322556(22)

BE (5th Semester)
Examination, Nov.-Dec., 2018

(New Scheme)

Database Management System

Time Allowed : 3 hours | *Maximum Marks :* 80
Minimum Pass Marks : 28

Note : (*i*) Part (*a*) of each question is compulsory. Attempt any **two** parts from (*b*), (*c*) and (*d*) of each question.

(*ii*) The figures in the right-hand margin indicate marks.

Unit-I

1. (*a*) Define Schema. [2]

   (*b*) What are the major disadvantages of Job processing system? [7]

   (*c*) Construct an ER diagram for Banking system. Assume all necessary constraints. [7]

   (*d*) What is an Attribute? Explain the different types of attributes by giving proper example. [7]

Unit-II

2. (*a*) What is the basic difference between primary key and candidate key? [2]

   (*b*) Briefly explain about the domain relational calculus. [7]

   (*c*) Explain the following operations in relational algebra : [7]

   (*i*) Selection
   (*ii*) Projection
   (*iii*) Renaming
   (*iv*) Join

   (*d*) Consider the following relational database :

   Employee (Person_name, city, street)

   Works (Person_name, company_name, salary)

   Company (Company_name, city)

   Manager (Person_name, Manager_name)

   Give an expression in relational algebra to express each query :

   (*i*) Find the names of all employees who work for First Bank Corporation. [1]

   (*ii*) Find the names, street and cities of residence of all employees who work for First Bank Corporation and earn more than $10000. [2]

   (*iii*) Find the total number of employees in each company. [2]

   (*iv*) Find the company name with highest number of employees. [2]

Unit-III

3. (*a*) Define Superkey. [2]

(*b*) What is SQL? Discuss DDL and DML with example. [7]

(*c*) What are various aggregate operators in SQL? Explain in brief. [7]

(*d*) What do you mean by constraints? What are the different types of constraints possible in a relational model? [7]

Unit-IV

4. (*a*) Define Transaction. [2]

(*b*) Define functional dependency with example. [7]

(*c*) What do you mean by normalization? Give difference between 3NF and BCNF. [7]

(*d*) Consider relation R with following attribute

R = (A, B, C, D)

and set of FD's (Functional Dependency) are

{ A → BC, B → C, A → B, AB → C, AC → D}

Compute irreducible set of FD. [7]

Unit-V

5. (*a*) Define Recovery. [2]

(*b*) Explain B+ trees. [7]

(*c*) Write short notes on :

(*i*) Log-based recovery [4]

(*ii*) Advance-recovery techniques [3]

(*d*) What do you mean by Indexing? Write down the different types of Indexing. [7]

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