POKHARA UNIVERSITY

Level: Bachelor Semester:Fall Year : 2020
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) Why data independence is important in data modeling? Differentiate between physical and logical data independence. 7
   b) Define and explain benefits of data model. Draw an E-R diagram for a Vehicle Management System including primary key, weak entity, composite attribute, derived attribute and multivalued attributes in your ER diagram. 8
2. a) Explain Relational Algebra. What are the relational algebra operations that can be performed? Give an example of all. 7
   b) Write SQL statements for following: 8
      i. Create a table named Automotor with chasis_number as primary key and following attributes: veh_brand, veh_name, veh_model, veh_year, veh_cost, veh_color, veh_weight
      ii. Enter a full detailed information of an automotor.
      iii. Change any Automotor's year to 2019.
      iv. Remove all Automotor records whose model contains character 'i' in last position.
      v. Display the total cost of all vehicles of the table Automotor.
      vi. Create a view from above table having vehicles only red color.
      vii. Display details of Automotor ordering on descending manner by brand name and by ascending on model when brand matches.
      viii. Change data type of color so that it only takes one character.
3. a) Differentiate between join and sub query. Explain different SQL joins with examples. 8

   b) What is functional dependency? Discuss its types. Explain the role of Functional dependency in the process of normalization. 7
4. a) What is multi-valued dependency? Illustrate the advantage of 4NF with suitable example. 8
   b) Describe the GRANT functions and explain how it relates to security. What types of privileges may be granted? How rights could be revoked? 7
5. a) Define query optimization. What are the basic steps of query processing? Explain. 7
   b) In terms of file organization, define *Indexing, Elevator Algorithm, Log disk.* How does a mechanical hard disk work? 8
6. a) What is a transaction? What is a serializable schedule? Describe the dead lock handling mechanism. 7
   b) Explain different types of crash recovery algorithm with suitable examples. 8
7. Write short notes on any two: 2×5
   a) Two phase locking
   b) Data Godown v/s Data Warehouse
   c) Schema and instances