POKHARA UNIVERSITY

Level: Bachelor Semester: Fall Year : 2017
Programme: BE Full Marks: 100
Course: Database Management System Pass Marks: 45
Time : 3hrs.

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 questions.

1. a) Describe about Schemas and Instances Write briefly about DDL and DML. 7

   b) Draw an ER diagram for the following scenario. 8

   A university contains many faculties. The faculties in turn are divided into several colleges. Each college offers numerous programs and each program contains many courses. Teachers can teach many different courses and even the same course numerous times. Courses can also be taught by many teachers. A student is enrolled in only one program but a program can contain many students. Students can be enrolled in many courses at the same time and the courses have many students enrolled.

2. a) Consider the following schema: 8

   employee (person_name, street, city)
   works (person_name, company_name, salary)
   company (company_name, city)
   manages (person_name, manager_name)

   Give an expression in relational algebra to express each of the following queries:

   a) Find the names of all employees who earn more than their managers
   b) Find the names of all employees who live in the same city and on the same street as their managers
   c) Find the names of all employees within the database that do not work for "NBL company"
   d) Find the names of all employees in the database who earn more than the top earner at "NBL Company" in the database.

   b) Write the SQL statements for the following queries by reference of **Liquors_Info** relation: 7

Serial No	Liquors	Start year	Bottles	Ready year
1	Gorkha	1997	10	1998
2	Divine Wine	1998	5	2000
3	Old Durbar	1997	12	2001
4	Khukuri Rum	1991	10	1992
5	Xing	1994	5	1995

   i. Create the Liquors_Info relation.
   ii. Insert the records in Liquors_Info as above.
   iii. List all the records which were ready by 2000.
   iv. Remove all records from data base that required more than 2 years to get ready.

3. a) How does "GROUP BY" claus work? What is the difference between WHERE and HAVING clause? Explain each with examples 8

   b) What is a database anomaly? Explain different types of database anomalies with suitable examples. 7

4. a) What do you mean by normalization process? Why is it necessary in RDMBS? Justify. 7

   b) Differentiate between authorization and authentication with brief examples. 8

5. a) Why ACL technique if considered safe- way for database security? How is any user allowed or prevented from accessing a certain resource? Justify technically. 7

   b) What is Query optimization? How can it be achieved? 8

6. a) Explain how records of a file are placed and organized into a secondary storage. 8

   b) What is Remote backup system? How does it help any organization? Clarify. 7

7. Write short notes on: (**Any two**) 2×5

   a) ACID Properties of transaction
   b) Concurency control
   c) Distributed Databases