Seat No.

Total No. of Pages : 3

OCT-NOV 2025 WINTER EXAMINATION

1154 B.Tech. CBCS

Sub. Name: Database Engineering

Sub. Code: 81548/81823/81825

Day and Date: Monday ,15-12-2025 **Total Marks: 70**

Time: 10:30 AM To 01:00 PM

Instructions: **1. All questions are compulsory**
2. Draw neat labelled diagrams wherever necessary
3. Figures to the right indicate full marks

Q1) Solve MCQs. (2 Marks Each) **[14]**

1. Which of the following is a fundamental operation in relational algebra? **[2]**

a. Set intersection
b. Natural join
c. Assignment
d. None of thementioned

2. Select emp_name from department wheredept_name like '_____ **[2]**
Science';Which one of the following has to be added into the blankto select th e dept_name whichhas Science as its ending string?

a. %
b. _
c. &
d. !

3. The file organization which allows us to read records that would satisfythe join **[2]**
conditionby using one block read is

a. Heap file organization
b. Sequential file organization
c. Clustering file organization
d. Hash file organization

4. A transaction is in_____ **[2]**
state after the final statement has been executed

a. Active
b. Partially Committed
c. Committed
d. None Of The Above

5. _____ operations do not preserve non-matched tuples. **[2]**

1. Left outer join
2. Inner join

3.Natural join
4. Right outer join

6. In ordered indices the file containing the records is sequentially ordered, a _____ is an index whose search key also defines the sequential order of the file. **[2]**
1. Clustered index
2. Structured index
3.Unstructured index
4.Nonclustered index

7. The union operation automatically _____ unlike the select clause. **[2]**
1.Adds tuples
2. Eliminates unique tuples
3.Adds common tuples
4. Eliminates duplicate

Q2) Solve any 2 of the following (7 Marks Each) **[14]**

1. Explain drawbacks of File system. **[7]**

2. How are the following integrity constraints implemented in SQL: **[7]**
a. Domain constraint
b. Referential integrity.
Explain the above with appropriate syntaxand example.

3. List and explain the desired properties of decomposition. **[7]**

Q3) Solve any 2 of the following (7 Marks Each) **[14]**

1. Explain the rules for reduction of following notationin ERD, with appropriate ex amples **[7]**
i. Weak Entity set
ii. Multivalued attribute in Strong Entity set
iii. Many to One relationship set.

2. List and explain the different DML statements in SQL **[7]**

3. Assume the Relations given below. **[7]**
Student(Enrno, name, courseId, emailId, cellno) Course(courseId, course_nm, duration)
Write SQL statements for following:
a. Find out list of students who have enrolled in “CSE”course. (2)
b. List name of all courses with their duration. (1)

c. List name of all students start with “s”. (2)

d. List emailId and cell no of all mechanical engineering students. (2)

Q4) Solve any 2 of the following (7 Marks Each) **[14]**

1. Define the terms Primary Index and Secondary Index. Differentiate between them on basis of the Evaluation Criteria for indices **[7]**

2. State and explainvarious classes of failure in database system. **[7]**

3. What is transaction? Explain its ACID properties of transaction **[7]**

Q5) 1. Solve any 2 of the following (7 Marks Each) **[14]**

1. Explain the purpose of Checkpoint mechanism. Explain the steps for performing acheckpoint **[7]**

2. Explain Buffer Managment. **[7]**

3. Define the terms Dense Index and Sparse Index. Differentiate betweenthem. **[7]**

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 (81548) Database Engineering Part 3 SEM 6
2] (101) Bachelor of Engineering (81825) Database Engineering Part 3 SEM 6
3] (101) Bachelor of Engineering (81823) Compiler Construction Part 3 SEM 6