

[Time: Three Hours]

[Marks: 80]

- N.B:**
- (1) Question No.1 is compulsory
 - (2) Attempt any three of remaining five questions
 - (3) Assume any suitable data if necessary and justify the same

- Q 1**
- a) Explain Brute-Force Nested Loop Join algorithm. 5
 - b) What is dead lock, explain wait and die scheme used for deadlock prevention. 5
 - c) What is Temporal Database? What are its characteristics? 5
 - d) Explain roll-up, drill down, slice, dice operations in OLAP. 5
- Q 2**
- a) Explain basic time stamp ordering protocol and compare it with 2 phase locking protocol in terms of deadlock and rollbacks. 10
 - b) Explain Mandatory Access Control and Discretionary Access Control, also explain access control list and access control entry w.r.t. the same. 10
- Q 3**
- a) Why fragmentation is required in distributed data bases, Explain Vertical fragmentation with example, comment on completeness , reconstruction and disjointness aspect of it. 10
 - b) Explain 2 Phase commit protocol with proper flow diagram. 10
- Q 4**
- a) Explain MOLAP, ROLAP and HOLAP Models. 10
 - b) What is the significance of serializability, explain conflict serializability and view serializability with the help of example. 10
- Q 5**
- a) Explain types of data extraction methods in ETL process 10
 - b) What is basic difference between pessimistic and optimistic concurrency control algorithm. Explain distributed 2PL algorithm. 10
- Q 6** Write short notes on **(any two)** 20
- a. Role Based Access Control
 - b. Query Optimization
 - c. Data Warehouse Architecture
 - d. Challenges in ETL functions
