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NCS 4401

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Following Paper ID and Roll No. to be filled in your Answer Book.

PAPER ID : 43209 Roll No. [redacted]

B. Tech. Examination, 2024-25

(Even Semester)

DATABASE MANAGEMENT SYSTEMS

Time : Three Hours] *[Maximum Marks : 60*

Note :– Attempt all questions.

SECTION–A

1. Attempt all parts of the following : 8×1=8

   (a) Define candidate key and super key with example.

   (b) Define triggers and its types.

   (c) Differentiate between drop and delete command.

   (d) Define consistency and isolation, property of transaction.

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(e) Define multiple granularity.

(f) What is relational calculus?

(g) Describe the importance of physical data independence.

(h) Explain the desirable properties of radiation decomposition.

SECTION – B

2. Attempt any two parts of the following : 2×6=12

(a) Discuss selection projection and join operation of relation algebra with suitable example.

(b) Student (Roll No., Name, Father_Name, Branch)
Book (ISBN, Title, Author, Publisher)
SP (Roll No., ISBN, Date_of_issue)
Answer the following queries in SQL.

(i) List roll number and name of all students of the branch 'CSE'.

(ii) Find the name of students who have issued a book published by 'ABC'?

(iii) List title of all books and their author issued by a student 'XYZ'.

(iv) List title of all books issued on or before Jan, 1, 2011.

(v) List all books published by publisher 'ABC'.

(c) Draw and explain the detailed system architecture of DBMS.

(d) Explain entity integrity, referential integrity and foreign keys.

SECTION – C

Note :– Attempt all questions. Attempt any two parts from each questions. 8×5=40

3. (a) Define normalisation. Explain 1F, 2F, 3F and *BCNF* using suitable example.

(b) Write a short notes on the following :

(i) Shadow

(ii) Paging and deadlock

(iii) Avoidance

(iv) Recovery in database transaction

(c) Explain joins. Discuss all types of joins with the help of proper example.

4. (a) Differentiate between schedule and transaction. Define the concepts of recoverable cascade, less and strict schedules.

(b) Explain the different types of data models in DBMS in detail.

(c) Discuss the three scheme architecture. Why do we need mapping between schema levels?

5. (a) Define deadlocks. What are the necessary condition for it? How it can be detected and recovered?

(b) Discuss the ACID properties of transaction and also mention their importance.

(c) Differentiate between procedural DML and non-procedural DML.

6. (a) Describe Armstrong's assumes in detail. What is the role of these rules in the database development process?

(b) Discuss to face commit protocol in detail. How it is different with three face commit?

(c) What do you mean by locking techniques of concurrency control? Discuss the various locking techniques and recovery with concurrent transaction in detail.

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