


VIT

Vellore Institute of Technology
Approved by the University Grants Commission of India (UGC), New Delhi
Final Assessment Test – November 2025

Course: BCSE355L - Cloud Architecture Design

Class NBR(s): 1824/1868/1876/1883/1891/1896/1908/

1914/1919/1925/1932/1941/1945/1955/1964/2436/

2442/4512

Slot: G1+TG1

Time: Three Hours

Max. Marks: 100

- KEEPING MOBILE PHONE/ANY ELECTRONIC GADGETS, EVEN IN 'OFF' POSITION IS TREATED AS EXAM MALPRACTICE
- DON'T WRITE ANYTHING ON THE QUESTION PAPER

COs	CO Statements
CO1	Demonstrate an in-depth understanding of AWS Cloud architecture, services, and design patterns.
CO2	Apply security and compliance measures effectively in AWS architectures using encryption, access controls, and monitoring.
CO3	Optimize cost and performance by selecting appropriate AWS services and utilizing cost-effective resource management strategies.
CO4	Configure and manage advanced AWS networking features, storage solutions, database technologies, and compute resources.

BL – Blooms Taxonomy Level (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)

Answer ALL Questions
(10 X 10 = 100 Marks)

1. A start-up aims to launch a global e-commerce platform, anticipating traffic from users across multiple continents. To ensure optimal performance, they require low latency, high availability, and minimal service interruptions. How can AWS Global Infrastructure support these objectives? Identify and explain the responsibilities of AWS service provider and AWS customers that would help the company build a secure, resilient architecture. CO1 BL3
2. A multinational company is migrating its monolithic application to AWS wants to enforce least privilege for its developers and operations team. Explain in detail how IAM users, roles, policies, and groups be designed to support secure, role-specific access and clear separation of duties across teams? CO1 BL2
3. An organization is deploying its first cloud-based web application using Amazon EC2. To provision their infrastructure effectively, the team must gain a comprehensive understanding of EC2 instance types and the instance lifecycle. Provide a detailed explanation of the various EC2 instance families, their use cases, and the complete lifecycle of an EC2 instance—from launch to termination. CO4 BL1

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| 4. | WebStream, a Content Management Service provider, needs a highly available and fault-tolerant platform. Their current setup—a single web server with attached storage—faces issues like single point of failure, poor scalability, and manual data sync. Recommend an AWS storage solution that addresses these limitations and explain in detail highlighting its key features and how it ensures resilience, scalability, and automated data management. | CO4 | BL2 |
| 5. | Design a secure and scalable VPC architecture that includes public and private subnets, an Internet Gateway, a NAT Gateway, route tables, security groups and network ACL'S, in your role as the cloud architect. Using clear architecture diagram and explain how this setup ensures isolation, controlled access, and high availability across application tiers. | CO4 | BL3 |
| 6. | A manufacturing firm wants to migrate its legacy on-premises E-commerce database to AWS relational database for high availability and read scalability. Explain a database solution provided in AWS that improves application availability and optimizes read scalability across workloads with suitable architecture. | CO4 | BL3 |
| 7. | Your organization suspects a potential security breach in its AWS environment. As the cloud security analyst, explain how AWS-native tools—Cloud Trail, Cloud Watch, and AWS Config—can be used together to investigate the incident, trace its root cause, and support resolution. Highlight how each tool contributes to activity tracking, anomaly detection, and configuration auditing during the investigation process. | CO3 | BL3 |
| 8. | A media streaming company hosts its content delivery platform on AWS. During a major live event, the platform experiences a sudden surge in traffic, suspected to be a Distributed Denial of Service (DDoS) attack targeting its public-facing endpoints. As the cloud security engineer, identify and explain how AWS Shield protects against DDoS attacks. | CO2 | BL3 |
| 9.a) | A logistics company is building a real-time alerting system to notify customers and internal teams about shipment status updates, delays, and delivery confirmations. The solution must support multiple communication channels, ensure reliable message delivery, and enforce strict access controls. As the cloud architect, describe how Amazon Simple Notification Service (SNS) can be used to implement this solution. | CO1 | BL3 |

OR

9.b) An insurance company wants to automate its end-to-end claims processing workflow, which involves multiple interdependent tasks such as document ingestion, fraud detection, policy validation, and customer notification. These tasks must be executed both sequentially and in parallel, with built-in fault tolerance, retry logic, and scalable execution to handle fluctuating claim volumes. As the cloud solutions architect, how would you design a resilient and scalable workflow using AWS services to meet these requirements.

CO1 BL3

10.a) An automotive manufacturer needs to transfer 8 PB of high-resolution sensor and telemetry data collected from multiple global factories to AWS for centralized analytics and machine learning. The transfer must be completed within a short time frame, with strict requirements for data security, transport reliability, and operational efficiency.

CO2 BL3

As the cloud infrastructure specialist, recommend the most suitable AWS Snow Family service for this migration with proper explanation. Compare it with other types of AWS snow Family service.

OR

10.b) A public university plans to migrate its on-premises data center—including web servers, application servers, and databases—to AWS, while maintaining a hybrid cloud model for compliance.

CO2 BL3

As the cloud solutions architect, propose a migration strategy using AWS SMS for server workloads and AWS DMS for structured data, ensuring minimal downtime, security, and business continuity.

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