JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2024

B.Tech-VI Semester (ECM)

COURSE CODE(CREDITS): 20B11EC611 (3) MAX. MARKS: 25

COURSE NAME: DATABASE SYSTEMS

COURSE INSTRUCTORS:Dr. Nishant Jain MAX. TIME: 1 Hour 30 Minutes

Note: *(a)All questions are compulsory.*

(b)Marks are indicated against each question in square brackets.

(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

Q1. With respect to Database management systems, explain data abstraction. List and explain the three levels of data abstraction in Database management systems.

[3]CO1

Q2. Assume that two students are trying to register for a course in which there is only one open seat. What component of a database system prevents both students from being given that last seat? Explain in detail.

[3]CO1

Q3. Write SQL DDL corresponding to the schema given below:

person (*driver_id*, *name*, *address*)
car (*license_plate*, *model*, *year*)
accident (*report_number*, *year*, *location*)
owns (*driver_id*, *license_plate*)
participated (*report_number*, *license_plate*, *driver_id*, *damage_amount*)

Make any reasonable assumptions about data types, and be sure to declare primary and foreign keys.

[5]CO3

Q4. Consider the banking database schema given below where the primary keys are underlined:

branch(branch_name, branch_city, assets)
customer (ID, customer_name, customer_street, customer_city)
loan (loan_number, branch_name, amount)
borrower (ID, loan_number)
account (account_number, branch_name, balance)
depositor (ID, account_number)

Construct the following SQL queries for the above relational database.

a. Find the ID of each customer of the bank who has an account but not a loan.

b. Find the ID of each customer who lives on the same street and in the same city as customer '12345'.

c. Find the name of each branch that has at least one customer who has an account in the bank and who lives in "Harrison"

[5]CO3

Q5. Suppose that we have a relation marks(ID, score) and we wish to assign grades to students based on the score as follows: grade F if score < 40, grade C if 40 ≤ score < 60, grade B if 60 ≤ score < 80, and grade A if 80 ≤ score. Write SQL queries to do the following:

a. Display the grade for each student, based on the marks relation.

b. Find the number of students with each grade.

[5]CO3

Q6. With the help of examples explain in detail how NULL values are operated in expressions that involve:

a. Arithmetic operations.
b. Comparison operations.

[2+2=4]CO2