POKHARA UNIVERSITY

Level: Bachelor | Semester: Spring | Year : 2018
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) Considering an example, differentiate between data and information. Explain, how DBMS overcome the limitations of traditional file processing system. 7

   b) Construct an *ER diagram* for a Metropolitan Bus Park. There are many gates for entering bus park. Different gates are assigned to different routes. A route uses different buses. Bus consists of different seats which are assigned to different passengers. Frequent travelers are also in passenger. Associate a log of reservation date while reserving seats. The passenger name must have two attributes first_name & last_name. Each of the entities must have primary key attribute as far as possible. The cardinality mappings should be explained properly. 8

2. a) Consider the relational database model: 7

Users (uid, cname, city)
Items (itemid, itemname, city, quantity, price)
Manager (mid, aname, city)
Query (queryno, uid, mid, itemid, query_details, hitratio)

Write the relational algebraic expression for the following tasks:

i. Find all (queryno, uid) pairs for query with a hitratio value greater than 500.
ii. Find all item names of items in Pokhara ordered with query_deatis as pokhara_details.
iii. Find itemids of items ordered through manager 35 but not through manager 27.

b) Write SQL statements for following: 8

i. Create a table named Vehicle with veh_number as primary key and following attributes:
veh_type, veh_brand, veh_year, veh_mileage, veh_owner,

veh_photo, veh_price

ii. Enter a full detailed information of a vehicle.
iii. Increment vehicle's price by 10,000.
iv. Remove all vehicle's records whose brand contains character 'o' in second position.
v. Display the total price of all vehicles.
vi. Create a view from above table.
vii. Display details of vehicles ordering on descending manner in brand and by mileage when brand matches.
viii. Change data type of year to datetime.

3. a) How does normalization help in organizing records in database? Justify with examples. 8

   b) Write down the properties of decomposition. Compare & contrast assertion & triggers. 7

4. a) Differentiate between authorization and authentication. Explain about access control and view. 7

   b) What is query optimization? List some strategies for optimization of queries and explain steps in for query processing with necessary diagram. 8

5. a) What is file organization? Explain how you organize files using B+ tree and hash index. 8

   b) What do you mean by crash recovery? Differentiate between deferred database modification and immediate database modification. 7

6. a) Define transaction & schedule. Explain different states in a transaction. 7

   b) Explain about distributed databases with its advantages and disadvantages. 8

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

   a) Sequential File Organization
   b) Cascading in referential integrity
   c) Data warehouse & Data mining