

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2024

B.Tech-VI Semester (ECM)

COURSE CODE(CREDITS): 20B11EC611 (3)

MAX. MARKS: 15

COURSE NAME: DATABASE SYSTEMS

COURSE INSTRUCTORS:Dr. Nishant Jain

MAX. TIME: 1 Hour

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. List four significant differences between a file-processing system and a DBMS. [2]CO1

Q2. Explain the difference between two-tier and three-tier application architectures. With reason, mention which is better suited for web applications? [2]CO1

Q3. Explain the concept of physical data independence and its importance in database systems. [2]CO1

Q4. Consider the banking database schema given below and answer the following:

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)

- State the difference between superkey, candidate key, and primary key. For the above schema, identify all the possible superkeys, and candidate keys.
- Write a short note on foreign-key constraints. For the banking database schema given above, determine the possible foreign-keys.
- Construct a schema diagram.
- Give an expression in the relational algebra for each of the following queries:
 - Find each loan number with a loan amount greater than \$10000.
 - Find the ID of each depositor who has an account with a balance greater than \$6000.
 - Find the ID of each depositor who has an account with a balance greater than \$6000 at the "Uptown" branch.

[2+2+2+3=9]CO2