



- **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 healthcare analytics company named HealthSync wants to migrate its patient data storage and analysis platform to AWS. Explain how the AWS Identity and Access Management (IAM) service helps HealthSync to implement a secure access control strategy in the cloud. Give two examples of IAM features that enhance security. **CO1 BL3**
2. A video streaming startup named Streamify plans to host its video encoding and storage system on AWS. The company expects fluctuating traffic—high during peak hours and low at night. Explain which compute services and features you would use to handle variable workloads, and which storage services and policies you would apply for cost optimization. **CO1 BL4**
3. Your company is building a secure and high-availability web application on AWS that must serve users from multiple regions. The application should include public-facing web servers, private application and database tiers, and global content delivery. As an AWS Solutions Architect, design a complete AWS network architecture to meet these requirements and describe how they work together to ensure security, scalability, and performance. **CO4 BL4**

4. You are the Cloud Architect for a global ride-sharing app. The platform uses Amazon Aurora PostgreSQL for relational data (user profiles, rides, payments) and DynamoDB for real-time location tracking and session management. During peak hours, the system experiences high read/write traffic, especially for location updates and ride-matching. Design a database architecture using Aurora and DynamoDB to ensure high availability, fault tolerance, scalability, and cost optimization.

CO4 BL4

- 5.a) Your company has observed a significant increase in AWS costs and incidents of misconfigured resources and unauthorized API calls, affecting performance and security. Explain the AWS services you would use together to detect and respond to unauthorized or misconfigured resource changes, and monitor system performance.

CO4 BL5

OR

- 5.b) You are a cloud administrator for a startup that migrated its dev and test environments to AWS. After three months, unexpected AWS charges appear due to exceeded Free Tier limits and inappropriate provisioning. Explain how can AWS Budgets monitor spending to send alerts and how does AWS Trusted Advisor helps to the optimize costs.

CO4 BL5

6. You are the Lead Cloud Security Architect for a financial services company handling sensitive customer data under regulatory compliance (PCI-DSS, GDPR). After migrating to AWS, audits revealed:

CO2 BL4

- Publicly accessible S3 buckets
- Web app vulnerable to SQL injection and XSS
- No centralized key management

How can AWS WAF and AWS Shield protect against SQL injection, XSS, and DDoS? Propose a solution using AWS KMS to manage encryption keys across services like S3 and RDS.

7. An application is hosted entirely on AWS and must meet strict compliance requirements, deliver high availability, and scale dynamically during peak hours. Recently, the platform experienced performance degradation, unexpected cost spikes, and a security audit failure due to misconfigured resources. Explain how the AWS Well-Architected Framework can guide the re-design of this platform with at least three of its pillars relevant to the scenario.

CO3 BL5

- 8.a) The company wants to migrate its databases with minimal downtime and lift-and-shift its application servers to AWS. They also want to ensure secure, reliable connectivity between on-premises and cloud environments. Describe how AWS Server Migration Service (SMS) facilitates the migration of on-premises Windows servers to AWS.

CO3 BL4

OR

- 8.b) A multinational media company needs to transfer over 10 petabytes of archived video content from multiple global data centers with limited bandwidth at some sites, and likely to process some data locally before uploading. Compare AWS Snowball, Snowball Edge, and Snowmobile in terms of capacity, use cases, and suitability for different migration scenarios.

CO3 BL4

9. The application uses Amazon RDS for PostgreSQL to store relational data. To ensure high availability and disaster recovery, the team has enabled Multi-AZ deployments. However, during peak hours, users report slow response times when accessing reports and dashboards that involve heavy read operations. Propose an architecture using both Multi-AZ and Read Replicas to balance availability, performance, and compliance.

CO3 BL4

10. You are designing a serverless order fulfillment system for an online bookstore. Orders must be:

CO4 BL6

- Queued for processing
- Customers notified via email/SMS
- Backend services (payment, inventory, shipping)

How does Amazon SQS decouple components in the order pipeline? How can Amazon SNS send notifications to customers across multiple channels? How can AWS Step Functions coordinate payment, inventory, and shipping tasks?

⇔⇔⇔ R/K/TY ⇔⇔⇔