REG.NO.:

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

SCHOOL OF COMPUTER SCIENCE ENGINEERING AND INFORMATION SYSTESM

SLOT: B2

CONTINUOUS ASSESSMENT TEST - II
WINTER SEMESTER 2024-2025

Programme Name & Branch	: **BTech-IT**	
Course Code and Course Name	: **BITE 412L-Cloud Computing**	
Faculty Name(s)	: **Dr. Sudha.M, Dr. Vani M P**	
Class Number(s)	: **VL2024250502699,2694**	
Date of Examination	: **17.03.2025**	**Maximum Marks: 50**
Exam Duration	: **90 minutes**	

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 (CO)

  1. Identify the core concepts of distributed systems: the way in which several machines orchestrate to correctly solve problems in an efficient, reliable and scalable way.
  2. Analyse the core architectural concepts to meet the challenges in implementing distributed systems.
  3. Examine important approaches in distributed systems to support synchronization and fault tolerance.

Q.No.	Question	Max Marks	CO	BL
1.	A global e-commerce platform is preparing for a major sales event where traffic is expected to surge unpredictably. The company is using the Cloud Component Model (CCM) approach to design its cloud-native application, ensuring high availability, security, and seamless scaling across multiple cloud providers. However, challenges such as load balancing, microservices orchestration, and compliance with data protection laws add complexity to the design. Considering Component Design, Architecture Design, and Deployment Design, how should the company structure its cloud solution to prevent failures, optimize performance, and ensure a smooth customer experience?	10	CO2	BL3
2.	In a real-world multi-cloud environment, efficient Intercloud Resource Management is critical for optimizing performance, cost, and reliability. Consider a scenario where an enterprise operates workloads across multiple cloud providers (AWS, Azure, GCP) to ensure high availability and cost-effectiveness. What are the key challenges in managing resources across multiple cloud providers, including networking, data consistency, and security and list the suitable strategies to utilize to ensure workload portability and interoperability between different cloud providers?	10	CO4	BL4

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3.	You are deploying a serverless application using AWS Lambda and Amazon API Gateway to process user requests. Each API call triggers a Lambda function that processes the data. Based on the given metrics, estimate the total execution time (in seconds) for all Lambda invocations per day. What is the total cost of executing the Lambda function for all API requests per day? Additionally, calculate the total cost for API Gateway requests per day. Finally, compute the overall total cost per day for the entire serverless application." For the below listed resource requirements in the cloud environment:	10	CO3	BL5

Metric	Value
Lambda Execution Time	200 milliseconds per invocation
API Gateway Cost	$4.00 per million API requests
Lambda Cost	$0.000000250 per 100 ms execution
Daily API Requests	15,000 requests per day

4.	Suppose you are designing a RESTful API for a cloud-based file storage service that allows users to upload, retrieve, organize, and share files. The system must support folder structures and file-sharing with specific permissions (e.g., read-only, edit access). What HTTP methods would you use for the following operations, and why? How would you structure the API endpoints for these operations? ○ Uploading a file ○ Retrieving a file ○ Organizing files into folders ○ Sharing a file with another user ○ Revoking access to a shared file	10	CO3	BL4
5.	How would you design and create a cloud-based task management application using Django, ensuring modularity for future enhancements like mobile app integration? Describe the step-by-step process, starting with project setup, including initializing a Django project, structuring it for scalability, and configuring it for cloud deployment.	10	CO5	BL6