

Tribhuvan University Institute of Science and Technology

2071

Bachelor Level/ First Year/ First Semester/ Science
Computer Science and Information Technology
Database Management System (CSc. 253)

Full Marks: 60
Pass Marks: 24

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

Attempt All The Question.

1.
 - a. Why do we need database management system? Discuss drawbacks of file system and advantages of database management system.
 - b. What is database system architecture? Describe three levels and benefits of this architecture.
2.
 - a) A database is being constructed to keep track of the teams and games of a sports league. A team has a number of players, not all of whom participate in each game. If is desired to keep track of the players participating in each game for each team, the positions they played in that game, and the result of the game. Design an ER diagram for this application
3.
 - a) Define integrity constraint? Discus referential integrity in detail.
 - b) What is functional dependency? How can we use functional dependency to normalize a relation in 3NF. Discuss with suitable example.
4. Consider the following employee database, where primary keys are underlined. (10)
employee (employee-name, street, city) works (employee-mame, compamy-mame, salary)
company (company-mame ciiy) mamages (employee-name, manager-name)
Give an expression in SQL for each of the following queries.
 - a) Find the names of all employees who work for Second Bank Corporation.
 - b) Find the names, street and cities of residence of all employees who work for Second Bank Corporation.
 - c) Find the names, street addresses, and cities of residence of all employees who work for Second Bank Corporation and earn less than S10, 000.
 - d) Find the names of all employees who work under the manager "Devi Prasad".
 - e) Find the number of employees having salary greater than or equal to 20000.

- 5.
- a) Why do we need concurrency control mechanism? Discuss basic, conservative, and rigorous two phase locking algorithm.
 - b) What is shadow paging? How can we use this technique to recover our database?