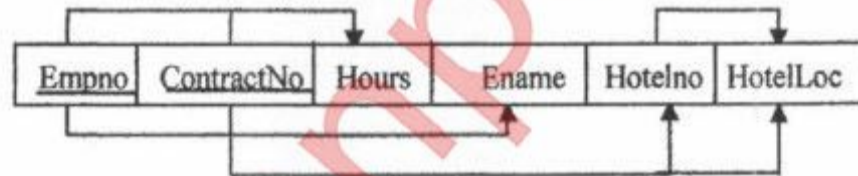


**(Time: 3 Hrs)**

**Marks: 80**

- N.B. : 1. Question no. 1 is compulsory.  
2. Solve any **Three** questions out of remaining **Five** questions.

- Qu-1 a) Explain Transaction state diagram. 5  
b) Describe View and Trigger. 5  
c) Discuss different Users of Database system. 5  
d) Explain different types of attributes in ER Model. 5
- Qu-2 a) Explain the algorithm to map ER and EER model to relational model in detail 10  
b) Explain steps in Query Processing. 10
- Qu-3 a) What is Conflict Serializability? How precedence graph is used to check whether the schedule is conflict serializable or not? 10  
b) Explain DML and DDL commands with syntax. 10
- Qu-4 a) Consider the following dependency diagram of relation R and Normalize till 3NF 10



- b) Discuss fundamental operations in relational algebra. 10
- Qu-5 a) Employees(Empid, Fname, Lname, Email, Phoneno, Hiredate, Jobid, Salary, Mid, Did) 10  
Departments(Did, Dname, Managerid, Locationid)  
Locations(Locationid, Streetadd, Postalcode, City)  
Write the SQL queries for the following.  
1. List the employees have a manager who works for a department based in the US.  
2. Write a query to display the details of all employees in the Finance department.  
3. Give 10% hike to all the Employees working in Did 20.  
4. Write a query to display all the information of the employees whose salary is within the range 1000 & 3000.  
5. Display the information of all the employees whose first name starts with 'R' in descending order of their salary.
- b) Draw and explain Database System Structure. 10
- Qu-6 Write Note on any TWO. 20  
a) Shadow Paging.  
b) ACID Properties of Transaction.  
c) Deadlock Detection and Recovery.