Pandit Deendayal Petroleum University, Gandhinagar
School of Technology
Mid-Semester Examination

B. Tech. (Computer)
Date: 06/10/2017
Course Name : Database Management Systems

Semester - III
Time: 2.30 pm to 4.30 pm
Course Code : 17CP202T
Max. Marks: 50

Instructions to students:
1. Do not write anything other than your roll number on the question paper.
2. Assume suitable data wherever required and mention it clearly.
3. You are required to answer all the questions in sequence as given in the question paper.

Q.1 **Answer the following questions.** **(09)**

(I) Given the basic ER and relational models, which of the following is INCORRECT?
A) An attribute of an entity can have more than one value
B) An attribute of an entity can be composite
C) In a row of a relational table, an attribute can have more than one value
D) In a row of a relational table, an attribute can have exactly one value or a NULL value

(II) Which of the following statements are TRUE about an SQL query?
P : An SQL query can contain a HAVING clause even if it does not have a GROUP BY clause
Q : An SQL query can contain a HAVING clause only if it has a GROUP BY clause
R : All attributes used in the GROUP BY clause must appear in the SELECT clause
S : Not all attributes used in the GROUP BY clause need to appear in the SELECT clause
A) P and R
B) P and S
C) Q and R
D) Q and S

(III) Consider the tables T1. How many tuples does the result of the following SQL query contains? SELECT DISTINCT T1.AGE FROM T1 WHERE T1.NAME = 'rohit';
A) 4
B) 1
C) 0
D) None of the above

(IV) Consider a database table T containing two columns X and Y each of type integer. After the creation of the table, one record (X=1, Y=1) is inserted in the table. Let MX and My denote the respective maximum values of X and Y among all records in the table at any point in time. Using MX and MY, new records are inserted in the table 128 times with X and Y values being MX+1, 2*MY+1 respectively. It may be noted that each time after the insertion, values of MX and MY change. What will be the output of the following SQL query after the steps mentioned above are carried out? SELECT Y FROM T WHERE X=7;
A) 127
B) 255
C) 129
D) 25

(V) Which of the following command is used to delete a table in SQL
A) insert
B) delete
C) drop
D) alter

(VI) The _____ of a relation refers to its logical design, while an _____ of the relation refers to its contents at a point in time.

(VII) A _____ is a language that enables users to access or manipulate data.

(VIII) Write short note on Storage Manager.

(IX) Every super key is also primary key. True or False ? Justify your answer.

Q.2 Attempt any Three questions: (21)

(I)   Compare the file system and DBMS with example in each category.
(II)   Explain the *grant* and *revoke* command in SQL with example.
(III) Explain the two tier and three tier architecture of DBMS.
(IV)   Explain any seven symbols of ER model with an example.
(V)   Explain candidate, super, primary and foreign key in relation model with an example.

Q.3 Write SQL statement as well as output of each of the following queries: (20)

(I)   Find the names and cities of residence of all employees who work for "Sphinx Productions"
(II)   Find the names, street addresses, and cities of residence of all employees who work for "Saplimited" and earn more than 10,000.
(III)   Find the name and city of residence for manager of the manager of "Tu Robin"
(IV)   Find the names and cities of residence of all employees in the database who do not work for "Allico"
(V)   Find the names and cities of residence of all employees in the database who earn more than each employee of "Sphinx Productions"
(VI)   Find names of all companies located in every city in which "Sphinx Productions" is located.
(VII)   Find names of all companies that has the most employees.
(VIII) Find names of those companies whose employees earn a higher salary, on average, than the average salary at "Saplimited"
(IX)   Find names of employees in the database who live in the same cities as the companies for which they work.
(X)   Give all managers of "Saplimited" a 10 percent raise unless the salary becomes greater than 50000.

Table : Works

Employee_name	Company_name	Salary
Nereida Searight	Saplimited	50000
Kiana Ensign	Saplimited	45698
Ignacia Mohamed	Allico	2569
Tu Robin	Sphinx Productions	25364
Wes Spoto	Gemedia	25120
Shiela Crabtree	Sphinx Productions	36204
Danyell Rieke	Saplimited	3698
Marvella Mcmullen	Sphinx Productions	65879
Fern Carr	Allico	48596
Kirby Bryden	Gemedia	45258
Amanda Corley	Sphinx Productions	8965
Elfriede Pyper	Sphinx Productions	19658
Katherina Tillmon	Gemedia	5896
Danyell Rieke	Gemedia	56956

Table : T1

ID	NAME	AGE
1	Rohit	40
2	Manish	50
3	Nishant	25
4	rohiT	40

Table : Company

Company_name	City
Sphinx Productions	Melbourne
Saplimited	West Chicago
Allico	South Windsor
Trekords	Melbourne
Gemedia	Honolulu
Sunworks	Melbourne
Icepoly	Melbourne
Nightbite	Norcross

Table : Employee

Employee_name	Street	City
Nereida Searight	123 6th St.	Melbourne
Kiana Ensign	71 Pilgrim Avenue	West Chicago
Ignacia Mohamed	512 Pine Court	South Windsor
Tu Robin	258 West Acacia Drive	West Chicago
Wes Spoto	9219 Arlington Street	Honolulu
Shiela Crabtree	653 South Deerfield Road	West Chicago
Danyell Rieke	9329 Pheasant Rd.	Orlando
Marvella Mcmullen	38 Walnutwood Lane	Norcross
Fern Carr	70 Stonybrook Ave.	Norcross
Kirby Bryden	4 S. Poor House St.	West Chicago
Amanda Corley	33 S. Talbot Street	Orlando
Elfriede Pyper	658 Randall Mill Drive	South Windsor
Katherina Tillmon	512 Pine Court	South Windsor

Table : Manages

Employee_name	Manager_name
Nereida Searight	Kiana Ensign
Ignacia Mohamed	Fern Carr
Tu Robin	Marvella Mcmullen
Wes Spoto	Kirby Bryden
Shiela Crabtree	Amanda Corley
Marvella Mcmullen	Elfriede Pyper
Katherina Tillmon	Danyell Rieke

Best Wishes