

(3 Hours)

- i. Q. 1. is Compulsory.
- ii. Attempt any three from the remaining.
- iii. Assume suitable data.

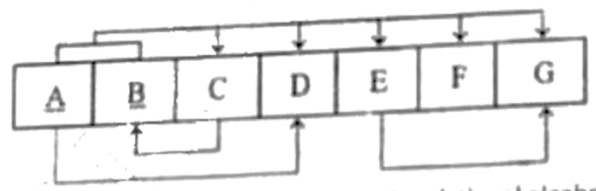


- Q1
- a Explain Data Independence 5
  - b Explain Recursive queries and Nested queries 5
  - c What are different Keys in ER diagram? 5
  - d Explain Join Operations in relational algebra 5

- Q2
- a Explain different indexing types in database management system 10
  - b Explain need of Normalisation along with all the normal forms 10

- Q3
- a Consider the following employee database. 10
    - Employee(empname, street, city, date\_of\_joining)
    - Works(empname, company\_name, salary)
    - Company(company\_name, city)
    - Manages(empname, manager\_name)
 Write SQL queries for the following statements:
    1. Modify the database so that employee "Amruta" now leaves in "Konkan"
    2. Find number of employees in each city with date\_of\_joining as "01-Aug-2017"
    3. list name of companies starting with letter "A"
    4. Display empname, manager\_name, street, city only for employees having manager
  - b Explain in detail different database users 10

- Q4
- a Construct a dependency diagram of relation R and normalize it up to the BCNF Normal form 10



- b Explain different types of operators in relational algebra 10

- Q5
- a Explain the difference between stored procedure and functions in SQL 10
  - b Draw EER diagram for Library Management System showing aggregation. 10

- Q6
- Write a short note on:
- a Specialization and Generalization 5
  - b DCL commands 5
  - c Cursors and its types 5
  - d Hashing techniques 5