Time: 3 hours   **Marks: 80**

N. B: **1. Question 1 is compulsory.**

2. Attempt any three out of remaining.

3. Assume suitable data if required.

Qu-1		**Attempt any four questions**	
	a)	Consider a suitable relation schema and perform nested query and query using group by clause.	**5**
	b)	Explain ECA Model.	**5**
	c)	What is view? Discuss the difference between a view and base relation.	**5**
	d)	Define a lock and describe the types of locks used in concurrency control.	**5**
	e)	List differentiation between OLTP and OLAP	**5**
Qu-2	a)	What is SQLJ used for? Describe the two types of iterators available in SQLJ.	**10**
Qu-2	b)	Differentiate between static and dynamic SQL? Which one is more efficient?	**10**
Qu-3	a)	Describe ARIES recovery algorithm with example.	**10**
	b)	Explain Indexing Technique in the database.	**10**
Qu-4	a)	Find the cost of data transfer over the network for following details. Employee table is at site 1 with 10,000 rows. Each row size is 100 bytes. Department table is at site 2 with 100 rows. Each row size is 35 bytes. Find optimum solution for data transfer if following query is executed from site 3. **Query:** For each employee retrieve the emp_name and dept_name where employee works. Size of result tuple is 40 bytes.	**10**
	b)	Explain different ways of concurrency control in DDBMS	**10**

Qu-5   Consider a data ware house for a hospital where there are three dimensions: **20**
    1) Doctor 2) Patient and 3) Time
And two measures count and charge.
Using above example perform following
    i)   STAR schema
    ii)   Snowflake schema
    iii)   Rollup & Drilldown operations
    iv)   Pivot operation
    v)   Slice and Dice operations

Qu-6		Explain the following concepts with the help of example.	
	a)	SQL Injection	**5**
	b)	Mandatory Access Control	**5**
	c)	Statistical Database	**5**
	d)	Timestamp Ordering Protocol	**5**

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