



Time Allotted : 3 Hours

Full Marks : 70

The Figures in the margin indicate full marks.

Candidate are required to give their answers in their own words as far as practicable

**Group-A (Very Short Answer Type Question)**

1. Answer any ten of the following :

[ 1 × 10 = 10 ]

- (i) What is data replication?
- (ii) What is minterm predicate?
- (iii) Define homogeneous distributed database.
- (iv) What is the maximum no of functional dependencies (trivial and non-trivial) of a relation R of degree n?
- (v) Write the full form of OLAP.
- (vi) What is data dictionary?
- (vii) Provide a technique for recovery management.
- (viii) Edit of a data item in a transaction is done in which mode?
- (ix) What are the attribute usage values?
- (x) What do you mean by granularity?
- (xi) What is the disadvantage of replication?
- (xii) Who is responsible for ensuring correct execution of a transaction in the presence of failures?

**Group-B (Short Answer Type Question)**

Answer any three of the following :

[ 5 × 3 = 15 ]

2. What are the advantages and disadvantages of replication? What is auxiliary program? [5]
3. Write down the Dynamic query optimization methods with example. [5]
4. Which components are necessary for building a distributed database? [5]
5. Explain distributed cost model with example. [5]
6. What is DDBMS ? What are the features of DDBMS ? [5]

**Group-C (Long Answer Type Question)**

Answer any three of the following :

[ 15 × 3 = 45 ]

7. Explain the following in detail: [ 8+4+3 ]
  - i. Query optimization issues in DDBs.
  - ii. World Wide Web Architecture and Protocols.
  - iii. Data warehousing architectures.
8. What is flat transaction and nested transaction? [ 4+6+5 ]

Discuss about dirty-read, fuzzy read and phantom.

What is ACID in DDBMS?
9. Briefly describe the various implementations of the process pairs concept. Comment on how process pairs may be useful in implementing a fault tolerant distributed DBMS. [ 15 ]
10. Write down "Basic Timestamp Ordering Scheduler (BTO-SC) Algorithm". [ 8+7 ]

Write down "Data Processor (DP) Algorithm" .
11. Discuss different types of search strategies. [ 6+4+5 ]

What is search space in distributed query optimization?

Simplify the following query, expressed in SQL, using idempotency rules:

```
SELECT ENO
FROM ASG
WHERE RESP = "Analyst"
AND NOT(PNO="P2" OR DUR=12)
AND PNO != "P2"
AND DUR=12
```