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CIA - I Examination - April/May/Nov/Dec 2025

Register No.: 212222240048

Branch & Sem.: AIML / VI (4)

Date: 8/4/25

Sign of the Invigilator: *[Signature]*

Subject Code & Subject Name : 19AIE541 - Cloud Computing

Questions

- 6A) Explain the concept of IP addressing and subnetting.
- ii) Describe the principles of virtualization and its key benefits.

7A) Explain Amazon S3, including its benefits, key operations, and how it can be used for hosting static websites.

8A) Implement IAM by explaining the process of managing users and groups, including the necessary steps.

Answers

6A)

i) IP Addressing:-

* IP address stands for Internet Protocol addressing which is a set of numbers separated by dots. This number is given for the devices as their identity.

* The two main purposes of IP address are the network ID and Host ID.

* IPv4 is the old version of IP address which is 32 bits of 4 octets and 8 bits each.

* Example: 192.168.0.1

* IPv6 is the new version of IP address which consists of 128 bits of 8 octets and 16 bits each.

Subnetting:-

* Subnetting is a process of dividing a larger network into small logical networks.

* Subnetting improves the IP address management and network stability.



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* Subnetting uses the a/b/c mask it's called subnet mask. For example: If you have a channel C network 192.168.0.1 with subnet mask 255.255.255.0. If you change the subnet to 255.255.255.192 then you divide the address by 4.

ii) Virtualization:

* Virtualization is a process of making virtual version of something like operating system, server, storage and network.

* It uses hypervisors (Virtual Machine Monitors) which create and manage the Virtual Machines.

* Virtual Machine acts like a physical machine with some permissions and restriction.

* Types of Virtualization:

- Server Virtualization.
- Storage Virtualization
- Network Virtualization
- Desktop Virtualization.

Server Virtualization:

* Server Virtualization divides the main large server into smaller servers so that almost every sub-server is able to be utilised efficiently.

Storage Virtualization:

* Storage Virtualization combines multiple storage devices into one which leads to managing of larger data.

Network Virtualization:

* Network Virtualization is same as the server virtualization as it can divide a single network into multiple and also can combine multiple networks into one.

Desktop Virtualization:

* Desktop Virtualization allows the user to access their desktop environment from anywhere.



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Key Benefits of Virtualization:

* Availability is one of the key benefits of virtualization which allows the user to access the virtual version easily.

* It is not needed to store a virtual version physically.

* And it is very durable.

2. Amazon S3 :

* S3 stands for Simple Storage Service which is provided by AWS.

* S3 can be used for various purposes including hosting a static website.

* And the main purpose is storage.

Benefits:

* Scalability: As the size of data increases the storage size increases by itself.

* Durability: Amazon S3 is 99.9 percent durable and secured.

* Security: No other user can access your storage until you permit.

* Faster: S3 is faster in both importing and transferring data.

Key Operations:

i) Create Bucket: The first step is to create a bucket and name it.

ii) Then upload the necessary files.

iii) Set permission for the resources, users and etc.

iv) Enable static web hosting in the bucket properties.



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v) ~~Host~~ Upload the error and index documents.

vi) Host your website by clicking the host button.

Hosting a static Website:

i) Firstly create a bucket with name matching your domain name.

ii) Then upload the web files, (for example: index.html, style.css).

iii) Enable the static web hosting in the bucket properties.

iv) Upload the error documents, (for example: error.html.)

v) Now you can host your static website in AWS S3.

8A) Amazon IAM:

* An user who is bang an IAM user can manage and access various phenomenon such as:

- * Users
- * Groups
- * Roles
- * Permissions

Steps to Implement IAM:-

Step 1: Login

* Login or sign in to the Amazon Web Service console, as an IAM or Root user.

Step 2: Create User:

* Go to dashboard in the console

* Click user and then create user.

* Name the user.

* Choose the type of user.

→ Programmatic user (CLI, SDK)

→ Inline user (for web UI)



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* Click next to set permission.

Step 3: Create Group:

* Go to groups and click "create group".

* Name the group as (for ex: Admins, Developers, S3 Read only).

* Now you have created the group

Step 4: Set Permissions:

* You can set permission according to your requirements to the user and to the resources.

* For example: there are different permissions such as:

* Action

* Resources

* Effect.

Step 5: Set MFA

- * Enabling MFA which is multi factor authentication is an optional but always recommended.

Step 6: Final:

- * Finally review all the settings

- * Click "create user" and now that you have implemented the IAM.