

1059

B.Sc. (Hons.) Bio-Informatics

Fourth Semester

BIN-4004: Introduction to Database Management System

Time allowed: 3 Hours

Max. Marks: 60

**NOTE:** Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

I. Attempt the following:-

- a) What do you mean by data independence?
- b) What is relational algebra?
- c) What are single-valued and multivalued attributes?
- d) Give an example of a query with 'where' and 'group by' clause.
- e) How centralized database is different from distributed database?
- f) What is meant by transaction management? (6x2)

**UNIT - I**

- II. a) Define the concept of aggregation and composition. How they are different. Give two examples of each one.
- b) Draw an ER diagram for a hospital management system, make suitable assumptions. (6,6)
- III. a) What is relational model? Compare and contrast it with network and hierarchical model.
- b) Explain the importance of Multi-user DBMS architecture. (8,4)
- IV. a) Why use JOIN operation in relational algebra? Explain different types of JOIN operations with examples.
- b) What are weak entity sets? How a weak entity set can be converted into strong entity set? (6,6)

**UNIT - II**

- V. Consider the employee database, with primary keys is underlined.  
Employee (employee\_name, street, city)  
Works (employee\_name, company\_name, salary)  
Company (company\_name, city)  
Managers (employee\_name, manager\_name)  
Write SQL expression for following queries.

(2)

- a) Find the names of all employees who work for First Bank Corporation and live in Las Vegas.
- b) Find the names, street addresses and cities of residences of all employees who work for First Bank Corporation and earn more than \$ 10000.
- c) Find all employees who do not work for First Bank Corporation.
- d) Find the company that has the smallest payroll. (12)

VI. Write short notes on the following:-

- a) Multiple Granularities.
- b) Distributed database systems
- c) Advantages of DBMS (3x4)

VII. a) Implement following relation using SQL query

Student (stud\_no, stud\_name, sub1, sub2, totalmark, percentage)

Create the table, add 5 records and display the data. Also write queries to update and delete 4 records.

b) Write a note on components of DBMS. (2x6)

x-x-x