2015

Time : 3 hours

Full Marks : 100

Pass Marks : 40

Candidates are required to give their answers in their own words as far as practicable.

The questions are of equal value.

*Answer any **five** questions.*

1. Discuss DBMS component Transaction manager.

2. Define primary key, candidate key, super key and foreign key.

3. What are functions of Database Administrator ?

4. Describe concurrent transaction and concurrency control.

5. Explain various use of DDL, DML and DCL commands with example.

6. Write SQL queries for a student table having schema (StdID, Name, Course, Sem) to perform following tasks :

   (a) To create the table student

   (b) To insert a tuple of data into student table

   (c) To view the tuples of student table

   (d) To delete a single row from the student table

7. Explain integrity constraint in RDBMS with example.

8. Describe normalization process for designing a database.

9. Explain database join and give an example of natural join.

10. Explain functional dependency and referential integrity.

2018

Time : 3 hours

Full Marks : 100

Pass Marks : 40

Candidates are required to give their answers in their own words as far as practicable.

The questions are of equal value.

*Answer any **five** questions.*

1. Discuss the main categories of data models.

2. What is RDBMS ? What is the difference between Logical Data Independence and Physical Data Independence ?

3. What is an Entity Type ? What is an Entity Set ? Explain the differences among an entity, an entity type and an entity set.

4. Discuss the Entity integrity and Referential integrity Constraints. Why is each considered important ?

5. What is a Normalization Process ? What are the different types of normal forms ?

6. What is a Functional Dependency ? What are the inference rules for functional dependencies ?

7. Discuss the main techniques for recovery from noncatastrophic transaction failures.

8. What is a Lock ? Describe the types of locks used in concurrency control.

9. Write SQL Queries for a Employee table having Schema (EmpID, Emp Name, EmpAddress, EmpDept, EmpPay). To perform the following tasks :

   (a) To create the table Employee.

   (b) To insert a tuple of data into Employee table.

   (c) Retrieve the names and addresses of all employees who work for the Research Department.

   (d) To delete a record from the Employee table whose employee name is 'Raj'.

10. Define any two of the following :

   (a) Query Processing

   (b) Data Dictionary

   (c) Join Dependency

   (d) Meta Data

2019

Time : 3 hours

Full Marks : 100

Pass Marks : 40

Candidates are required to give their answers in their own words as far as practicable.

The questions are of equal value.

*Answer any **five** questions.*

1. What is DBMS ? What are its characteristics ? Explain three level architecture of DBMS.

2. What is relational database systems ? Explain all constraints and interfaces of relational database systems.

3. Compare Hierarchical, Network and Relational data model. What are distinguishing features of Relational data model that make it so popular ?

4. What is ER model ? What are its objectives ? Explain the concept of specialization, generalization and aggregation by taking suitable examples.

5. Explain following type of keys with example :
   (a) Primary Key
   (b) Candidate Key
   (c) Secondary Key
   (d) Super key

6. What is normalization ? What are its objectives ? Explain different normal forms by taking suitable examples.

7. What is relational calculus ? How different operations are carried out in relational calculus ? Also explain the differences between relational algebra and relational calculus.

8. What are various problems arising out of concurrency ? How concurrency is handled in database systems ?

9. What is the need of database recovery ? Explain the difference between immediate update and deferred update technique.

10. Write notes on the following :
    (a) Features of SQL
    (b) Client Server architecture
    (c) Functional dependency
    (d) Data independence