016302

December 2023
B.Tech. (CE(DS)) III SEMESTER
Fundamentals to Database Systems (PCC-DS-301)

Time : 3 Hours]   [Max. Marks : 75

Instructions :

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*
2. *Answer any four questions from Part-B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART–A

1. (a) What are the responsibilities of DBA?   (1.5)
    (b) Differentiate between Primary Key and Foreign Key.   (1.5)
    (c) Differentiate between inner join and outer join. (1.5)
    (d) Differentiate between strong and weak entity with the help of an example.   (1.5)
    (e) Discuss mapping cardinalities.   (1.5)
    (f) What do you mean by Transactions? Discuss consistency with the help of an example in terms of transaction.   (1.5)
    (g) Explain the term serializability.   (1.5)

(h) Write SQL queries for alter, drop, update and insert commands. (1.5)

(i) What do you mean by Functional Dependency? (1.5)

(j) What do you mean by referential integrity constraint? (1.5)

PART–B

2. (a) Explain architecture of DBMS in detail. (10)

(b) Discuss advantages of DBMS over File processing system. (5)

3. (a) Draw E-R Diagram for University. (5)

(b) Explain ACID properties with the help of examples. (10)

4. (a) Explain insert anomalies, delete anomalies and update anomalies with the help of examples. (10)

(b) Consider the following schema and hence write the SQL queries.

Employee (Emp_id, name)
Assigned_to (project_id, emp_id)
Project (project_id, project_ name, chief_arch)

(1) Get details of employees (both number and name) working on project S9.

(2) Gather details of employees working on both projects S5 and S6.

(3) List the employee numbers of employees other than employee 11 who works on at least one project that employee e11 works on. (5)

5. (a) What do you mean by data independence? Explain physical and logical data independence in detail. (5)

(b) What do you mean by concurrency? Discuss Two Phase Locking Protocol and Timestamp protocol in detail. (10)

6. (a) Explain Conflict Serializability and View Serializability in detail. (10)

(b) Discuss in brief methods for recovery management. (5)

7. What do you mean by Deadlock? Explain all conditions for Deadlock. Also explain how deadlock can be prevented? (15)

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