1)What is AWS?

Amazon Web Services (AWS) is a big cloud computing platform from Amazon. It gives businesses many services to help them grow and come up with new ideas. These include computing power, storage, databases, and tools for machine learning, among others. AWS is a popular cloud platform that offers more than 200 full-featured services from data centers around the world. Companies can use AWS to get computing resources without buying their own physical equipment. This helps them to innovate faster and spend less on IT. The services AWS provides cover areas like computing, storage, databases, networking, data analysis, and machine learning.

2)Describe what AWS is and its significance in cloud computing.

AWS leads the pack in cloud computing offering a wide range of services to meet various business needs, from new companies to big corporations. Its worldwide setup, along with a huge set of tools and services, lets organizations set up and grow their apps. AWS matters because it gives safe, adaptable, and budget-friendly answers that push digital change and help businesses stay nimble. The company's global reach paired with its extensive toolkit, enables firms to launch and expand their programs. AWS stands out for providing secure flexible, and cost-effective options that spark digital shifts and keep companies on their toes.

3) Explain the key components of AWS architecture.

AWS architecture is a construction that is made up of the following components such as regions and availability zones that in-turn ensure that the cloud has sufficient resources to cover for the loss in any of the physical locations.

EC2:

Allows users to affordably and quickly increase or reduce server capacity to run applications. The system’s ability to scale is one of the

powerful attributes that can additional computing resources be brought online.

S3 (Simple Storage Service):

An object store that provides remote storage access to computers while providing options for data protection, redundancy, and speed.

RDS (Relational Database Service):

Through RDS, database management and services are simplified with the help of the. AWS does not operate physical hardware, thus MySQL, PostgreSQL, and SQL Server are databases that AWS provides only under the running system.

IAM:

The IAM service allows for the rights and roles configuration on the backend if the user is applying the more secured role-based system, which in turn helps in proper security monitoring and enforcement.

4)What are the benefits of using cloud computing with AWS?

Scalability: This is because with AWS one is able to quickly scale up or down the resources depending on the type of workload that is required in the business.
Flexibility: The combination of the various services provided by AWS also makes it easier for a business to choose those services that closely suits its needs perhaps in storage, compute power, machine learning or Internet of Things.
Cost-efficiency: This is because the pricing model that AWS used is based on pay as you go which virtually means a business does not have to pay for a set of hardware and then pay as per utilization.
Security: AWS offers a safe environment comprising of a variety of options and solutions helping in security and identity as well as data compliance issues.

5) How does AWS pricing work?

AWS is a usage-based model, and users get charged only for the services that they use. This model also proves to be convenient specifically to businesses because what is being consumed can also be controlled and increased or decreased depending on the need of the business without worrying too much about it blowing their budget.

Pay-as-you-go: They are charged based on the resources consumed and it is not locked in or involving any initial payment. This model is designed if their workload varies or increases at some times while very low at others.
Reserved Instances: Long-term reservation allows users to reserve for an amount of time, one or three years, and it is 75% cheaper than the pay-as-you-go model. This option is best used when the usage or need for the selected course is constant and does not fluctuate.
Free Tier: AWS has what is commonly referred to as the AWS free tier that has restrictions; either by the number of services provided, the period of use which is generally one year or a specified usage limit that users can use AWS services while incurring no charges.

6) Explain Cloud Computing Models.

IaaS-Infrastructure as a Service: Provides the facility of Virtualized computing resources via the internet. On-Demand: Users can rent IT Infrastructure, like Servers, Storage, Networking, for example, AWS EC2.

PaaS – Platform as a Service: A platform provided to the customer, which helps them develop, launch and maintain applications minus the headache of the structural Infrastructure layer, comes under PaaS. For example, AWS Elastic Beanstalk is one.

SaaS- Software as a Service: This type of cloud computing conveys software applications over the internet, on demand, and generally on a subscription basis. It also includes AWS Infra services like Amazon Workspaces.

7) Explain AWS Snowball.

Answer: AWS Snowball is AWS's petabyte-scale data transport solution that uses secure appliances to transfer large amounts of data into and out of AWS. Snowball devices are rugged, mobile, and physically ship terabytes of data through appliance storage. After the data has been transferred, the subject device is returned to AWS wherefrom the data of

the device is then migrated to the AWS cloud. Due to its scalability, this service can be used in the migration of huge amounts of data and edge computing.

8) Explain Load Balancing.

This is a mechanism load balancing is used to distribute every other network traffic that reaches an application such as no server becomes overloaded. In AWS, Elastic Load Balancing is a service that aids in distributing incoming application traffic across targets such as EC2 instances, containers, IP addresses, and can be in one or more Availability Zones. It helps to make the system more fault-tolerant, and this helps make it highly available in reality.

9) What is Auto Scaling?

The AWS service that describes the matter of automatically scaling the number of EC2 instances in the group is Auto Scaling. Auto Scaling allows the user to always maintain the correct number of instances relative to the demand on an application. It enables the automatic scaling up or down, based on the policies set for it, so the system avoids unneeded response time and keeps the operational costs in control.

10) What is the AWS Lambda Service?

Answer: AWS Lambda is a service for developers. Easy to run code in the cloud without thinking about the underlying infrastructure. With Lambda, you can write code in response to new data changes or user requests. It is charged based on the use's run duration. More importantly, the lambda function is on an on-demand basis, so it will always use only the resources needed depending on the requests that have been made, making it cost-optimal and cost-effective.