TRIBHUVAN UNIVERSITY
FACULTY OF MANAGEMENT
Office of the Dean
2014

**Full Marks: 40**
**Time: 2 hrs.**

**BIM / Fourth Semester / ITC 218: Database Management System**

***Candidates are required to answer the questions in their own words as far as practicable.***

## Group "A"

***1. Brief Answer Questions:*** *[10 × 1 = 10]*

i. What do you mean by schema of a database?
ii. What is theta join?
iii. What do you mean by entity constraint?
iv. How parallel database differs from centralized database?
v. What do you mean by functional dependency?
vi. What is extraneous attribute?
vii. Write syntax to define trigger in SQL.
viii. Why is dynamic SQL used?
ix. What is NULL value in database?
x. What do you mean by closure of an attribute?

## Group "B"

***Short Answer Questions:*** *[5 × 3 = 15]*

2. Explain 3NF and BCNF with examples.

3. What do you mean by distributed database system? Explain different reasons for building distributed database system.

4. Write SQL statement to create following tables:
Project (Pid, pname, budget)
Employee (Eid, name, address, Pid) Foreign Key Pid References Project

5. What is transaction? Explain concurrent transactions with example.

6. Consider schema U={A,B,C,D,E,F} and the functional dependencies
AB →C, B →E, CF →D. Find closure of AB.

## Group "C"

***Long Answer Questions:*** *[3 × 5 = 15]*

7. Design a database using ER diagram for a mobile shop. This mobile shop maintains information about entities: customer, mobile, bills , and login.

- Customer has attributes: cid, cname, address, phone, type, the cname is composed of first_name, middle_name, and last_name.
- Mobile has attributes: model, name, brand, IMEINo. A customer may purchase one or more mobile and request only one bill for payment.
- Login has attributes: userid and password
- Bill has attributes: billno, cname, amount.

State any assumptions made in the design of the E-R diagram

8. Consider the following relational database.

Students(RollNumber , StudentName, Address, Year)

Teachers(TeacherID, TeacherName, CourseID, Salary, Department)

Courses(CourseID, RollNumber, CourseTitle, Semester)

Write relational algebra expression for the following requests

i) Find the name of the Students of 3rd year and studying Computer Network .

ii) Find the name of the teacher who teaches subject "Database System" to Rajan Sharma.

iii) Find the maximum salary of teacher in each department.

iv) Delete record of 4th year students of Account department.

v) Change salary of teacher Arju Shrestha from 21000 to 17000.

9. Consider the following relational database

Project (P_ID, P_Name, P_Location, Type)

Employee (Emp_Id, Emp_Name, Address , Salary, Post, Date_Join)

Works (Dept_No, Emp_Id, Shift)

Write the SQL statement for the following queries

i) Insert new project {'P1002','Edge of tomorrow', 'Putalinagar', 'Private'}.

ii) List the name of the employees who work at "Save the Children" project.

iii) List the name of the employees whose salary is above the average salary.

iv) Remove record of all employees who work in morning shift at the project located in Bagbazar Kathmandu.

v) Change address and post of employee 'Singh Shab' to 'Pokhara' and 'assistant lecturer'.