Question Bank

DATABASE MANAGEMENT SYSTEM (DBMS)

BCA II - Paper code 202

Session 2023-24

Question Paper pattern for Main University Examination Max Marks: 100

Part—1 (very short answer) consists 10 questions of two marks each with two questions from each unit Maximum limit for each question is up to 40 words

Part — 11 (short answer) consists questions of four marks each with one question from each unit, Maximum limit for each question is up to 80 words.

Part — III (Long answer) consists questions of twelve marks each with one question from each unit with internal) choice.

UNIT-1

Database System Concepts & Architecture: Overview of DBMS, Basic DBMS terminology, data base system vis file system, Advantages, and dis-advantages of DBMS. Coded rules, data independence. Architecture of a DBMS, Schemas, Instances. Database Languages, Database Administrator, Data Models.

1. What do you understand by DBMS? Explain it with a diagram?
2. Explain the history of DBMS?
3. What are the applications of DBMS
4. Why do we need DBMS
5. What do you understand by basic DBMS terminologies?
6. What is the difference between database system and file system?
7. What are the advantages and disadvantages of DBMS?
8. What is code rule? Explain it with example?
9. Define the term data independence
10. Explain the architecture of database management system -Level 1, Level 2 and Level 3
11. What do you understand by schema and instances? Explain it with example. Write the difference between both
12. What is DBMS language? Explain DCL, DML, DDL, TCL

13. Explain the Database administrator?
14. What is the role of database administrator?
15. Explain the term data model.
16. Explain the types of models with diagrams.

UNIT-II

*Data Modeling: Data modeling using the Entity Relationship Model: ER model concepts.
notation for ER diagram, mapping constraint, Keys, Concepts of Super Key, candidate key.
primary key, Generalization, aggregation Relational Model: Concepts, Constraints, Languages,
Relational database design by ER & EER mapping, Relational algebra relational calculus.
Relational Algebra. Fundamental operations of Relational Algebra.*

1. What is data modelling?
2. Explain the entity relationship model with diagram, giving a real example of entity and relationship.
3. Explain the types of entities, Entity set and entity type
4. Difference between strong entity and weak entity
5. Explain the types of relationship
6. Explain the following terms:
    i.   Notation of ER diagram
    ii.   Mapping constraints
7. What is a key? Explain 8 types of keys with an example.
8. What is generalization, aggregation, and specialization? State differences Explain it with the help of diagram and example
9. What is Relational Model
10. How do we map the ER model with relational Model
11. What are the strategies for schema design
12. Explain the Relational database design by ER & EER mapping
13. What is Relational algebra relational calculus
14. Explain the tuple relational Calculus (TRC) and Domain Relational Calculus (DRC)
15. What is relational algebra? Explain the following relational operators. {Explain with example
    i.   Select operators
    ii.   Project operators
    iii. Union operators
    iv.   Set intersection
    v.   Set difference
    vi.   Cartesian product
    vii. Rename operation

Unit 3

Database Design: Functional dependencies, loss less decomposition. Normalization 1NF, 2-NF, 3-NF, BCNF and 4NF. Transaction Management: Transactions: Concepts. ACID Properties. States of Transaction, Serializability, Isolation, Checkpoints. Deadlock Handling.

1. What is database design?
2. What is decomposition? Write the difference and explain loss less decomposition and loosy decomposition.
3. What is normalization? Explain the normal forms-- first normal form, second form, third normal form and BCNF normal form 4th NF , 5th NF . Explain all the normal forms with examples
4. Explain the term dependency preservation decomposition
5. What is the Inference rule
6. What is join dependency
7. What is Inclusion Dependency
8. Explain multivalued Dependency
9. What do understand by functional dependency
10. Explain what is transaction?
11. What are the Transaction Properties
12. Explain the transaction states?
13. What are ACID Properties
14. Explain DBMS schedule
15. What is serialization
16. Explain the types of serializability – Conflict and View
17. Explain the Isolation Property
18. What are checkpoints
19. Explain the Deadlock Handling mechanism
20. What do understand by security in terms of DBMS? Explain the following terms in reference of security
    i. Access control
    ii. Backup
    iii. Recovery
    iv. Maintenance
    v. Performance

UNIT- IV.

Introduction to SQL: Characteristics of SQL, Advantages of SQL. SQL data types and literals, Types of SQL commands, SQL operators and their procedure, Tables, views and indexes, Queries and sub queries, Aggregate functions, insert, update, and delete operations, Joins, Unions, Intersection, Minus in SQL.

1. Explain the Characteristics of SQL
2. What are the Advantages of SQL
3. Explain the SQL data types and literals
4. What are the types of SQL commands (Explain all specified in your practical file)
5. Explain the SQL operators and their procedure
6. What are Aggregate functions
7. Write the syntax of insert, update, and delete operations,
8. What are Joins?
9. Explain the types of joins with an example
10. What are Unions Explain with an example
11. What are Intersections Explain with an example
12. What are minus, Explain with an example
13. Explain the following with example
    a. Tables
    b. Views
    c. Indexes
    d. Queries
    e. Sub Queries

UNIT-V

Recovery System & Security: Failure Classifications, Recovery & Atomicity. Log Base Recovery, Recovery with Concurrent Transactions, Shadow Paging, Failure with Loss of Non-Volatile Storage, Introduction to Security & Authorization

1. Explain the Recoverability of Schedule
2. What are Failure Classifications
3. Explain the types of Failure Classification.
4. Explain the Recovery and Atomicity in DBMS
5. Explain the process of Log Base Recovery in DBMS
6. What do you understand by Recovery with Concurrent Transactions,
7. What is Shadow Paging in DBMS
8. Explain the Failure with Loss of Non-Volatile Storage,
9. What is Security in DBMS
10. What is Authorization in DBMS