Tribhuvan University
Institute of Science and Technology
2081
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Bachelor Level / Second Year/ Forth Semester/ Science
Computer Science and Information Technology (CSC 265)
(Database Management System)
(NEW COURSE)

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

Candidates are required to give their answers in their own words as for as practicable.
All figures in the margin indicate full marks.

Section A

Long Answer Questions.
Attempt any **TWO** questions.

[2 × 10 = 20]

1. What do you mean by entity type and entity set? Construct an ER diagram for an airline ticket booking system where customers buy airline tickets online. The system should provide discounts on the basis of number of tickets bought. It should also keep records of buyers on the basis of number of times buyer visits the system. It should also filter the unwanted visitors to manage traffic congestion.   [3 + 7]

2. Consider the library database schema containing the tables given below where primary keys are underlined.   [3+3+4]
   USER (UserID, User_name, Address)
   USES (UserID, BookID, Issued_date, Returned_date)
   BOOK (BookID, Book_naame, Author, PublisherID)
   PUBLISHER (PublisherID, Publisher_name, Address)
   Specify the following queries in both SQL and Relational Algebra on this database schema.
   a. Retrieve names of all books issued to the user "Hari".
   b. Retrieve the names of all books published by "ABC publication".
   c. Count the number of books published by the author "Ram".

3. What are desirable properties of transactions? Explain conflict serializability with example.   [4 + 6]

Section B

Short Answer Questions.
Attempt any **EIGHT** questions.

[8 × 5 = 40]

4. What do you mean by referential integrity? Why do you need this integrity?   [3.5 + 1.5]

5. Explain ANSI/SPARC three-schema architecture with suitable diagram.   [5]

6. What are informal design guidelines for relational schemas.   [5]

7. Classify database management systems based on the data model.   [5]

8. Define the terms data, database, DBMS, database system, and data base catalog.   [5]

9. Explain relational algebra natural join (*) operation with example.   [5]

10. Explain deferred update approach in database recovery.   [5]

11. Explain transaction deadlock with example.   [5]

12. Define specialization. Explain disjoint constrain with example.   [1.5 + 3.5]

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