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राष्ट्रीय प्रौद्योगिकी संस्थान गोवा
NATIONAL INSTITUTE OF TECHNOLOGY GOA

Farmagudi, Ponda, Goa, 403401

Programme Name: B.Tech

Mid Semester Online Examinations, October 2020

Course Name: Database Systems

Date: 06-10-2020

Duration: 1 Hour 30 Minutes

Course Code: CS301

Time: 3.30 PM- 5.00PM

Max. Marks: 50

ANSWER ALL QUESTIONS

- 1 a. With necessary parameters define database management system. Also discuss any four database systems with necessary example.
b. What is database Model? Explain any three database models with necessary example.
c. Define (with suitable example) Super Key, Primary Key, Foreign Key and Candidate Key. (3+3+4)

- 2a. What are nested queries? List the significance of any four constructs of a nested query.
b. What is a schema? With necessary block diagram explain the three schema architecture of database systems. Also give necessary example.
c. Explain the basic operations of a relational algebra. (4+3+3)

3. Consider the following relational database
STUDENT (roll_number, name, department, address)
BOOKS (isbn, title, authors, publisher)
LOAN (roll_number, isbn, date)

Write the SQL queries for the following statements:

- a. Find the names of students who have borrowed a book published by Springer.
b. Find the names of students who have borrowed all books published by Wiley.
c. Find the names of students who have borrowed more than three different books published by Elsevier.
d. For each publisher, find the names of students who have borrowed more than three books of that publisher. (4x2=8)

4. Consider the following relational schema
EMPLOYEE (person_name, street, city)
WORKS (person_name, company_name, salary)
COMPANY (company_name, city)
MANAGES (person_name, manager_name)

Give the relational algebra queries for the following statements:

- a. Find the names, street addresses, and cities of residence of all employees who work for Software Solutions and who earn more than Rs 1,00,000 per annum.
b. Find the names and cities of residence of all employees who work for Software Solutions.
c. Find all employees in the database who do not work for Software Solutions.
d. Find all employees who live in the same city as that in which the company for which they work is located. (4x2=8)

- 5a. What are the significances of a view. Also, discuss the different ways to create views.

- b. Give the general template of a PL/SQL functions**
- c. Give the general template of a PL/SQL packages.**
- d. What are PL/SQL cursers? Discuss any four attributes of cursers.**

(3+3+4+4)

-----ALL THE BEST-----