



**Tribhuvan University**  
**Faculty of Humanities & Social Sciences**  
**OFFICE OF THE DEAN**  
**2023**

Bachelor in Computer Applications  
Course Title: Database Management System  
Code No: CACS255  
Semester: IV

Full Marks: 60  
Pass Marks: 24  
Time: 3 hours  
Batch: 2020

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

**Group B**

Attempt any SIX questions.

[6×5 = 30]

2. Define database and DBMS. Explain the benefits of DBMS in detail. [2+3]
3. What are different SQL constraints to specify the rules for the data in the database? Explain. [5]
4. What is relational algebra? Explain different RA operations. [1+4]
5. How candidate key is different from primary key? Also explain foreign key in detail. [2+3]
6. What is a stored procedure? How can it be used in a database? Explain with an example. [2+3]
7. What are the main purposes of concurrency control? Explain two phase locking protocol in detail. [1+4]
8. What is database security? Describe steps of query processing. [2+3]

**Group C**

Attempt any TWO questions.

[2×10 = 20]

9. What are fully and partial functional dependencies? Explain 2NF and 3NF in detail. [4+6]
10. How different join operations can be performed? Explain with proper examples. Consider a database of a shipment company. Shipped items are received into the system at a single retail center. Shipped items make their way to their destination via one or more standard transportation events (i.e., flights, truck deliveries). The transportation events follow a regular schedule. Create an ER diagram to represent this information. [5+5]
11. Consider the following tables: [10]  
Book(Bookid, Title, Publisher, PublishedDate, Price)  
Book\_Authors(Bookid, Author\_name)  
Borrower(CardNo, Name, Address, Contact)  
BookIssue(BookId, CardNo, IssuedDate, DueDate)  
Write SQL query for the following:
  - a) Find the name of the books taken by Ramesh Sharma.
  - b) Find the Issued book name and the borrower's name who have Issued date before 15<sup>th</sup> May, 2023 and due date after 15<sup>th</sup> June, 2023.
  - c) Find the borrower's name who has taken the book written by Laxmi Prashad Devkota.
  - d) Find the number of books issued on the date 25<sup>th</sup> April, 2023.
  - e) Find the borrower's name who has taken the book having price more than average price.