Roll No.											

PRESIDENCY UNIVERSITY

BENGALURU

End - Term Examinations – December 2025	
Date: 13 – 12- 2025	**Time:** 01:00pm – 04:00pm

School: SOCSE	**Program**: B-Tech	
Course Code : CIT3405	**Course Name:** Edge and Fog Computing for IOT	
Semester: VII	**Max Marks**: 100	**Weightage**: 50%

CO - Levels	CO1	CO2	CO3	CO4	CO5
Marks	36	16	34	14	-

Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2marks. **10Q x 2M=20M**

1.	Define Fog Computing and state its purpose in IoT.	2 Marks	L1	CO1
2.	List two key differences between Edge and Cloud processing.	2 Marks	L2	CO1
3.	State any two issues faced while federating Edge resources.	2 Marks	L2	CO1
4.	What is meant by resource orchestration in Fog systems?	2 Marks	L1	CO2
5.	Mention two objectives of optimization in Fog computing.	2 Marks	L2	CO2
6.	Define network slicing and its relation to 5G Fog networks.	2 Marks	L2	CO2
7.	What role does middleware play in Fog-based IoE solutions?	2 Marks	L1	CO3
8.	Give two examples of Fog applications that use IoE.	2 Marks	L3	CO3
9.	List two factors that impact Fog application performance.	2 Marks	L2	CO4
10.	Define bandwidth and latency with respect to Fog architecture.	2 Marks	L2	CO4

Part B

Answer the Questions. **Total Marks 80M**

11.	**a.**	Explain Fog Computing architecture and its key layers with diagram.	**10 Marks**	**L2**	**CO1**
	b.	Describe how Fog devices interact with IoT sensors and Edge controllers.		**L2**	**CO1**
		Or			
12.	**a.**	Compare Cloud, Fog and Edge computing based on response time and data location.	**10 Marks**	**L2**	**CO1**
	b.	Analyse how Edge–Fog coordination improves data processing efficiency in scenarios such as smart transportation or smart grids. Highlight two key advantages.		**L4**	**CO1**

13.	**a.**	Define orchestration and explain its benefits in Fog resource handling.	**10 Marks**	**L2**	**CO2**
	b.	Explain how 5G networks support ultra-low latency Edge applications.		**L2**	**CO2**
		Or			
14.	**a.**	Discuss how optimization improves task scheduling in Fog computing.	**10 Marks**	**L2**	**CO2**
	b.	Explain how network slicing ensures QoS for different IoT services.		**L2**	**CO2**

15.	**a.**	Demonstrate the function of middleware in a Fog-based IoE ecosystem.	**10 Marks**	**L3**	**CO3**
	b.	Explain how Fog architecture is used in a Smart Agriculture system.		**L3**	**CO3**
		Or			
16.	**a.**	Describe the role of machine learning in Fog data processing.	**10 Marks**	**L3**	**CO3**
	b.	Explain a middleware tool that supports Fog data analytics.		**L3**	**CO3**

17.	**a.**	State and explain any three performance metrics for Fog systems.	**10 Marks**	**L3**	**CO4**
	b.	Describe two privacy issues arising in Fog-Edge deployment.		**L3**	**CO4**
		Or			
18.	**a.**	How do network bandwidth and delay impact Fog applications?	**10 Marks**	**L3**	**CO4**

	b.	Design a Fog-assisted Smart Healthcare monitoring system that performs real-time patient data analysis at the Edge and Fog layers. Create your architecture, specify processing responsibilities at each layer, and justify how your design improves reliability, privacy, and emergency response time		**L6**	**CO4**

19.	**a.**	Explain communication and data flow among Cloud, Fog and Edge components.	**20 Marks**	**L2**	**CO1**
	b.	Discuss the role of virtualization in resource allocation across Fog nodes.		**L2**	**CO1**
			Or		
20.	**a.**	Illustrate how task off-loading occurs between Edge and Fog layers.	**20 Marks**	**L2**	**CO1**
	b.	Describe methods for discovering and managing Fog resources in IoT.		**L2**	**CO1**

21.	**a.**	Develop a Fog-based IoE application for Smart Healthcare and explain its workflow.	**20 Marks**	**L3**	**CO3**
	b.	Analyze optimization factors in that application.		**L3**	**CO3**
			Or		
22.	**a.**	Propose an IoE scenario using Fog and Edge integration and explain its advantages.	**20 Marks**	**L3**	**CO3**
	b.	Evaluate the suitability of Fog-based machine learning for supporting large-scale IoE applications such as healthcare or surveillance. Provide reasons for your recommendation.		**L5**	**CO3**