MODULE 2

Relational Model

1. List and explain characteristics of Relation.17CS53 July/August 2021
   Or
   Describe any two characteristics of relations with suitable example for each 17CS53 Aug/Sept 2020
2. Discuss characteristics of relation that make them different from ordinary tables. 17CS53 Jan/Feb 2021
3. List Set theory operations used in relation data model. Explain any two with examples. 17CS53 July/August 2021, 17CS53 Aug/Sept 2020
4. Briefly discuss the different types of Update Operations on relational database. Show an example of a violation of the referential integrity in each of the update operations. 17CS53 July/August 2021
5. Discuss the Entity integrity and Referential integrity constraints. Why each considered important? 15CS53 Jan/Feb, 18CS53 Jan/Feb 2021
6. How the aggregate functions and grouping are specified in relational model? Explain. 18CS53 July/Aug 2021
7. Define the followings: 17CS53 Aug/Sep 2020
   - Relation state
   - Domain
   - Relation schema
   - Arity
8. Define the flowing with examples 18CS53 July/August 2021 ,17CS53 Dec/Jan 2020
   - Key
   - Super key
   - Candidate key
   - Primary key
   - Foreign key

Relational Algebra

9. Explain unary relational operators along with their syntax and example. 15CS53 July/August
10. Discuss equijoin and natural join with suitable examples using relational algebra notation 18CS53 Jan/Feb 2021
11. Explain with example left outer join and right outer join. 15CS53 July/August
12. Explain the various inner join operations in relational algebra with examples. 18CS53 July/August 2021
13. Discuss the various types of JOIN operations with an example. Why is THETA join required? 17CS53 Aug/Sept 2020
14. Discuss the following relational algebra operation .Illustrate with an example for

each JOIN, DIFFERENCE, SELECT, UNION. 15CS53 Jan/Feb

15. Given the schema: 18CS53 Jan/Feb 2021
    Passenger (pid, pname, pgender, pcity)
    Agency (aid,aname, acity)
    Flight (fid,fidate, time, src, dest)
    Booking (pid, aid, fid, fdate),
    Given relation algebra expression for the following18CS53 Jan/Feb 2021
    - Get the complete details of all flights to new Delhi.
    - Find only the flight numbers for passenger with paid 123 for flights to Chennai before 06/11/2020
    - Find the passenger names for those who do not have any bookings in any flights
    - Get the details of flights that are scheduled on both dates 01/12/2020 and 02/12/2020 at 16:00 hours
    - Find the details of all male passengers who associated with jet agency.

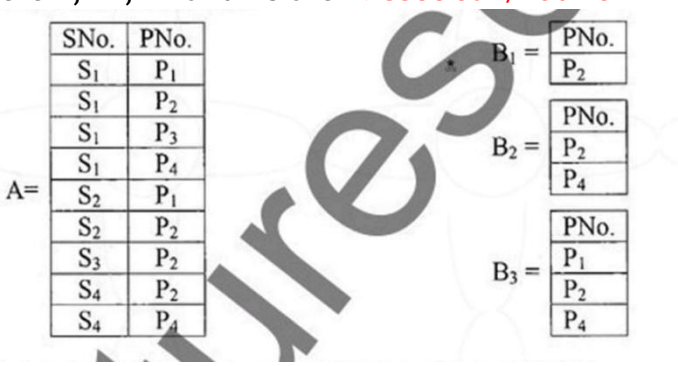
16. Consider the following SAILORS database. 15CS53 July/August ,18CS53 July/Aug 2021, 17CS53 Aug/Sep 2020, . 17CS53 Dec/Jan 2020
    SAILORS (Sid, Sname, rating, age)
    BOATS (bid, bname, color)
    RESERVES (Sid, bid, day)
    - Find the names of sailors who have reserved green boat.
    - Find the names of sailors who have reserved all boats.
    - Find the names of sailors who have reserved boat 103.
    - Retrieve the sailor names that have reserved red and green boats.
    - Retrieve the colors of boats reserved by Raj
    - Retrieve the SIDs of sailors with ago over 20, who have not reserved a red boat.
    - Retrieve the sailors name with age over 20 years and reserved black boat.
    - Retrieve the sailors name who have reserved green boat on Monday.
    - Retrieve the number of boats which are not reserved.
    - Retrieve the sailors names who is the oldest sailor with rating 10.
    - Find names of sailors who have reserved a red boat.
    - Find names of sailors who have reserved a red or green boat

17. Given the schema: 18CS53 Jan/Feb 2021
    Passenger (pid, pname, pgender, pcity)
    Agency (aid,aname, acity)
    Flight (fid,fidate, time, src, dest)
    Booking (pid, aid, fid, fdate),
    Given relation algebra expression for the following18CS53 Jan/Feb 2021
    - Get the complete details of all flights to new Delhi.
    - Find only the flight numbers for passenger with paid 123 for flights to Chennai before 06/11/2020
    - Find the passenger names for those who do not have any bookings in any flights
    - Get the details of flights that are scheduled on both dates 01/12/2020 and

02/12/2020 at 16:00 hours

- Find the details of all male passengers who associated with jet agency.

18. Discuss DIVISION operation. Find the quotient for the following: A/B1, A/B2 and A/B3
    Where A, B1, B2 and B3 are 17CS53 Jan/Feb 2021



A=

SNo.	PNo.
S_1	P_1
S_1	P_2
S_1	P_3
S_1	P_4
S_2	P_1
S_2	P_2
S_3	P_2
S_4	P_2
S_4	P_4

B_1 =

PNo.
P_2

B_2 =

PNo.
P_2
P_4

B_3 =

PNo.
P_1
P_2
P_4

Mapping Conceptual Design into Logical Design

19. Explain the steps in mapping from ER to relational schema. Discuss each step with example. 15CS53 July/August , 18CS53 Jan/Feb 2021, 17CS53 Aug/Sep 2020
    Or
    Give the ER to relational mapping algorithm. Discuss each step with an example. 15CS53 Jan/Feb
    Or
    Summarize the steps involved in converting the ER constructs to relational schemas.
    Or
    Enumerate the steps tables involved in converting the ER constructs to corresponding relational table. 17CS53 Dec/Jan 2020
    Or
    Explain the steps to convert the basic ER model to Relational Database Schema?17CS53 Jan/Feb 2021

SQL

20. For the following relations for a book club: 17CS53 Jan/Feb 2021
    MEMBERS (Member-id, Name, Designation, Age)
    BOOKS (Bookid, Book-Title, Book-Author, Book-Publisher, Book-price)
    RESERVES (Member-id, Book-id, Date)
    Write the SQL queries:
    - Find the names of members who are professors older than 45 years.
    - List the titles of books reserved by professors.

- Find Id's of members who have not reserved books that cost more than Rs.500.
- Find the authors and titles of books reserved on 27-May-2017.
- Find the names of members who have reserved all books.

21. Explain with examples, the basic constraints that can be specified when a database table is created in SQL. 17CS53 Dec/Jan 2020

22. Explain the following in SQL 15CS53 Jan/Feb
    - Unspecified WHERE clause and use of the Asterisk.
    - Explicit and NULLS .
    - Renaming attributes and joined tables.

23. Describe the six clauses in the syntax of SQL retrieval query with example. Which of the six are required and which are optional? 15CS53 July/August
    Or
    Describe the six clauses in the syntax of an SQL. retrieval query 18CS53 July/August 2021

24. Write SQL queries for the following relational schema: 17CS53 Dec/Jan 2020
    CUSTOMER (CID, CNAME, EMAIL ,ADDR.,PHONE)
    ITEM (ITEM NO,ITEM NAME, PRICE, BRAND)
    SALES (CID,ITEM NO,# ITEMS, AMOUNT, SALE_DATE)
    SUPPLIER (SID, SNAME, SPHONE, SADDR)
    SUPPLY (SID, ITEM NO, SUPPLY DATE ,QTY)
    - List the items purchased by customer Prasanth.
    - Retrieve items supplied by all suppliers starting from 1 Jan 2019 to 30 Jan 2019.
    - Get the details of customers whose total purchase of items worth more than 5000 rupees
    - List total sales amount, total items, average sale amount of all items.
    - Display customers who have not purchased any items.

25. Explain the basic data types available for attributes in SQL. 17CS53 Jan/Feb 2021
26. Explain the following SQL commands: CREATE , INSERT, SELECT and UPDATE .Give their syntax and at least one example for each. 17CS53 July/August 2021
27. Write the SQL statement for the 17CS53 July/August 2021
    - Show the resulting salaries if every employees working on the Product X's project is given a 10% raise.
    - Retrieve all employees in department 5. Whose salary in between $ 30,000 and $40,000.
    - Retrieve the name and address of all employees who work for the "Research department".

28. Write SQL query for the following database schema: 18CS53 Jan/Feb 2021
    Employee (employee name, street, city).
    Works (employee name, company name, salary).
    Company (company name, city).

Managers (employee name, manager name) .

- Find the names, street address and cities of residence for all employees who work for First Bank Corporation and earn more than $10,000.
- Find the names of all employees in the database who do not work for First Bank Corporation. Assume that all people work for exactly one company .
- Find the names of all employees in the database who earn more that every employee of "Small Bank Corporation". Assume that all people work for at most one company.
- Find the name of the company that has the smallest payroll.
- Find the names of all employees in the database who live in the same cities and in the same streets as do their managers.