MASTER OF COMPUTER APPLICATION
Second Semester
DATABASE MANAGEMENT SYSTEM
(MCA-06)

Duration: 3Hrs.   **Full Marks: 70**

(PART-B: Descriptive)

Duration: 2 hrs. 40 mins.   **Marks: 50**

1. Answer the following questions: (any five)   **2×5=10**

a) What is database? Give two examples of DBMS.

b) Describe few disadvantages of databases.

c) Define data independence. Describe its types.

d) Explain the integrity rules.

e) What is the difference between TRUNCATE and DELETE.

f) Explain the difference between Third Normal Form and BCNF.

g) Describe basic DML statements in SQL.

2. Answer the following questions: (any five)   **3×5=15**

a) Write the query/queries to create one user who can connect to oracle and can create tables.

b) Discuss the database anomalies that can increase the size of data files.

c) What is relational algebra? Explain the division operation.

d) What is normalization? Explain the 1st and 2nd Normal Form using example.

e) What should be the characteristics of a good conceptual schema design?

f) Explain the Non-Loss Decomposition using suitable example.

g) What is Query Processing? What are the basic steps involved in Query Processing?

3. Answer the following questions: (any five)   5×5=25

a) What is database administrator? Explain its responsibilities.

b) Explain three level architecture of database.

c) Explain the external sort-merge algorithm using suitable example.

d) Explain different constraints in SQL with example.

e) Explain any five types of failures for which recovery is needed.

f) What is a Transaction? Explain the features of a database transaction.

g) Explain the Lost Update Problem with example.

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(The figures in the margin indicate full marks for the questions)

Duration: 20 minutes   **Marks – 20**

(PART A- Objective)

Choose (✓) the correct response(s) in each of the multiple choice questions:

1. The relational database model:
    a) Was first proposed by Dr. E.F. Codd.
    b) Is difficult to understand and use.
    c) Is not a record based model.
    d) None of above.

2. Currently available RDBMS include:
    a) Oracle Database 11g Release 2.
    b) Microsoft SQL Server 2012.
    c) Both a) and b).
    d) Only a).

3. Examples of physical changes possible for physical data independence are:
    a) Moving a database file from one device/directory to another.
    b) Splitting or combining database data files.
    c) Both a) and b).
    d) Neither a) nor b).

4. Examples of entity are:
    a) A customer's name.
    b) A customer.
    c) Both a) and b).
    d) Neither a) nor b).

5. An entity in the conceptual design becomes which object in the logical design?
    a) View.
    b) Table.
    c) Column.
    d) Index.

6. An Outer Join is an extension of:
   a) Cross join.
   b) Natural join.
   c) Inner join.
   d) None of the above.

7. To change the state of database to last savepoint, we use:
   a) DCL.
   b) DML.
   c) DDL.
   d) TCL.

8. The COUNT function will return which value for the collection {1, _, 1, 4, _, 6}?
   a) 15.
   b) 4.
   c) 6.
   d) 5.

9. Normalization takes place during:
   a) Physical design.
   b) Implementation and rollout.
   c) Construction.
   d) Logical design.

10. NOT NULL constraints:
    a) Are required on primary key columns.
    b) Prevents inserts from omitting mandatory columns.
    c) Allow columns to be set to null values.
    d) Are required on unique identifier columns.

11. CREATE SESSION provides the ability to:
    a) Connect to the database.
    b) Create tables in your own schema.
    c) Create tables in any user's schema.
    d) Create new users in the database.

12. Third Normal Form resolves anomalies caused by:
    a) Transitive dependencies.
    b) Multivalued attributes.
    c) Repeating groups.
    d) Join dependencies.

13. The letter A in the acronym ACID stands for:
    a) Automated.
    b) Abbreviated.
    c) Analog.
    d) Atomicity.

14. Degree of a relation means:
    a) The number of columns in the relation.
    b) The number of rows in the relation.
    c) Both a) and b).
    d) Neither a) nor b).

15. The _____ is an optimistic concurrency-control:
    a) Validation scheme.
    b) Timestamp-Ordering protocol.
    c) Two phase locking protocol.
    d) All of above.

16. An SQL DELETE statement without a WHERE clause causes:
    a) An error message.
    b) Every row in the table being deleted.
    c) Every column in the table being deleted.
    d) A Cartesian product.

17. The DBA-privileged commands include commands for:
    a) Account creation.
    b) Security level assignment.
    c) Both a) and b).
    d) Neither a) nor b).

18. The size of a data item is called:
    a) Field size.
    b) Granularity.
    c) Data type.
    d) Process size.

19. A weak entity:
    a) Does not have primary key.
    b) Has candidate key.
    c) Has alternate key.
    d) Can exist by itself.

20. SQL is a:
    a) Procedural language.
    b) Non procedural language.
    c) Object oriented programming language.
    d) Low level language.

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