PRACTICAL TEST CASES

PRACTICAL TEST 1 :

Your company is preparing to launch a new internal web-based tool that will be accessed by approximately 200 employees concurrently. To ensure high availability, low latency, and scalability, you are tasked with creating a Virtual Machine (VM) on Google Cloud.

Tasks:

- Choose an appropriate machine type (consider CPU and memory requirements).
- Select a suitable operating system image.
- Ensure the VM is deployed in a reliable region and zone.
- Configure firewall rules to allow HTTP/HTTPS access.
- Enable automatic restart to improve availability.

Describe the complete steps you would follow to create, configure, and secure this VM.

PRACTICAL TEST 2 :

You need to deploy multiple identical Virtual Machine (VM) instances behind a load balancer to handle incoming web traffic efficiently and ensure scaling based on demand.

Tasks:

- Create an instance template with a standard VM configuration (including startup scripts if necessary).
- Deploy a managed instance group using the instance template.
- Configure the group to automatically scale based on CPU utilization.
- Set up a basic HTTP load balancer to distribute traffic across instances.

Explain the steps to create the instance template and managed instance group, including how you would configure autoscaling policies and load balancing.

PRACTICAL TEST 3 :

Your web application allows users to upload images, and you are tasked with creating a secure Cloud Storage bucket for storing these images.

Requirements:

- Create the bucket in the us-central1 region.
- Only the web application service account should have read and write permissions.
- Public access must be disabled.

Tasks:

- Using Google Cloud Console: Describe step-by-step how to create the bucket and configure the permissions.
- Using the gsutil CLI tool: Provide the exact commands to create the bucket, set the storage class and region, and apply the necessary IAM permissions.

PRACTICAL TEST 4 :

A backend developer from your team needs a MySQL database hosted on Google Cloud for a production-grade application. You must set up a Cloud SQL instance and grant secure access to the application server.

Tasks:

- Create a new Cloud SQL instance with MySQL.
- Set an appropriate database version, instance size, and storage settings.
- Configure authorized networks securely (restricting access to the app server's IP or VPC network).
- Create a database user and database schema.
- Explain how to securely store database credentials for the application (e.g., using Secret Manager).

Describe each step involved in setting up the instance, configuring access, and ensuring database security.

PRACTICAL TEST 5 :

Your team is building a highly secure application that must only communicate internally within Google Cloud. No external internet access should be allowed for VMs or other resources.

Tasks:

- Create a custom VPC network with a custom subnet in the us-central1 region.
- Ensure internal IP addresses are allocated (private communication only).
- Disable external IP addresses for all VMs.
- Set up appropriate firewall rules to allow internal traffic but block internet access.
- (Optional) Use Private Google Access if VMs need to reach Google APIs internally without internet exposure.

Explain the step-by-step process of designing and implementing this VPC network to meet the security requirements.