

(3 Hours)

[Total Marks : 100

- N.B. :** (1) Question No. 1 is **compulsory**.
 (2) Solve any **four** from Question Nos. 2 to 7.
 (3) **Figures** to the **right** indicate **full** marks.
 (4) Assume any suitable **data** wherever **required**.
1. (a) Explain different types of transparencies in distributed databases. 10
 Consider the following schema :-
 Emp (eno, ename, title)
 Proj (pno, pname, budget, Loc)
 Pay (title, salary)
 Assignment (eno, pno, responsibility, duration)
 (i) Give 2 examples of horizontal and vertical fragmentation each.
 (ii) Give the derived horizontal fragmentation on emp & pay relation. Write the resultant fragments.
- (b) Explain heuristic approach of query processing with relevant examples. 10
2. (a) Explain Hash join and External Sorting algorithm in detail. 12
 (b) Explain conceptual design phase of database life cycle. 8
3. (a) In SQL3 how the type inheritance and table inheritance implemented? Explain with suitable examples. 10
 (b) Explain left, right, outer, inner, equi join, pattern matching with example. 10
4. (a) Draw and explain architectures for parallel databases. 10
 (b) Explain mapping of Generalization, Specialization, Union/category with relevant examples. 10
5. (a) Consider the following DTD :-
 <!DOCTYPE Parts [
 <!ELEMENT part (name, subpartinfo*)>
 <!ELEMENT Subpartinfo (part, quantity)>
 <!ELEMENT name (# PCDATA)>
 <!ELEMENT quantity (# PCDATA)>
]>
 (i) Give a small example of data corresponding to the above DTD. 5
 (ii) Show how to map this DTD to a relational schema. You can assume that part names are unique. 5
- (b) Discuss deadlock handling techniques in distributed database. 10

[TURN OVER

6. (a) Explain cost functions for SELECT operation. **10**
(b) Compare RDBMS, OODBMS and ORDBMS. **10**
7. Write a short notes on (any **four**) :- **20**
- (a) Nested Relations.
 - (b) XQuery
 - (c) EXIST and NOT EXIST.
 - (d) Client - Server architecture.
 - (e) Bloom Join Techniques.
