

**IM.Sc. (CS) (NEP) Sem.-4 Examination  
Database Management Systems-II**

Time : 2.30 Hours]

June-2025

[Max.Marks : 50

- Q-1 Attempt the following** **10**
- A. Explain query optimization strategies for Join operations.. 5
- B. Describe the heuristic approach for query optimization with examples. 5
- OR**
- A. Explain in detail any three join strategies used in parallel processing. 5
- B. Describe cost estimation techniques for evaluating query plans. 5
- Q-2 Attempt the following** **10**
- A. Explain the problems of concurrent transaction execution with example. 5
- B. Describe timestamp-based concurrency control method with suitable examples. 5
- OR**
- A. What is deadlock? Explain wound-wait techniques for deadlock prevention. 5
- B. What is optimistic concurrency control ? List and explain various phases of optimistic concurrency control. 5
- Q-3 Attempt the following** **10**
- A. Describe deferred update for database recovery. 5
- B. Explain different types of database failures. 5
- OR**
- A. Discuss the shadow paging technique 5
- B. Explain checkpoint with example 5
- Q-4 Attempt the following** **10**
- A. Explain discretionary access control mechanisms. 5
- B. Explain the concepts of distributed database with examples. 5
- OR**
- A. How does data encryption ensure database security? Discuss with advantages. 5
- B. Explain Bell-LaPadula database security model. 5

(P.T.O)

**Q-5 Attempt the following (any 10)**

1. Define query equivalence.
  2. What is the role of query interpretation?
  3. Mention any two heuristics for query optimization.
  4. What are the ACID properties of a transaction?
  5. Define transaction log with its importance.
  6. What is a wait-for graph?
  7. List two types of database failures.
  8. What is shadow paging used for?
  9. Define starvation.
  10. What is data encryption in databases?
  11. What do you mean by key and algorithm with reference to encryption?
  12. What is the main difference between Discretionary Access Control (DAC) and Mandatory Access Control (MAC)?
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