**Weekly test – August 8th based on AWS**

**1.What is AWS?**

**Answer:** AWS (Amazon Web Services) is one of the most common and vast cloud structures that offers users various services, such as computing capabilities, storage, networking, and others, through the internet – the cloud. It enables business and developers to host applications, data, and use complex technologies without having or investing in physical infrastructures.

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

**Answer:** AWS is a cloud based computing platform, which makes it easier for individuals, organizations or governments to operate application and services across the world with no investment. Its significance in the context of cloud computing lies in the fact that it provides companies with very flexible, versatile and cost-effective solutions for many of their IT needs and demands. The AWS environment is global that enables organizations to deploy resources in a particular region and availability zones for accessibility.

3. **Explain the key components of AWS architecture.**

**Answer: Regions and Availability Zones (AZs):** Regions: AWS has grouped data centers and related facilities in the various part of the world in to geographical areas called Regions, which contains one or many Zones. These AZs are arranged in a way that will minimally impact others in matters concerning fault tolerance and availability were there to be an issue.   
**Elastic Compute Cloud (EC2)**: Provides scalable computing capacity in the cloud, allowing users to run virtual servers.  
**Simple Storage Service (S3):** Object storage service for storing and retrieving any amount of data from anywhere on the web.  
**Virtual Private Cloud (VPC):** The feature will enable the clients to set up a secure place in AWS to confine the resources within a virtual network/verse.   
**Identity and Access Management (IAM):** A service that can be used to regulate the access rights of the AWS resources to users, groups, and roles safely.

**4. Discuss services like EC2, S3, RDS, and IAM.**

**Answer: EC2 (Elastic Compute Cloud):** A web service that provides resizable compute capacity in the cloud, making it easy to scale up or down as needed.

**S3 (Simple Storage Service):** A highly durable and scalable object storage service that allows users to store and retrieve data from anywhere on the web.

**RDS (Relational Database Service):** A managed database service that supports multiple database engines such as MySQL, PostgreSQL, and SQL Server, making it easier to set up, operate, and scale relational databases.

**IAM (Identity and Access Management):** A service that helps control access to AWS resources, enabling users to manage permissions for users, groups, and roles securely.

5. **What are the benefits of using cloud computing with AWS?**

**Answer: 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.

6. **How does AWS pricing work?**

**Answer:** 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. AWS also has a reserved instance that give users particular discounts in case they are willing to use particular resource for a longer duration.

7. **Explain the pay-as-you-go model, reserved instances, and free tier.**

**Answer: 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.

8. **Explain cloud computing models.**

**Answer**: **IaaS (Infrastructure as a Service):** Offers virtualized computing resources over the internet. On-Demand: Users can rent IT infrastructure (servers, storage, networking), for example, AWS EC2.

**Platform as a Service (PaaS):** A platform that is provided for customers to develop, launch and maintain applications without burdening themselves with the structural infrastructure layer- AWS Elastic Beanstalk.

**SaaS (Software as a Service):** This type of cloud computing delivers software applications over the internet, on demand and typically on a subscription basis. This includes AWS Infra services like Amazon Workspaces.

9. **Explain AWS Snowball.**

**Answer:** AWS Snowball is a data transport solution allowing to securely move petabytes of data into and out of AWS. Snowball devices are robust, mobile and it is physically shipped terabytes of data using storage appliance. After transferring the data, the concerned device is returned to AWS where the data is then transferred to the AWS cloud. Due to its scalability, this service can be used for the migration of large quantities of data as well as edge computing.

10. **Explain Load Balancing.**

**Answer:** Load balancing is a mechanism employed to every other network traffic that reaches an application in such a way that no server gets overloaded. In AWS, Elastic Load Balancing (ELB) is a service which helps in distributing the incoming application traffic across targets like EC2 instances, containers and IP addresses and can be in one or more Availability Zones. This helps in making the system more fault tolerant and this in fact makes it highly available.

11. **Explain Auto Scaling.**

**Answer:** Auto Scaling is the AWS service that describes the matter of automatically scaling the number of EC2 instances in the group. Auto Scaling allows you maintain adequate number of instances with respect to the incoming traffic for your application. It allows automatic scale-up or scale-down depending on the policies that you set for it, which is useful for keeping the system responsive while controlling the expenses.

12. **Explain AWS Lambda Service.**

**Answer:** AWS Lambda is a service that make it easier for developers to run their code in the cloud without having to worry about the underlying infrastructure. In Lambda you can write code that runs when triggered by data changes or user requests and is charged based on use duration. Lambda functions operate on demand, which means that it will always only use the necessary resources based on the number of requests made resulting in optimal and cost-effective utilization.