

**Time: 3 hours**

**Max. Marks: 75**

**Answer any five questions  
All questions carry equal marks**

---

- 1.a) Compare the database system with file system.
- b) What is meant by storage manager? Discuss about DML. [15]
- 2. Construct an E-R diagram for a car-insurance company that has a set of customers, each of whom owns one or more cars. Each car has associated with it zero to any number of record accidents. [15]
- 3. State various fundamental operations in the relational algebra and explain them with suitable examples. [15]
- 4.a) Explain the logical connectivities in the SQL.
- b) Discuss about complex integrity constraints in SQL triggers. [15]
- 5. Explain clearly the lossless join decomposition, dependency preserving decomposition. Give suitable example to each of them. [15]
- 6. Explain the lock based protocols and time stamp based protocols. [15]
- 7. Discuss clearly about recovery with concurrent transactions. Give suitable example. [15]
- 8.a) Discuss about indexed sequential access methods.
- b) Compare the hash based indexing and tree based indexing. [15]

---0000---

BR BR BR BR BR BR BR BR  
BR BR BR BR BR BR BR BR  
BR BR BR BR BR BR BR BR