

Section A

Q.-1. Answer the following. (Attempt any three) (30)

- (1) Explain the concept of Functional Dependency and the process of finding Candidate Keys using closure sets.
- (2) Describe the Oracle System Global Area (SGA) and its mandatory components like the Shared Pool and Database Buffer Cache.
- (3) Discuss the various SQL Joins (Inner, Left Outer, Right Outer, and Self Join) with diagrams and examples.
- (4) Explain the fundamental PL/SQL Block Structure, including Declaration, Executable, and Exception sections.
- (5) Discuss Exception Handling in PL/SQL, differentiating between Predefined and User-defined exceptions.

Section B

Q.-2. Write short notes on any four of the following topics. (20)

- (1) Identify the five major components of a database system environment.
- (2) Briefly explain the characteristics of the Hierarchical Data Model.
- (3) List the eight characteristics of a relational table.
- (4) Define Armstrong's Axioms (Reflexive, Augmentation, and Transitivity rules).
- (5) Briefly explain the role of a Database Administrator (DBA).
- (6) Discuss the functions SQLCODE and SQLERRM in exception handling.

Section C

Q.-3. Multiple Choice Questions. (10)

(1) What acts as an intermediary between users and the database by interpreting requests and fetching information?

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|---------------------|--------------------|
| A) Operating System | B) DBMS |
| C) Hardware | D) Data Dictionary |

(2) In which level of the three-level DBMS architecture are user views defined?

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|-------------------|---------------------|
| A) Internal Level | B) Conceptual Level |
| C) External Level | D) Physical Level |

(3) The ability to change the internal level without changing the conceptual level is known as:

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|------------------------------|-------------------------------|
| A) Logical Data Independence | B) Physical Data Independence |
| C) Data Abstraction | D) Mapping |

(4) The relational data model was originally commenced by:

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|--------------------|----------------------|
| A) Peter Chen | B) Dr. E.F. Codd |
| C) Charles Bachman | D) William Armstrong |

(5) Which key is described as a minimal (irreducible) superkey?

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|----------------|------------------|
| A) Primary key | B) Candidate key |
| C) Foreign key | D) Secondary key |

(6) Which physical database files are critical to the database and used to synchronize all database activities?

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|-------------------|-------------------|
| A) Redo Log Files | B) Data Files |
| C) Control Files | D) Password Files |

(7) An "Online Backup" (Hot backup) can only be performed if the database is in which mode?

- A) NOARCHIVELOG
- B) SHUTDOWN
- C) ARCHIVELOG
- D) MOUNT

(8) In the LIKE operator, which character is used to match exactly one single character?

- A) %
- B) *
- C) _
- D) #

(9) Which operator is used for variable assignment in PL/SQL?

- A) =
- B) ==
- C) :=
- D) =>

(10) Which cursor attribute returns TRUE if the most recent DML operation affected at least one row?

- A) %ISOPEN
- B) %NOTFOUND
- C) %FOUND
- D) %ROWCOUNT

Section D

Q.-4. State whether the following statements are true or false. (10)

- (1) The Conceptual Level of the three-level DBMS architecture deals with the physical representation of data on the computer.
- (2) The Network data model was created to represent complex data relationships more effectively than the hierarchical model.
- (3) In an ER diagram, an entity set is represented by a rectangle.
- (4) A relation is in 1NF if it contains multi-valued attributes in its columns.
- (5) The System Global Area (SGA) is a memory structure private to each individual server process.
- (6) In a homogeneous distributed database system, at least one of the databases is not an Oracle Database.
- (7) An Online Backup (Hot backup) can be performed even if the database is in NOARCHIVELOG mode.
- (8) The TRUNCATE command is classified as a Data Definition Language (DDL) statement.
- (9) A Database Role can be granted to other roles, but it cannot be granted circularly.
- (10) Implicit Cursors are automatically opened by Oracle for every DML command and single-row query.