Roll No. _____

Pandit Deendayal Petroleum University, Gandhinagar

School of Technology

Mid-Semester Examination

B. Tech. (ICT) | **Semester – V**
Date: 01/10/2018 | **Time: 10.00 AM to12:00 PM**
Course Name : Database Management Systems | **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. (Q-I to Q-III carry 2 marks, Q-IV to Q-IX carry 1 mark)** **(12)**

(I) Database table by name Loan_Records is given below.

Borrower	Bank_Manager	Loan_Amount
Ramesh	Sunderajan	10000
Suresh	Ramgopal	5000
Mahesh	sunderajan	7000

What is the output of the following SQL query?

```
select count(*) from   (SELECT Borrower, Bank_Manager  FROM Loan_Records
      NATURAL JOIN (SELECT Bank_Manager, Loan_Amount FROM Loan_Records)) ;
```

(II) In table T1, P is the primary key, Q is the foreign key referencing R in table T2 with on-delete cascade. In table T2, R is the primary key and S is the foreign key referencing P in the table T1 with on-delete set NULL. Now, delete record (3,8),(2,2) from table T1 and T2 respectively. Write the number of remaining tuples in T1 and T2.

(III) Consider the natural join of a relation R with a relation S. If R has m tuples and S has n tuples then write the maximum and minimum sizes (in terms of tuples) of natural join opeartion.

(IV) Given the relations
employee (name, salary, dept-no), and department (dept-no, dept-name,address),
Which of the following queries cannot be expressed using the basic relational algebra operations ($\sigma,\pi,\times,\bowtie,\cup,\cap,-$)
A). Department address of every employee
B). Employees whose name is the same as their department name
C). The sum of all employees' salaries
D). All employees of a given department

(V) Select operation in SQL is equivalent to
A). select operation in Relational Algebra
B). select operation in Relational Algebra ,expect that SQL return the duplicate value
C). Projection operation in Relational Algebra
D). Projection operation in Relational Algebra ,expect that SQL return the duplicate value

(VI) _____ Data Independence is easier to achieve than _____ Data Independence.

(VII) For the following select syntax order, give the execution order.

Line No	*Command*	*Arguments*
1	Select	<attribute list>
2	From	<relation list>
3	Where	<predicates>
4	Group by	<attribute list>
5	Having	<group predicates>
6	Order by	<attribute list>

(VIII) An ER model of a database consists of entity types A and B. These are connected by a relationship R which does not have its own attribute. Under which of the following conditions, can the relational table for R be merged with that of A?
A). Relation R is one-to-many and the participation of A in R is total.
B). Relation R is one-to-many and the participation of A in R is partial.
C). Relation R is many-to-one and the participation of A in R is total.
D). Relation R is many-to-one and the participation of A in R is partial.

(IX)	I am not able to identify the tuple from relations uniquely. A) Super Key B) Candidate Key C) Foreign Key D) Primary Key

Q.2 Attempt any Three questions: **(18)**

(I)	Suppose you want to build a job site similar to *Naukari.com*. Compare the file system and DBMS for the said example in any six categories.
(II)	Explain selection (σ), projection (π) and natural join (⋈)operations of relational algebra with example.
(III)	Explain three level of database management system using example.
(IV)	Explain any six symbol of E-R model using example.

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

(I)	Find the names of customers who have visited restaurant of New Martinsville.
(II)	Find the names of customers who have visited a Bollywood theme restaurants.
(III)	Find the names of customers who have not visited any restaurants in year 2018 at Ballwin city. Make output in alphabetic order.
(IV)	Find name of customers whose rating is better than some customer name which contains word Blaga.
(V)	Find the id of customers with the highest rating. (without using aggregate functions)
(VI)	Find the names of restaurants who have been visited by customers from McGuffey and Yulee.
(VII)	Find the names of restaurants who have been visited by highest number of customers.
(VIII)	Find the average age of customers with a rating of 3.
(IX)	Find the names of customers who are older than the youngest customers with a rating of 4.(using aggregate function)
(X)	Print the age of the youngest customers for each rating level (having atleast three customers in it) in ascending order. Note: Only one column of age will be there in output.

Customers

Cid	Cname	Rating	Age	City
1	Erasyl Drina	3	25	Ronks
2	Melech Nosizwe	4	29	Ballwin
3	Alvin Wynn	2	60	Newburgh Heights
4	Xabi Crescentia	1	58	Pettisville
5	Jakov Durans	6	45	Charlton Heights
6	Conchobhar Sjef	7	38	Mullins
7	Muirne Iraklis	8	61	Yulee
8	Cyriacus Irune	4	95	New Martinsville
9	Irenka Blaga	3	45	Stockville
10	Ahtahkakoop Koldo	2	30	McGuffey

Restaurants

Rid	Rname	City	Theme
1	The Golden Valley	New Martinsville	Artful
2	The Meadow After Dark	Ronks	Fusionist
3	The Silk Canteen	Ballwin	Persian
4	The Holy Spices	New Martinsville	Irani
5	The Savory Salmon	Ballwin	Pan Asian
6	Lemon Grass	Mullins	Bollywood
7	The Cottage	New Martinsville	Vintage
8	Harmony	Mullins	Royal
9	Butlers	Yulee	Mediterranean
10	Roast	McGuffey	Textured

Visited

Cid	Rid	Year
1	1	2011
2	5	2015
8	9	2016
5	3	2013
6	5	2015
3	7	2016
9	2	2010
10	4	2010
1	8	2011
5	6	2011
8	10	2015
3	5	2018
4	8	2016
7	5	2016
6	9	2017
8	5	2015
9	2	2018
1	6	2017
1	4	2016
2	7	2012

T1

P	Q
2	2
3	8
7	3
5	8
6	9
8	5
9	8

T2

R	S
2	2
8	3
3	2
9	7
5	7
7	2

Best Wishes