# UNIT - V: Cloud Security & Advanced Concepts

**Syllabus:** Security in Cloud Computing, and Advanced Concepts in Cloud Computing.

## Multiple Choice Questions (MCQs)

1. What cloud security architecture model defines what security tasks are handled by the provider versus what tasks are managed by the customer?

   a) Monolithic Security Framework

   b) Shared Responsibility Model

   c) Encapsulated Gateway Matrix

   d) Zero-Correlation Scale

   - **Answer:** b) Shared Responsibility Model
2. Which security threat occurs when a malicious tenant exploits a vulnerability in a hypervisor to bypass logical boundaries and access a neighboring tenant's private data?

   a) Denial of Service (DoS)

   b) Virtual Machine (VM) Escape

   c) Phishing

   d) Inside Data Routing Loop

   - **Answer:** b) Virtual Machine (VM) Escape
3. To secure data while it is moving over internet connections between a client and a cloud node, organizations must enforce:

   a) Encryption At-Rest

   b) Encryption In-Transit (e.g., TLS/SSL)

   c) Multi-core physical hardware separation

   d) Web 2.0 interface parameters

   - **Answer:** b) Encryption In-Transit (e.g., TLS/SSL)
4. What advanced cloud concept decentralizes computing by pushing application logic, data caching, and processing closer to the edge devices and IoT nodes?

   a) Mainframe Centralization

   b) Edge Computing

c) Monolithic Web Architecture

d) Grid Redundancy

- **Answer:** b) Edge Computing

5. What advanced cloud execution model allows developers to deploy code blocks (functions) that run dynamically only upon triggers, without requiring persistent server management?

   a) Infrastructure as a Service (IaaS)

   b) Serverless Computing / Function-as-a-Service (FaaS)

   c) Type-2 Hosted Virtualization

   d) Dedicated Physical Hosting

   - **Answer:** b) Serverless Computing / Function-as-a-Service (FaaS)

6. Identity and Access Management (IAM) systems in cloud security are fundamentally designed to:

   a) Monitor the heat signature of physical multicore chips

   b) Ensure that only authenticated and authorized entities have precise access to cloud resources

   c) Map Sustainable Development Goals to local servers

   d) Re-route transport layer packets automatically

   - **Answer:** b) Ensure that only authenticated and authorized entities have precise access to cloud resources

7. Which United Nations Sustainable Development Goal (SDG) relates directly to optimized green data centers managing resource consumption efficiently via virtualization?

   a) SDG 4 (Quality Education)

   b) SDG 7 (Affordable and Clean Energy)

   c) SDG 16 (Peace, Justice, and Strong Institutions)

   d) SDG 17 (Partnerships for the Goals)

   - **Answer:** b) SDG 7 (Affordable and Clean Energy)

8. According to the syllabus mapping, which SDG directly benefits from secure cloud platforms that improve digital governance, transparency, and data administration?

   a) SDG 7

b) SDG 12

c) My SQL 2.0

d) SDG 16 (Peace, Justice, and Strong Institutions)

- **Answer:** d) SDG 16 (Peace, Justice, and Strong Institutions)

9. What is a key security risk specific to multi-tenant cloud storage structures?

   a) Reduced network link oversubscription

   b) Cross-tenant data leakage due to faulty logical isolation

   c) Rapid auto-scaling features

   d) Implementation of Web 3.0 models

   - **Answer:** b) Cross-tenant data leakage due to faulty logical isolation

10. Cloud environments must maintain strict compliance standards. What process involves a formal independent review to verify that a cloud platform meets required security controls?

    a) Code Compilation

    b) Security Auditing and Compliance Certification

    c) Virtualization Live Migration

    d) Data Center Network Oversubscription

    - **Answer:** b) Security Auditing and Compliance Certification

## Fill in the Blanks

1. Protecting data, applications, and virtualized assets from breaches and cyber threats falls under _____.
   - **Answer:** Security in Cloud Computing
2. Serverless architectures and Edge topologies are broadly categorized under _____.
   - **Answer:** Advanced Concepts in Cloud Computing
3. Under the Shared Responsibility Model, physical security of server racks is the duty of the _____.
   - **Answer:** Cloud Service Provider (CSP)

4. To secure stored cloud files against physical theft or unauthorized database reads, organizations use encryption _____.
    - **Answer:** At-Rest
5. _____ systems assign granular permissions to users, specifying exactly which cloud buckets or virtual servers they can edit.
    - **Answer:** Identity and Access Management (or IAM)
6. Secure cloud storage infrastructures directly support _____, which seeks to promote secure digital governance and strong data transparency.
    - **Answer:** SDG 16 (or Peace, Justice, and Strong Institutions)
7. Moving compute nodes closer to physical sensors to drastically minimize round-trip networking latency is called _____.
    - **Answer:** Edge Computing
8. _____ Computing allows running applications without thinking about server instances, billing only for the precise milliseconds of computation used.
    - **Answer:** Serverless
9. Virtualization helps protect environments by reducing electronic waste and maximizing material utility, aligning with _____ (Responsible Consumption and Production).
    - **Answer:** SDG 12
10. The security practice of continuously verifying every single user and device requesting access to cloud segments, regardless of network perimeter boundaries, is known as _____ architecture.
    - **Answer:** Zero Trust