**LINUX**

**1. Read about Linux in general (architecture, directories, distributions, etc.).**

Linux is an open-source operating system based on Unix. It has a kernel that manages hardware, a file system with directories like /bin, /etc, /home, and comes in different distributions such as Ubuntu, CentOS, and Red Hat.

**SQL**

**1. Read about SQL/PLSQL and DML, DDL, and DCL.**

SQL is a language to manage databases.

- DML (Data Manipulation Language) handles data: SELECT, INSERT, UPDATE, DELETE.

- DDL (Data Definition Language) defines structure: CREATE, ALTER, DROP.

- DCL (Data Control Language) manages permissions: GRANT, REVOKE.

PL/SQL is Oracle's procedural extension of SQL.

**2. What are the different types of JOINs?**

- INNER JOIN: returns matching rows from both tables.

- LEFT JOIN: returns all rows from left table + matching from right.

- RIGHT JOIN: returns all rows from right table + matching from left.

- FULL OUTER JOIN: returns all rows from both tables with matches where available.

- CROSS JOIN: returns all combinations of rows from both tables.

**3. What is RDBMS and NoSQL? Also, read about:**

- RDBMS: Relational Database Management System; stores data in tables with structured schema (e.g., MySQL, Oracle).

- NoSQL: Non-relational databases; stores unstructured or flexible data (e.g., MongoDB, Cassandra).

Other concepts:

- Aggregation functions: SUM, COUNT, AVG, MAX, MIN.

- Date and string functions: DATE\_FORMAT, CONCAT, SUBSTRING, NOW().

- Constraints: rules on data (PRIMARY KEY, FOREIGN KEY, UNIQUE, CHECK, NOT NULL).

- Indexes: improve query speed on columns.

**TOMCAT**

**1. In your own words, explain what JVM means.**

JVM (Java Virtual Machine) runs Java programs by converting bytecode into machine code the computer can execute.

**2. In your own words, explain what an application server is.**

An application server provides an environment to run web applications and manages requests, sessions, and business logic.

**3. In your own words, explain what a WAR file is, how Tomcat handles it, and where it should be deployed.**

A WAR (Web Application Archive) file is a packaged web application. Tomcat deploys it by extracting it into a folder inside the 'webapps' directory so it can run.

**ADDITIONAL EXERCISES**

**Docker**

**1. Read about Docker: what it is, use cases, and basic commands.**

Docker is a tool that packages applications into containers. Containers run the same on any system. Common commands: docker build, docker run, docker ps.

**Kubernetes**

**1. What is Kubernetes?**

Kubernetes is a system to manage containerized applications, automating deployment, scaling, and maintenance.

**2. Explain the purpose of master and worker nodes, and how to identify whether a node is master or worker.**

Master nodes manage the cluster (scheduling and control), worker nodes run the applications. You can identify roles using `kubectl get nodes`.

**Version Control (GitHub/GitLab):**

**3. Read about common Git commands.**

Git is a version control system. Common commands: git init, git add, git commit, git push, git pull, git clone.