
20 Multi-Statement Tricky Questions (Database Unit – ICT A/L)

Q1. Relational Database Concepts

Which of the following statements are true about relational databases?

1. A tuple is the same as a row in a table.
2. A relation must always have a primary key.
3. Attributes can have duplicate names within the same table.
4. A domain defines the possible values for an attribute.

Q2. Primary & Foreign Keys

1. A primary key can have NULL values.
2. Foreign keys establish relationships between tables.
3. A table can have multiple candidate keys but only one primary key.
4. Composite keys are created using more than one attribute.

Q3. DBMS vs File System

1. A DBMS reduces data redundancy compared to file systems.
2. File systems support concurrency better than DBMS.
3. DBMS ensures data integrity through constraints.
4. File systems allow easier enforcement of relationships among data.

Q4. Normalization

1. 1NF eliminates partial dependency.
2. 2NF ensures no multivalued attributes.
3. 3NF removes transitive dependency.
4. Denormalization sometimes improves query performance.

Q5. SQL – Data Definition Language (DDL)

1. `CREATE TABLE` is a DDL command.
2. `ALTER TABLE` modifies the structure of a table.
3. DDL commands are automatically committed in most DBMS.
4. DDL commands are reversible using `ROLLBACK`.

Q6. SQL – Data Manipulation Language (DML)

1. `INSERT, UPDATE, DELETE` are DML commands.
2. DML commands affect the structure of the database.
3. DML changes can be rolled back.
4. `SELECT` is sometimes classified as DML.

Q7. Transaction Management

1. A transaction must follow ACID properties.
2. Atomicity means a transaction is completed fully or not at all.
3. Durability ensures changes remain even after system failure.
4. Consistency ensures only authorized users access the database.

Q8. ER Model

1. An entity represents a real-world object.
2. Attributes describe properties of entities.
3. Relationships connect entities.
4. A weak entity always has its own primary key.

Q9. Data Integrity Constraints

1. Entity integrity ensures no primary key attribute is NULL.
2. Referential integrity ensures that a foreign key value must match an existing primary key value.
3. Domain integrity ensures values must fall within a predefined set.
4. Integrity constraints are enforced only during database creation.

Q10. Indexing

1. Indexing improves data retrieval speed.
2. Indexes slow down **INSERT** and **DELETE** operations.
3. A primary key automatically creates a clustered index.
4. Secondary indexes cannot be created by the user.

Q11. DBMS Advantages

1. Provides security for data.
2. Allows concurrent access by multiple users.

- 3. Increases uncontrolled redundancy.
- 4. Provides backup and recovery facilities.

Q12. Data Models

- 1. The hierarchical model organizes data as records in a tree structure.
- 2. The network model uses parent-child relationships.
- 3. The relational model uses tables.
- 4. Conceptual models are independent of physical storage.

Q13. SQL Constraints

- 1. **NOT NULL** ensures a column must always have a value.
- 2. **UNIQUE** allows NULL values.
- 3. **CHECK** is used to restrict values in a column.
- 4. **DEFAULT** provides an automatic value when none is supplied.

Q14. Views in SQL

- 1. A view is a virtual table.
- 2. Views do not store data physically.
- 3. Views can be used to restrict access to sensitive data.
- 4. Views always allow **INSERT** and **DELETE** operations.

Q15. Joins

1. INNER JOIN returns rows with matching values in both tables.
2. LEFT JOIN returns all rows from the left table and matching rows from the right.
3. RIGHT JOIN returns rows common to both tables only.
4. FULL OUTER JOIN returns all rows when there is a match in one of the tables.

Q16. Data Independence

1. Logical data independence protects applications from changes in storage structures.
2. Physical data independence protects applications from changes in logical schema.
3. Both logical and physical independence are features of DBMS.
4. Without data independence, every schema change affects applications.

Q17. Deadlocks in DBMS

1. Deadlock occurs when two transactions wait indefinitely for resources.
2. Deadlocks can be prevented using timeout-based methods.
3. Starvation and deadlock are the same.
4. Recovery from deadlock may involve rolling back transactions.

Q18. Data Warehousing vs OLTP

1. OLTP systems are optimized for transaction processing.
2. Data warehouses are optimized for analytical queries.
3. OLTP uses historical data for analysis.
4. Data warehouses usually contain denormalized data.

Q19. Backup & Recovery

1. Full backup copies the entire database.
2. Incremental backup copies only the changes since the last backup.
3. Recovery techniques ensure data is available after failure.
4. Backups eliminate the need for recovery.

Q20. Cloud Databases

1. Cloud databases provide scalability and elasticity.
2. Data in the cloud can only be accessed from a single location.
3. Cloud DBMS reduces the need for local hardware resources.
4. Security is a major concern in cloud databases.
