1. **What is AWS?**

**Ans)** Amazon Web Services (AWS) is a comprehensive and evolving cloud computing platform provided by Amazon, offering services like compute power, storage, and databases on a pay-as-you-go basis.

1. **What are the main services provided by AWS?**

* Compute (EC2, Lambda)
* Storage (S3, EBS)
* Database (RDS, DynamoDB)
* Networking (VPC, Route 53, ELB)
* Security (IAM, KMS)
* Monitoring (CloudWatch, CloudTrail)

1. **What is EC2?**
2. EC2 (Elastic Compute Cloud) is a virtual server in the AWS cloud.It provides resizable compute capacity to run applications.Users can choose instance types based on their needs.
3. **What is S3 and what are its storage classes?**
4. S3 (Simple Storage Service) is scalable object storage for any data.  
   It offers durability, security, and access control features.  
   Storage classes: Standard, Intelligent-Tiering, Standard-IA, One Zone-IA, Glacier, Glacier Deep Archive.
5. **What is the difference between an EC2 instance and a Lambda function?**
6. EC2 is a virtual machine that requires manual provisioning and scaling.  
   Lambda is serverless, auto-scales, and runs code in response to triggers.  
   Lambda is ideal for short-lived, event-driven tasks.
7. **What is IAM and why is it used?**  
   A) IAM (Identity and Access Management) manages user access to AWS resources.  
   It allows creation of users, roles, and policies. It helps enforce least-privilege and secure resource access.
8. **How does AWS VPC work?**  
   A) VPC (Virtual Private Cloud) creates an isolated network in AWS. You can define subnets, route tables, and gateways. It lets you control network configuration and security.
9. **What is the difference between public and private subnets in a VPC?**  
   A) Public subnet has a route to the internet via an Internet Gateway. Private subnet has no direct internet access for security. Used to separate external and internal-facing resources.
10. **What is an Elastic Load Balancer (ELB)?**  
    A) ELB distributes incoming traffic across multiple targets like EC2s.It ensures high availability and fault tolerance of applications. Types: Application, Network, and Gateway Load Balancers.
11. **What is Auto Scaling in AWS?**  
    A) Auto Scaling automatically adjusts EC2 instances based on demand.  
    It improves cost-efficiency and application availability. Uses scaling policies and health checks to manage resources.
12. **What are the different types of EC2 instance types?**

A)

* General Purpose (t4g, t3, m6)
* Compute Optimized (c7g, c6g)
* Memory Optimized (r7, x2)
* Storage Optimized (i4, d3)
* Accelerated Computing (p4, inf1)

1. **What is the difference between EBS and S3?**  
   A) EBS (Elastic Block Store) provides block-level storage for EC2 instances.  
   It's persistent and attached to a single instance like a virtual hard disk.  
   S3 (Simple Storage Service) is object storage accessible via HTTP, ideal for backups, static assets, and media.
2. **How does Route 53 work in AWS?**  
   A) Route 53 is a scalable Domain Name System (DNS) service. It routes user requests to AWS resources or external servers. Supports routing policies like latency-based, failover, and geolocation.
3. **Explain the concept of security groups and NACLs.**  
   A) Security Groups act as virtual firewalls at the instance level and are stateful.  
   They control inbound and outbound traffic for EC2 instances .Network ACLs (NACLs) operate at the subnet level and are stateless, checking traffic entering or leaving the subnet.
4. **What is CloudWatch and how does it differ from CloudTrail?**  
   A) CloudWatch monitors AWS resources via metrics, logs, dashboards, and alarms.  
   Used for performance tracking and operational visibility. CloudTrail logs all AWS API calls for auditing and compliance tracking.
5. **What is the difference between AWS RDS and DynamoDB?**  
   A) RDS is a managed relational database service supporting engines like MySQL, PostgreSQL, and Oracle. It provides features like backups, patching, and replication.  
   DynamoDB is a fully managed NoSQL database for key-value and document data, with fast performance at scale.
6. **Explain AWS Lambda's cold start issue.**  
   A) A cold start happens when a Lambda function runs after being idle. AWS must initialize a new container and runtime, which causes a delay. Cold starts affect latency, especially in VPC-enabled functions.
7. **What are AWS Availability Zones and Regions?**  
   A) A Region is a physical location consisting of multiple Availability Zones. Each Availability Zone (AZ) is an isolated data center within the Region. Using multiple AZs ensures high availability and fault tolerance.
8. **How do you secure data in transit and at rest in AWS?**  
   A) Data in transit is secured using protocols like SSL/TLS.  
   Data at rest is encrypted using services like AWS KMS or built-in storage encryption.  
   S3, EBS, and RDS support encryption at rest.
9. **Explain the Shared Responsibility Model of AWS.**  
   A) AWS is responsible for the security "of" the cloud — including hardware, software, and infrastructure.  
   Customers are responsible for security "in" the cloud — like data, IAM, application settings, and OS patches.  
   It's a collaborative model to ensure overall cloud security.
10. **How would you design a fault-tolerant architecture on AWS?**

* Use multiple Availability Zones (AZs) and Regions
* Load balancers (ELB) to distribute traffic
* Auto Scaling for redundancy
* RDS Multi-AZ or Aurora for database failover
* S3 for durable storage
* CloudFront for global content delivery
* Regular backups and health checks
* Use Route 53 failover routing for DNS-based disaster recovery