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BRAINWARE UNIVERSITY

Term End Examination 2025-2026
Programme – B.Tech.(CSE)-2024/B.Tech.(CSE)-AIML-2024/B.Tech.(CSE)-AIR-2024/B.Tech.(CSE)-CYS-2024
Course Name – Database Management Systems
Course Code - BTS30102/BTA30102/BTR30102/BTY30102
(Semester III)

Full Marks : 60 **Time : 2:30 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 x 15=15

1. *Choose the correct alternative from the following :*

(i) Identify the levels of data abstraction in a database system.
a) Logical, Interface, Kernel b) Logical, View, Physical
c) Internal, View, Application d) Interface, Physical, Schema

(ii) Select the SQL statement for deleting records.
a) DROP b) DELETE
c) ERASE d) REMOVE

(iii) Name the type of integrity ensuring no duplicate entries.
a) Foreign key b) Check constraint
c) Primary key d) Unique key

(iv) Compare relational and network models.
a) Relational uses arrays b) Network uses tables
c) Relational uses tables, network uses links d) Network has fewer constraints

(v) Describe the function of Cartesian Product in query expressions.
a) Filters columns b) Combines all tuples
c) Matches by key d) Retrieves top rows

(vi) Determine the purpose of renaming in relational algebra.
a) Normalize names b) Add metadata
c) Modify attribute names d) Eliminate nulls

(vii) Choose the method to preserve dependencies in normalization.
a) Decomposition b) Join
c) Projection d) Preservation

(viii) Recognize the clause that restricts results in SELECT queries.

a) ORDER
b) FILTER
c) WHERE
d) EXCEPT

(ix) Identify the full form of ACID.

a) Automatic, Consistent, Indexed, Durable
b) Atomicity, Consistency, Isolation, Durability
c) Access, Control, Integrity, Dependability
d) Allocation, Concurrency, Independence, Distribution

(x) Identify the technique ensuring data remains accessible after crashes.

a) Shadow paging
b) Record compression
c) Query expansion
d) Duplicate storage

(xi) Identify a technique preventing cascading aborts.

a) Two-phase commit
b) Deferred update
c) Immediate update
d) Shadow copy

(xii) Choose a benefit of concurrency control.

a) Increased I/O
b) Reduced storage
c) Higher throughput
d) Lesser indexing

(xiii) Explain the difference between strong and weak passwords in authentication.

a) Based on memory retention
b) Strong passwords are longer and complex
c) Weak passwords are required by systems
d) Weak passwords improve access speed

(xiv) Explain the principle behind least privilege access.

a) Gives full access to admins
b) Grants minimal access required to perform tasks
c) Blocks all user actions
d) Combines privileges for ease

(xv) Clarify the outcome of not using access control mechanisms.

a) Improved data analysis
b) Greater vulnerability to threats
c) Efficient query processing
d) Enhanced indexing

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Define Data Definition Language (DDL). (3)
3. Differentiate between 1NF and 2NF. (3)
4. Recall the difference between primary and secondary indexing. (3)
5. Illustrate the need for strong authentication methods in enterprise databases. (3)
6. Develop a mechanism to prevent SQL injection in the ETL process. (3)

OR

Compose a data mart layout for customer feedback analysis. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Compare and contrast relational and object-oriented data models. (5)
8. Describe various SQL3 features and their benefits in modern DBMS. (5)
9. Discuss various database recovery techniques with examples. (5)
10. Analyze the role of serializability in ensuring correctness of schedules. (5)
11. Analyze a real-world case where access control failure led to data leakage. (5)
12. Design a dashboard for warehouse-based decision support. (5)

OR

Build a defense framework to detect and block SQL injection attempts. (5)

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