Here are clear and concise answers for your DBMS viva questions:

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1. What is Normalization?

Normalization is the process of organizing data in a database to eliminate data redundancy (duplicate data) and ensure data integrity.
It involves dividing large tables into smaller, related tables and defining relationships between them.

👉 Objective:

Reduce data redundancy

Improve data consistency

Ensure efficient data storage

Example:
A table storing customer orders with customer info repeated can be split into Customers and Orders tables with a relationship via Customer_ID.

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2. What is Anomaly?

An Anomaly is an error or inconsistency that occurs when inserting, updating, or deleting data in an unnormalized table.

There are 3 types of anomalies:

Insertion Anomaly: Inability to insert data due to absence of other data.

Update Anomaly: Same data stored in multiple places needs to be updated in all.

Deletion Anomaly: Deleting data accidentally removes important related data.

Example:
In an unnormalized student-course table, deleting a course could also remove student info.

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3. Define Trigger and Write the Syntax

A Trigger is a stored procedure that automatically executes in response to certain events on a table (like INSERT, UPDATE, or DELETE).

Syntax:

```
CREATE TRIGGER trigger_name
BEFORE | AFTER INSERT | UPDATE | DELETE
ON table_name
FOR EACH ROW
BEGIN
  -- trigger logic
END;
```

Example:

```
CREATE TRIGGER log_update
AFTER UPDATE ON students
FOR EACH ROW
BEGIN
  INSERT INTO log_table VALUES (NEW.id, CURRENT_TIMESTAMP);
END;
```

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4. What is a Transaction?

A Transaction is a sequence of one or more SQL operations that are executed as a single unit of work.

It must satisfy ACID properties:

Atomicity – All or none of the operations happen

Consistency – Database remains in a valid state

Isolation – Concurrent transactions don’t interfere

Durability – Once committed, changes are permanent

Example: Money transfer from one account to another (debit + credit) is a transaction.

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5. Write the States of a Transaction

A transaction goes through the following 5 states:

State Meaning

Active: The transaction is currently executing
.
Partially Committed: The final statement has been executed, but not yet committed.

Committed: All operations are successful and changes are saved.

Failed: An error has occurred; transaction can’t proceed.

Aborted: Transaction has been rolled back (undone).

Let me know if you need a printable version or diagram for these answers!