

Tribhuvan University Institute of Science and Technology

2070

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) What is database management system? Discuss the advantages of using database management system over file system.
 - b) What is data abstraction? Discuss three levels of this abstraction.

2.
 - a) Construct an ERD to record the marks that students get in different exams of different course offerings.
 - b) Define integrity constraint? Discuss domain constraint with suitable example.

3.
 - a) With the information given below, calculate any three members of F".
$$R = (A, B, C, G, H, I)$$
$$\{A \rightarrow B, A \rightarrow C, CG \rightarrow I, B \rightarrow H\}$$
 - b) Discuss 2NF and 3NF with suitable example.

4.

Consider the following supplier database, where primary keys are underlined:

supplier (supplier-id, supplier-name, city)

supplies (supplier-id, part-id, quantity)

parts (part-id, par-name, color, weight)

Construct the following relational algebra queries for this relational database

 - a) Find the name of all suppliers located in city "Kathmandu".
 - b) Find the name of all parts supplied "ABC Company".

- c) Find the name of all parts that are supplied in quantity greater than 300.
- d) Find the number of parts supplied by "ABC Company".
- e) Find the name of all suppliers who supply more than 30 different parts.

5.

- a) What is serializable schedule? How can you test a schedule for conflict serializability?
- b) Discuss recovery technique base on deferred update with concurrent execution in multiuser environment.