Marks

Full Name (in Block Letter): _____

ID: _____ **Section:** ____ **Signature:** _____

Date: _____ **Total Marks: 10** **Time: 15 Minutes**

Question 1 [CO1]: Select if the following tasks will require **DDL**(Data Definition Language) or **DML**(Data Manipulation Language) and **Explain** your answer briefly**:**

[2 X 2 = 4]

a. In a PostgreSQL database for an e-commerce platform, you are assigned to modify the datatype of the "price" column in the "Products" table from integer to a floating-point number.

b. In the same PostgreSQL database for an e-commerce platform, you aim to give all employees a 20% salary increase (a utopian scenario!, but trust me life is harder 🙂). Express the nature of this task, specifying whether it requires DDL or DML, and provide a brief justification for your choice.

Question 2 [CO1]:

There are **two types** of data independence in database management systems: **Logical Data Independence**, and **Physical Data Independence**. Given the scenario below, identify what type of data independence it is and Explain your answer.

[2 X 1.5 = 3]

a. In a university management database, the institution has mandated the recording of database access activities in a table named "DB_log." However, the content of this newly created "DB_log" table is visible in the front end or user interface..

b. In the same university management database, the organization has chosen to enhance the efficiency of responding to user queries by implementing an index on the "student_ID" field within the "Student" table.

Question 3 [CO1]: In a hotel reservation system, three receptionists are responsible for updating room availability. Currently, the available rooms are 20. Receptionist X intends to add 5 rooms to the availability, while Receptionist Y and Z want to reduce the availability by 18 and 6 rooms respectively. The requests are processed almost simultaneously. If the system uses a file-based approach, explain the potential anomalies and issues that could occur during these room availability updates. Provide a mathematical description of how the file-based approach might lead to incorrect room availability, and discuss how a database approach, with its mechanisms for ensuring data consistency and integrity, would handle this problem to maintain accurate room availability. **[1 X 3 = 3]**