

Seat No. **MAR\_APR 2025 SUMMER EXAMINATION****11731 Bachelor of Technology (NEP-2.0)****Sub. Name: Database Engineering****Sub. Code: 94356****Day and Date: MAY ,19-05-2025****Total Marks: 70****Time: 02:30 PM To 05:00 PM**

**Instructions:** 1. Assume suitable data wherever necessary and mention it boldly  
2. Figures to the right indicate full marks

**Special Inst.:** 1. Question no. 6 is compulsory  
2. Solve any four questions from Q. No. 1 to Q. No. 5

**Q1) [15]**

- a. Discuss the architecture of a database system and its components. [8]
- b. Explain the concept of relational algebra and provide example queries. [7]

**Q2) [15]**

- a. Write an SQL query for the following: [8]  
i. Given a 'Students' table with attributes (StudentID, Name, Age, Department), write an SQL query to find the average age of students in each department.  
ii. Write an SQL query to display the total number of orders placed by each customer from an 'Orders' table (attributes: OrderID, CustomerID, OrderDate).
- b. Explain PLSQL triggers and stored procedures with examples. [7]

**Q3) [15]**

- a. What is normalization? Explain 1NF, 2NF, and 3NF with examples. [8]
- b. Discuss temporal functional dependencies with examples. [7]

**Q4) [15]**

- a. Explain different file organization techniques used in databases. [8]
- b. Define the following terms. [7]  
1. Functional Dependency 2. Data Dictionary 3. Data redundancy

**Q5) [15]**

- a. Describe the concept of serializability and how it is tested. [8]

b. Explain deadlock handling techniques in databases.

[7]

**Q6)** Write short note on any two.

[10]

a. Role of Database Users and Administrators

b. Referential Integrity and Foreign Keys

c. Checkpoints in Database Recovery

d. Stable Storage Implementation

## **End Of Question Paper**

**Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -**

This Question Paper may be distributed for following Subjects as common code.

सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (1154) B.Tech. CBCS (94356) Database Engineering Part 3 SEM 6