B.C.A. (PART-II) EXAMINATION, 2023-24

(Fourth Semester)

Paper : I

BCA-401 : Introduction To Database Management System

Time : Three Hours]   [Maximum Marks : 70

Note: (i)   Answer **Five** Questions in all.

   (ii)   Question No. **1** is **Compulsory**.

   (iii)   Answer remaining **four** questions, selecting **two** questions from each Section **A** and **B**.

   (iv)   All questions carry equal marks.

1.   Answer **all** parts of the following:

   (a)   Explain ACID Properties.

   (b)   What are the various characteristics of SQL ?

   (c)   Define candidate key and primary key with examples ?

   (d)   What are DCL and TCL languages in DBMS ?

Section-A

2.   Explain three level architecture of database and explain why mapping are done between these levels.

3. What are Joins? Discuss all types of Joins with the help of suitable examples.

4. What is Database Integrity? Explain the types of Integrity constraints.

5. The relation scheme as **Student(name, courseNo, rollNo, grade) has** the following functional dependencies :

   Name, courseNo→gradeloop

   rollNo, courseNo→grade

   name→rollNo

   rollNo→name

   Find the candidate keys, Prime attributes, Non-Prime attributes and identify the highest normal form of the above relation.

Section-B

6. (a) What is Relational Algebra? Explain various relational algebraic operations with example.

   (b) What is Relational Calculus? Explain its two types with example.

7. (a) How to remove redundancy in RDBMS? Explain 3NF, BCNF and with example.

(b) What are the Derived Attributes and Multivalued Attributes in ER Model? Draw the ER Model of University Management and Explain its attributes, entity and relationship.

8. (a) What is SQL? Discuss five aggregate Functions with suitable examples in SQL.

(b) Consider the following schema for institute library :

Student (RollNo, Name, Father_Name, Branch)

Book (ISBN, Title, Author, Publisher)

Issue (RollNo, ISBN, Date-of-Issue)

Insert any five records of each table and Write the following queries in SQL and relational algebra :

(i) List roll number and name of all students of the branch 'BCA'.

(ii) Find the name of student who has issued a book published by 'JAK' publisher.

(iii) List title of all books and their authors issued to a student 'RAM'.

(iv)   List title of all books issued before July 15, 2024.

(v)   List all books published by publisher 'JAK'

9.   Write notes on any two of the following :

(a)   Generalization and Specialization

(b)   Database Backup and recovery

(c)   Cursor in SQL

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