Tribhuvan University
Faculty of Humanities & Social Sciences
OFFICE OF THE DEAN
2025

Bachelor in Computer Applications
Course Title: Database Management System
Code No: CACS 255
Semester: IV

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

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. What is flat file system? Explain the advantages of using DBMS over flat file system. [1+4]

3. How logical data independence is different from physical data independence? Explain three level database architecture. [2+3]

4. How primary key is different from super key? Explain composite key and partial key. [3+2]

5. What are selection and projection operators in relational algebra? Given a table with schema

   Student(Rollno(PK), Fname, Lname, Address, Level, Did(FK)),

   Department(Did(PK), Dname, HOD)

   Write an RA query to find the name of students who are in 'Bachelor' level living in 'Birgunj' and studies under the department with department head 'Ramesh Sharma'. [2+3]

6. How parameters can be passed to a stored procedure? Explain with an example. [1+4]

7. How timestamp based algorithm uses timestamp to serialize the execution of concurrent transactions? Explain in detail. [5]

8. What are different types of indexing used in database? How index can be created using SQL? Write with example. [3+2]

Group C

Attempt any TWO questions. [2×10 = 20]

9. What are the advantages of normalization? Explain 3NF and BCNF with example. [4+6]

10. How ER model can be mapped to the relational data model? Explain with a proper example. [10]

11. a) What is inner join? Perform inner join to find the customer names who are going on flight to 'South Wales': [2+3]

    Customer (Cid, Name, Address, Age, Email)

    Booking(Cid(FK), FlightID(FK), BookedDate)

    Flight(FlightID, AirplaneCode, DepartureTime, Destination, Duration)

    b) What are unary and ternary relationship? Write with examples. [2+3]