

NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI-15
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
B.Tech. DEGREE, V SEMESTER EXAM, NOVEMBER- 2024
CSPC52 - Database Management and Systems

DATE: 26-11-2024 TIME: 02.00 p.m. - 05.00 p.m.

MAX.MARKS:100 marks

Answer all Questions

5 x 20 =100 marks

1. ~~a.~~ Explain the different data models used in a database system.
~~b.~~ write short notes on the storage manager and the query processor components in the Database System architecture. ~~& Draw~~
2. Consider the following relation
Book (Book_id, book_title, publisher, book_price)
 - a) Write a SQL procedure which print details of books whose price is more than the average book price.
 - b) Write a SQL function that will display the name of books with price more than Rs.1000.
 - c) Write a trigger such that if record is deleted from the book table, insert old record in book_backup table.
3. ~~a.~~ Suppose that we decompose the schema $r(A, B, C, D, E)$ into $r_1(A, B, C)$ and $r_2(A, D, E)$. Check if this decomposition is a lossless decomposition and if the following set F of functional dependencies holds:
 $A \rightarrow BC$
 $CD \rightarrow E$
 $B \rightarrow D$
 $E \rightarrow A$
~~b.~~ Explain the lock based protocol used for concurrent execution of transactions briefly.
4. ~~a.~~ What is a recoverable schedule? Why is recoverability of schedules desirable? Are there any circumstances under which it would be desirable to allow non recoverable schedules? Explain your answer.

b. Describe the implementation of Atomicity and Durability property in a database system briefly?
5. ~~a.~~ Explain the different types of indexing techniques used in a database with examples.

~~b.~~ Create student's collections in MongoDB and perform the basic CRUD operations in the document. Use Projections for selecting only necessary data from the student document.