

**Time: 3 Hours****Max. Marks: 60****Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 20 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 8 marks and may have a, b, c as sub questions.

PART - A**5 × 4 Marks = 20**

- 1.a) Define types of data models and explain briefly in one line each. [4]
- b) What are set operations? [4]
- c) Explain BCNF. [4]
- d) Discuss on Lock based concurrency control. [4]
- e) What are primary and secondary indexes? [4]

PART - B**5 × 8 Marks = 40**

- 2.a) What is meant by ER model? Explain how an ER diagram can be converted into relations. [4+4]
- b) Explain how to destroy/alter Tables and views? [4+4]

OR

- 3.a) Write a note on database architecture. [4+4]
- b) Explain the role of file manager and buffer manager in DBMS. [4+4]
4. Explain Division in relational algebra. [8]

OR

- 5.a) Explain about nested queries and correlated nested queries in the SQL. [4+4]
- b) What are aggregate operators in SQL? Explain them with suitable examples. [4+4]
6. Discuss the need for schema refinement. Explain the third and fifth normal form and inclusion dependencies. [8]

OR

7. Describe about the Multi-Valued Dependencies and Fourth normal form with suitable examples. [8]

- 8.a) Define these terms: atomicity, consistency, isolation, durability, schedule, blind write, dirty read, unrepeatable read, serializable schedule, recoverable schedule, avoids – cascading - aborts schedule. [4+4]
- b) Explain about Concurrent execution of transactions. [4+4]

OR

- 9.a) Explain Dead lock prevention policies employed in databases. [4+4]
- b) Briefly discuss write ahead log protocol. [4+4]

10. Define the Tree structured Indexing Hash based indexing with simple illustrations. [8]

OR

11. Explain the File organization types and its techniques. [8]