Only for 2021 to 2023 AD admitted Students

TRIBHUVAN UNIVERSITY
FACULTY OF MANAGEMENT
Office of the Dean
December 2025

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. What is Data independence?
2. How can you represent "Project" operation in Relational algebra?
3. Define lossless decomposition in DBMS.
4. Write any two advantages of using NO SQL database.
5. What is specialization?
6. What is Catastrophic Failure in database?
7. List any two advantages of using indexing.
8. What is Partial key dependency?
9. What do you mean by cascading rollback?
10. What is subquery?

Group "B"

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

11. Explain the concept of shadow paging.
12. What are the different degree of relationship in Database? Explain.
13. Write the difference between Tuple Relational Calculus and Domain Relational Calculus.
14. Let R = ABCDE be a set of attributes, and let F be the set of functional dependencies given by F = {A → BC, B→ E, BE → D}. Find candidate key.
15. Explain left join with an example.
16. Explain the differences between parallel and distributed database.

Group "C"

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

17. List and explain different types of database users.
18. Explain Time Stamp Based Protocol in brief with its use.
19. Describe the process and criteria for database normalization up to the Third Normal Form with examples.
20. Discuss the relevance of using constraint in database. Explain the different types of database Constraints.

Group "D"

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

21. Consider the given schema design for Department Store.

customer (customer_id,name,address,gender,age,phone,email,created_date)

product (product_id,name,product_price,mfg_date,exp_date)

purchase(purchase_id,customer_id,product_id,qunatity,total_price,entered_by,entered_at)

a. Construct the DDL statement for the above schema and write the SQL query for the following.

b. Show the list of products where the price exceeds 5000.

c. Find the name of customer who purchase pen.

d. Update the product price to 300 for Kit-Kat.

e. Add details of new customer.

f. Delete all product where price is less than 10. ***[5+1+1+1+1+1]***

22. Design an ER (Entity-Relationship) Diagram for a Driving License Management System. The system should manage information about applicants, including their name, date of birth, address, and contact details. It should also track driving licenses, with details such as license number, issue date, expiry date, and license type. Additionally, the system should maintain information about vehicles, including vehicle number, type, and model, as well as driving tests, including test date, test type, and result. The relationships in the system include that an applicant can apply for one or more driving licenses, a driving license is issued to one applicant, an applicant can own multiple vehicles, and an applicant must pass tests before a license is issued. Identify the entities, their attributes, primary keys, and relationships, and represent them in an ER diagram.