BRAINWARE UNIVERSITY

Term End Examination 2024-2025
Programme – MCA-2024
Course Name – Database Management System
Course Code - MCA17105 (T)
(Semester I)

Full Marks : 40 **Time : 2:0 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A
(Multiple Choice Type Question)

1. *Choose the correct alternative from the following :* 1 x 10=10

(i) A primary key is used to _____.
a) uniquely identify a record in a table
b) link two tables together
c) store large text data
d) store encrypted data

(ii) What type of database organizes data in a tree-like structure?
a) Hierarchical
b) Relational
c) Network
d) Object-oriented

(iii) Contrast between a WHERE clause and a HAVING clause in SQL.
a) WHERE filters rows before grouping, while HAVING filters groups after grouping
b) WHERE filters groups before grouping, while HAVING filters rows after grouping
c) Both filter rows
d) Both filter groups

(iv) Outline the role of a database administrator (DBA).
a) Designing databases
b) Managing database security
c) Ensuring data integrity
d) All of these

(v) Outline the different types of constraints used in database design.
a) NOT NULL
b) UNIQUE
c) CHECK
d) All of these

(vi) Identify potential bottlenecks to optimize the performance of a frequently executed query.
a) Analyze the query execution plan.
b) Check the database indexes.
c) Monitor system resources.
d) All of these

(vii) Utilize a method to ensure data integrity and prevent duplicate entries in a specific column.
a) Create a unique constraint on the column.
b) Create a primary key on the column.
c) Create a foreign key on the column.
d) None of these

(viii) Compare the situations in which a hierarchical data model would be more suitable than a relational data model.

a) When you need to represent hierarchical relationships between data.
b) When you need to store large amounts of unstructured data.
c) When you need to perform complex queries.
d) When you need to enforce data integrity.

(ix) Determine the most effective optimization strategy for Improving the performance of a slow-running database query.

a) Compare different optimization techniques.
b) Measure the impact of each optimization on query performance.
c) Evaluate the trade-offs between performance and cost.
d) All of these.

(x) Evaluate the effectiveness of your database security measures for a healthcare application in protecting patient data.

a) Conduct vulnerability assessments.
b) Monitor database activity for suspicious behavior.
c) Implement regular security audits.
d) All of these.

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Determine the three layer abstraction of DBMS and explain briefly . (3)
3. How does normalization help to reduce redundancy in databases? (3)
4. Interpret the work of views in databases. (3)
5. Develop nested transactions in PL/SQL to ensure partial rollback in case of failure. (3)
6. Classify the difference between simple and composite attributes. (3)

OR

List the disadvantages of DBMS. (3)

Group-C

(Long Answer Type Questions) 5 x 3=15

7. Explain tuple , attribute, relation tuple variable and Domain. (5)
8. Compare static hashing and dynamic hashing. (5)
9. Simplify SELECT and PROJECT operation. (5)

OR

Simplify Boyce-Codd normal form, Associate and state why BCNF stricter than 3NF. (5)

****