TRIBHUVAN UNIVERSITY
FACULTY OF MANAGEMENT
Office of the Dean
November 2024

Full Marks: 60
Pass Marks: 30
Time: 3 Hrs.

BIM / Fourth Semester / IT 220: Database Management System

Candidates are required to answer the questions in their own words as far as practicable.

Group "A"

Brief Answer Questions: [10 × 1 = 10]

1. Define Relational Calculus.
2. Who is Database administrator?
3. What are the conditions required for Lossless Decomposition in DBMS?
4. What do you mean by Tuple in DBMS?
5. List any two advantage of using No SQL Database.
6. Define indexing.
7. What do you mean by Data Mining?
8. What is the difference between Shared lock and Exclusive lock?
9. What is the use of Check constraint in SQL?
10. Give an example of ternary relationship in DBMS.

Group "B"

Short Answer Questions: (Attempt any FIVE Questions) [5 × 3 = 15]

11. List the differences between centralize and client-server architecture in Database Management System.
12. How weak entity set can be identified by strong entity set? Illustrate with an example.
13. Write the difference between Tuple Relational Calculus and Domain Relational Calculus.
14. Explain the advantages of using Distributed Databases over Centralized Database systems.
15. Explain different types of set operation in Database.
16. How Database can be recovered from catastrophic failures? Explain.

Group "C"

Long Answer Questions: (Attempt any THREE Questions) [3 × 5 = 15]

17. What are the different types of Attributes use in ER? Explain.
18. Define Serializable Schedule. Explain two phase locking techniques with example.
19. Define Anomaly. How normalization helps to remove different types of Anomaly from database? Explain with example.

20. From the following relation.

Doctor (D_id) Name, Age, Address, department)

Write Relation Algebra.

    a. To find all Name who works in 'Cardio' department
    b. To list all the Doctor
    c. To list Name of Doctor whose age is greater than 50 and works in 'oncology' department
    d. To delete the records whose age is less than 25.
    e. To insert new Doctor detail.

Group "D"

Comprehensive Answer / Case / Situation Analysis Questions: *[2 × 10 = 20]*

21. Consider the given relations

Manager (MID, Name, Salary, Age)

Mangers (MID, BID)

Branch (BID, Address, Phone)

Write SQL for following:

    a. Write DDL statement to create above relation.
    b. Find the Name of manager whose salary is more than 100,000 and age is less than 30.
    c. Find the Name and Age of manager who manages Baneshwor Branch.
    d. Insert details of New Branch.
    e. Increase the salary of the manager by 30% who works at Humla branch.
    f. Display the detail of branch which are outside Kathmandu.

22. ABC is a non-life insurance company which deals with various type of insurance policies, such as health, vehicle and property insurance. Each policy has a unique policy-number, coverage-details, premium amount and expiry date. Policies are associated with customer who have a unique customer_ID, Name, Contact_information and address. The company also Tracks claims made against each policy, where each claim has a claim_ID, date_of_filing, claim_amount and status. Draw the ER Diagram showing all entities, attributes, relationship and cardinalities.

✿✿✿