
Class Number(s) : VL2024250501566/01570/01577/01599/01602/06625
Date of Examination : 01/02/2025
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- Explore technologies behind the communication and management of fogs and edge resources.CO4-Analyze the performance and issues of the applications developed using fog and edge architecture.CO2-Learn the techniques for storage and computation in fogs, edges, 5G and clouds.

Q. No	Question	M	CO	BL
1.	Describe the business models of Fog and edge computing platforms with suitable examples.	10	1	1
2.	Design an edge-based Smart health monitoring system that collects vital signs data (heart rate, oxygen saturation). The system should detect potential health risks and send alerts to users and emergency services. (a) Illustrate and explain the suitable diagram for fog edge computing paradigm? (4 M) (b) Compare how the above paradigm CIOT approach? (6 M)	10	1	4
3.	(a) Elaborate the different network and management challenges in federated environment? (b) A smart home security system uses edge computing to analyse video feeds from security cameras. The system consists of motion detection software, Video feeds from cameras, a local fog device running the program and storing the data. Using proper equation explain the overall reliability of the edge fog computing environment in the given scenario depends on the reliability of each component.	5 5	4	6
4.	A city's surveillance system uses IP cameras to capture and analyse footage in real time. The system utilises edge computing to perform initial video processing and inject detection at the edge of the network reducing latency. The processed data is then transmitted to a local cloudier for further analysis such as facial recognition and license plate detection. Finally, the analysed data is sent to cloud for long term storage. Illustrate with a neat diagram how network slicing can be used to prioritise and manage different types of traffic in the smart surveillance system such as video feeds, alarm signals and software updates.	10	2	3
5.	a) What is the important role of SDN in Cloud computing? b) Elaborate with example how SDN and NFV compliment network slicing?	5 5	2	1
