This question paper contains 6 printed pages.

Your Roll No. .....

Sl. No. of Ques. Paper : **8176** IIC

Unique Paper Code : **62341201**

Name of Paper : **Database Management Systems**

Name of Course : **B.A. (Prog.) Computer Applications**

Semester : **II**

Duration : **3 hours**

Maximum Marks : **75**

(Write your Roll No. on the top immediately on receipt of this question paper.)

Question No. 1 is compulsory.

Attempt any five questions from Q. Nos. 2 to 8.

(a) Describe different types of relationships in the context of a relational data model with the help of a suitable example. 3

(b) Differentiate DELETE and DROP SQL commands with the help of an example. 3

(c) A database consists of following relations:

```
EMPLOYEE(EMP_CODE,EMP_NAME,JOB_CODE)
JOB (JOB_CODE, JOB_DES)
```

Identify and describe primary key and foreign key(s) in the above relations. 4

(d) Write the SQL command that will not abort the changes being made to a relational table `Employee`. 2

(e) Illustrate insertion anomaly with a suitable example. 3

P. T. O.

(f) What do you understand by referential integrity rule? Illustrate with the help of suitable example. 2

(g) Give an SQL command to add a new attribute `Email` with data type `varchar (20)` in the relational table `Employee`. 2

(h) A database consists of the relation `Customer`:

```
Customer (Cust_Code, Cust_Name,
Region_Code, DOB, Age)
```

where `cust_code` is the primary key and age is the derived attribute. Describe the derived attribute and also draw an ER diagram for the same. 4

(i) Refer the following table to give the output of the given SQL command on the table `CUSTOMER`:

```
SELECT *
FROM CUSTOMER
WHERE Cust_Age>25 and Cust_Age<30:
```

CUSTOMER		
Cust_id	Cust_Name	Cust_Age
1	Ram	32
5	Hari	27
2	Kamna	25
7	Suresh	24
3	Rajesh	23
6	Komal	22
4	Chatana	25

1

2. (a) Describe the different components of a database system. 1

(b) Give the output of the given SQL command on the tabel STUDENT:

(i)
```
SELECT MAX (AGE), MIN (FEES)
        FROM STUDENT;
```

(ii)
```
SELECT NAME
    FROM STUDENT
        WHERE NAME LIKE "R%;
```

STUDENT

ID	NAME	AGE	ADDRESS	FEES
1	Ramesh	32	Ahmedabad	2000-00
2	Rakesh	27	Bhopal	8500-00
3	Kamal	25	Delhi	1500-00
4	Chatan	25	Mumbai	6500-00
5	Mukesh	24	Indore	10000-00
6	Raju	23	Kota	2000-00
7	Komal	22	Pune	4500-00

Suppose you are given the following requirements for a database for the India Cricket League (ICL):

(a) The ICL has many TEAMS.

(b) Each team has a `team_id` (unique), `team_name`, `city`, `coach_name` and `captain_name`.

(c) Each PLAYER belongs to only one team

(d) Each player has a `player_id` (unique), `player_name`, `position` (such as batsman, bowler, and all-rounder) and `team_id`.

(e) A Match is played between teams.

P.T.O.

(f) Each match has match_id (unique), team_id date and score.

Construct an ER diagram for the ICL database. 10

4. (a) What is Network data model? Give any two disadvantages of the network model. 4

(b) Describe DBMS functions:

(i) Data integrity management

(ii) Backup and recovery management. 6

5. Consider the database SALES with the tables Salesperson. Write SQL queries for the following:

Saleperson (Saleperson_id, Saleperson_name, Region_id, city, Sales, Sex,)

Region (Region_id, Region_name) 10

(a) Find the name of the Salesperson_name who works for north region.

(b) Find all Salesperson_name in the database according to their city.

(c) Find the Salesperson_name and Region_id that gets the maximum Sales.

(d) Find the Regions_name and cities where average sales per Salesperson are greater than 550.

(e) Find the total number of Salespersons in north region, in which the Salesperson operates. 10

6. Using the relations Course and Marks, given below, find the result of the following operations:

(f) Each match has `match_id (unique)`, `team_id` `date` and `score`.

Construct an ER diagram for the ICL database. 10

4. (a) What is Network data model? Give any two disadvantages of the network model. 4

(b) Describe DBMS functions:

(i) Data integrity management

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5. Consider the database SALES with the tables `Salesperson`. Write SQL queries for the following:

`Saleperson (Saleperson_id, Saleperson_name, Region_id, City, Sales, Sex,)`

`Region (Region_id, Region_name)` 10

(a) Find the name of the `Salesperson_name` who works for north region.

(b) Find all `Salesperson_name` in the database according to their `city`.

(c) Find the `Salesperson_name` and `Region_id` that gets the maximum `Sales`.

(d) Find the `Regions_name` and cities where average sales per `Salesperson` are greater than 550.

(e) Find the total number of `Salespersons` in north region, in which the `Salesperson` operates. 10

6. Using the relations `course` and `Marks`, given below, find the result of the following operations:

(a) PRODUCT of COURSE and MARKS

(b) DIFFERENCE OF COURSE AND MARKS

(c) UNION of COURSE and MARKS

(d) JOIN OF COURSE AND MARKS on equal course code

(e) SELECT C_code= 'C98'

(Note : use the relation MARKS)

Relation Course

C_Code	C_Name
C21	English
C32	Maths
C33	Economics
C50	Accounting
C56	History
C81	M.I.S

Relation Marks

C_Code	C_Name
C21	English
C25	E.V.S.
C33	Economics
C34	Pol. Sc.
C50	Accounting
C81	M.I.S
C86	Hindi
C98	German

3. (a) Consider the relation EMPLOYEE (emp_id,

`firstname, middlename, lastname, email`). List and describe the *required* and *optional attributes*. 4

(b) Give any *three* advantages of the DBMS over file systems. 6

8. (a) Describe 3NF. When is a table said to be in 3NF? Illustrate with the help of an example. 4

(b) Differentiate between centralized and distributed databases. 4

(c) Consider the following relational table: 2

STUDENT

STD_ID	STD_NAME	Contact	Address	City
1	Anil	9933445566	A4	Delhi
2	Deepika	9988776655	B12	Mumbai
3	Sapna	8899776655	C12	Lucknow
4	Gaytri	9911223344	I12/14	Delhi
5	Umesh	9977665544	I133/89	Pune
6	Shyam	9922334455	B3	Jaipur
7	Anita	9933445566	C9	Mumbai

Give the output on execution of each of the following SQL commands on the table customer:

```
SELECT COUNT (DISTINCT city) FROM
STUDENT;
```

`firstname, middlename, lastname, email`). List and describe the *required* and *optional attributes*. 4

(b) Give any *three* advantages of the DBMS over file systems. 6

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