

**DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE**

**Regular & Supplementary Winter Examination-2023**

**Course: B. Tech**

**Branch :** Computer Engineering / Computer Science and Engineering

**Semester :V**

**Subject Code & Name: BTCOC501 Database Systems**

**Max Marks: 60**

**Date:01-01-24**

**Duration: 3 Hr.**

**Instructions to the Students:**

1. All the questions are compulsory.
2. The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

|                                                                                                                                       | (Level/CO) | Marks |
|---------------------------------------------------------------------------------------------------------------------------------------|------------|-------|
| Q. 1 Solve Any Two of the following.                                                                                                  |            | 12    |
| A) We develop database applications directly on top of file systems. But some problems arise because of this, Discuss those problems. | CO1/3      | 6     |
| B) Explain two tier and three tier architectures of DBMS with schematic diagram and mention at least 1 example of each.               | CO1/2      | 6     |
| C) Draw the symbols of ER Diagram. Draw ER Diagram for Library Management System.                                                     | CO1/2      | 6     |
| Q.2 Solve Any Two of the following.                                                                                                   |            | 12    |
| A) What is Relational algebra? Explain basic operations along with symbols of Relational Algebra.                                     | CO2/2      | 6     |
| B) Write Relational Algebra Queries for following.                                                                                    | CO2/3      | 6     |
| Note: Consider Relational Table - Account( Acno, AcName, Br_name, Amount).                                                            |            |       |
| a) To display all tuples from Accounts table.                                                                                         |            |       |
| b) To display Acno, AcName from accounts.                                                                                             |            |       |
| c) To display the tuples for the account whose amount>25000 and Br_name="Dharashiv)                                                   |            |       |
| d) To display Acno, AcName, Amount From Account where the amount>50000                                                                |            |       |
| C) Explain Equijoin, left join and right join with suitable example and write proper relational algebraic query for each of them.     | CO2/2      | 6     |
| Q. 3 Solve Any Two of the following.                                                                                                  |            | 12    |
| A) Mention different SQL languages. Explain their purpose with suitable SQL commands.                                                 | CO3/1,2    | 6     |
| B) Write the SQL Queries for the following.                                                                                           | CO3/3      | 6     |

- a) Creating, Using, showing and deleting databases.
- b) To create BOOK table with Bkid, Title, Author, branch, cost and date of publishing. (Assume proper data type for each column).
- c) Write query to insert 2 valid rows of values into the BOOK table.
- d) Write query to increase the length of Title and Author.
- e) Write query to list books with cost less than 100.
- f) Write query to list all books with title "RDBMS".

C) Consider the following schema:

CO3/3

6

Suppliers (sid : integer, sname : string, address : string)

Parts (pid : integer, pname : string, color : string)

Catalog (sid : integer, pid : integer, cost : real)

Write query for the following

- a) To create above tables
- b) Find the name of suppliers who supply some red parts
- c) Find the sids of suppliers who supply some red or green parts
- d) Find the sids of suppliers who supply some red part or are at 221 packer Ave
- e) Find the sids of suppliers who supply some red part and some green part

Q.4 Solve Any Two of the following.

12

- A) What is normalization? Why one need to normalize the database tables?
- B) Explain 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> normal form with the help of suitable example.
- C) Why we need to organize database files? Mention the type of organisations, and explain any one with suitable example.

CO4/2

6

CO4/2

6

CO3/2

6

Q. 5 Solve Any Two of the following.

12

- A) Define Transaction and their properties with suitable example.
- B) Define serial and non-serial schedules. Explain serialisabilty with suitable example.
- C) Explain the need of concurrency control. Mention the concurrency control methods. Explain any one with suitable example.

CO5/2

6

CO5/2

6

CO5/2

6

\*\*\* End \*\*\*