Nepal College of Information Technology

**Unit Test**

Spring 2013

Program : BE IT Time : 2 hrs

Semester : (IV) FM : 70

Subject : Database Management System PM : 35

* *Candidates are requested to give their answer as far as practicable in their own words.*
* *The figure in the margin indicates the full marks*
* ***Attempt ALL question***

**1** (a) What do you mean by DBMS? What are its applications? [7]

(b) What do you mean by data Independence? Explain the difference between physical and logical Independence. [8]

**2** (a) Explain the concept of logical, physical and conceptual model. [7]

(b) Construct an E-R diagram for a hospital with set of patients and set of medical doctors. Associate with each patient a log of various test and examinations conducted. [8]

**3** (a) Explain the distinctions among the terms primary key, candidate key, super key and foreign key. [7]

(b) Consider the relational database of figure given below, where primary keys are underlined. Give an expression in the relational algebra to express each of following queries. [8]

employee (person-name, street, city)

works ( person-name, company-name, salary)

company ( company-name, city)

(i) Find the names of all employees who works for First Bank Corporation.

(ii) Find the names and cities of residence of all employees who work for First Bank Corporation.

iii) Find the names, street address and cities of residence of all employees who work for the First Bank Corporation and earn more than $ 10,000 per annum.

**4** Consider the employee database of figure given below, where primary keys are underlined. Give an expression in SQL for each of following queries. [15]

employee (employee-name, street, city)

works ( employee-name, company-name, salary)

company ( company-name, city)

manages ( employee-name, manager-name)

(a) Find the names of all employees who work for First Bank Corporation.

(b) Find the names and cities of residence of all employees who work for First Bank Corporation.

(c) Find the names, street addresses, and cities of residence of all employees who work for First Bank Corporation and earn more than $10,000.

(d) Find all employees in the database who live in the same cities as the companies for which they work.

(e) Find all employees in the database who live in the same cities and on the same streets as do their managers.

**5** Write short notes on(any two): [10]

(a) Weak and Strong Entity Set

(b) Basic Structure of SQL

(c) Schema and Instances