

Roll No. ....

Total Pages : 03

BT-4/M-24

44185

## DATABASE MANAGEMENT SYSTEMS

PC-IT-210A

Time : Three Hours]

[Maximum Marks : 75

**Note :** Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

### Unit I

1. (a) What do you mean by data independence ? Differentiate between logical data independence and physical data independence. 8
- (b) Discuss the role of ER diagram in DBMS. Explain the concept of specialization and generalization using suitable example. 7
2. (a) Define the network data model. Provide examples of real-world applications where network data models are commonly used, and discuss their suitability for these applications. 8
- (b) What is a database administrator ? Explain the role and responsibilities of database administrator. 7

## Unit II

3. (a) Discuss the concept of relations in the relational model. What are the characteristics of a relation, and how is it represented in a database ? 7
- (b) Define relational algebra and discuss its significance in relational database management. What are the fundamental operations in relational algebra ? 8
4. (a) What are domain constraints and referential integrity constraints ? How do they enforce data consistency and integrity ? 8
- (b) What is a View, and how can we create, modify, and delete it ? Explain using examples. 7

## Unit III

5. (a) Define functional dependency in the context of relational database design and explain different types of Functional dependencies in DBMS. 8
- (b) Define multivalued dependencies and explain their significance in relational database design. 7
6. Discuss the different types of anomalies that can occur in database design and Explain 2NF, 3NF and BCNF using suitable example. 15

## Unit IV

7. (a) Explain the concept of conflict serializability and how it determines the correctness of concurrent transaction schedules. 8
- (b) Explain the principles and mechanisms behind shadow paging as a recovery technique for ensuring data consistency and durability. 7
8. Explain the following : 15
- (a) 2 -Phase Locking
- (b) Timestamp Technique.