(3 hrs.) Maximum Marks = 80

NB:

1. Question No. 1 is compulsory and solve any THREE questions from remaining questions
2. Assume suitable data if necessary
3. Draw clean and neat diagrams

			Marks
Q1.		Attempt any four	
	a.	Explain different types of database users in DBMS.	5
	b.	Explain union and intersection operator in relational algebra with example	5
	c.	What is the purpose of Views in DBMS? Write syntax of view	5
	d.	What are the Pitfalls of Relational database design? Explain in short	5
	e.	Discuss conflict serializability and view serializability in a schedule	5
Q2.	a.	Suppose that as the database administrator (DBA) in a hotel, you have to set up a database to capture all the following information that the hotel needs to maintain. • The hotel offers three types of ROOMS, including single room, double room, and triple room. Every room is identified by its unique number. • Every employee at the hotel is either a receptionist, a cleaning staff, or a kitchen staff. Each RECEPTIONIST is identified with her/his name, employee number and years of experience. Receptionists are responsible for ensuring the room is clean before the room is assigned to the guest. Thus, they assign a single CLEANING TAFF to clean each room every morning and/or whenever it is required. Note that the same room may need to be cleaned several times on the same day, before it gets reassigned. For each cleaning assignment, the date and the status need to be provided. The KITCHEN STAFF is characterized by their specific responsibilities, e.g. being a cook or a waiter. The cleaning staff and the kitchen staff are also uniquely identified by their employee number. • Receptionists welcome GUESTS and upon presentation of their valid traveling documents, they allocate a unique room to each guest and specify one group of facilities which is accessible to the guest during his stay. Guests are uniquely identified with their passport number but other necessary information are also recorded about the guests, including: name, phone numbers, arrival date, departure date, and credit card number. Each FACILITY GROUP contains specific set of facilities, e.g. the bar or gym, in order to be used by the guests. The arrival and departure dates of a guest will in turn determine the occupation of a specific room • A guest can be accompanied with one person to have a double room or at most two people for a triple room. Each ACCOMPANYING person is identified by his/her name. Draw and explain ER diagram representing above information. Cleary show weak and strong entity (if any), type of participation and type of cardinality in your ER diagram	15
	b.	What is data independence? Discuss its importance by giving an example of each level.	5

[TURN OVER]

6411BAACBDB111F71B9C4DB43E98A25A

Q3. a. Consider "student" table 10

Stud_ID	Name	Phone	City	Country
1	Alex	654124	Perth	Australia
2	Martin	654125	Sydney	Australia
3	Shruti	910001	Delhi	India
4	Jaya	910002	Mumbai	India
5	Paul	450525	London	England
6	Andrew	450526	London	England

Write SQL queries by referring above relation.

1. Create above relation using sql command by considering STUD_ ID as primary key.
2. Write a query to display names that starts with letter 'a' from table Students.
3. Display total number of rows return by the table using aggregate function.
4. Display column Name in ascending order from table Students.
5. Display the records of student who are from the city Delhi or Mumbai

b Explain SQL aggregate functions with the help of an example 10

Q4 a. What is Normalization? Explain 1NF,2NF,3NF with example. 15
Relation R(ABCDEF) is given. Check the highest normal form in the relation. Functional dependencies are {AB->C, C->DE, E->F, F->A}

b. Explain various keys in Databae Management system 5

Q5 a. Discuss ACID properties of transaction in detail 10

b. Consider following relations 10

```
Customer(cid: integer, cname: string, address: string, city: string, state:
Product(pid: integer, pname: string, price: currency, inventory: integer)
Shipment(sid: integer, cid: integer, shipdate: Date/Time)
ShippedProduct(sid: integer, pid: integer, amount: integer)
```

Write relational algebra queries for the following:

1. Return the product name and price for all products with a price less than Rs.5.00
2. Return the id and names of all customers that have ever received a shipment where a product quantity (amount) in the shipmment is greater than 20.
3. Return a list of all the customer names with addresses in the state 'CA' and have received a shipment prior to January 2,2014.

Return the product name and shipdate for all shipments that have an amount greater than the current inventory

Q6 a. What do you mean by deadlock with respect to transaction? Explain the procedure for deadlock handling 10

b. Discuss different types of concurrency control techniques in detail 10

* * * * * * *

6411BAACBDB111F71B9C4DB43E98A25A