POKHARA UNIVERSITY

Level: Bachelor | Semester: Fall | Year : 2023
Programme: BE | Full Marks: 100
Course: Database Management System (New) | Pass Marks: 45
Time : 3hrs.

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) What is data abstraction in DBMS? Explain in detail. 7
   b) Consider you are asked to design a database for the Exam section of your college. Draw its ER diagram assuming required entities and their attributes. 8
2. a) Convert the ER diagram that you designed in question no 1 b) into relational schema. 7
   b) What are the views? Consider the table **tbl_emp** as follows: 8

Emp_id	Emp_name	Salary	Department	Date_of_joining
101	Anish	20000	Packing	2070-02-01
102	Rojina	18000	Cleaning	2075-04-06
103	Sita	35000	Polishing	2078-09-12

Write the SQL statements for the following:

i. Create the above table by considering Emp_id as primary key and insert the above records.
ii. Change the Department of Anish to marketing.
iii. Increase the salary of employees whose department is Cleaning by 12%.
iv. Find the name of employees having salary greater than 16000 and who joined after 2072-11-25
v. Add a new column Address to the above table.
vi. Delete the entire table.

OR

Why is joining in SQL necessary? Explain Inner Join, Natural Join and Outer Join with suitable examples.

3. a) What are the different types of integrity constraints? Explain with examples. 8

b) What is denormalization? Why is it necessary? Explain in detail. 7

4. a) What is the role of views in security? Explain the concept of authorization with suitable examples. 7

b) Explain the basic steps in query processing in detail. 8

5. a) Explain how the records are organized using fixed-length and variable-length records. 7

b) What is serializability and why is it needed? Explain the ACID properties in brief. 8

6. a) What is crash recovery? Explain log-based recovery method with example. 7

OR

What is transaction rollback? Explain how the Remote Backup System provides high availability and recovery facility.

b) List out the different categories of NoSQL databases. Explain the concept of blockchain with its properties. 8

7. Write short notes on: **(Any two)** 2×5

a) Nested Queries

b) Third Normal Form (3NF)

c) Lock-based protocols for concurrency control