VIT
Vellore Institute of Technology

Slot : B1+TB1

School of Computer Science Engineering and Information Systems
Fall Semester 2023-2024
Continuous Assessment Test – I

Programme Name & Branch: MCA
Course Name & code: Database Systems- PMCA503L
Class Number (s): VL2023240106181, VL2023240106185, VL2023240106189
Faculty Name (s) MUTHAMIL SELVAN T, KARTHIKEYAN J, TAPAN KUMAR DAS
Exam Duration: 90 Min.   Maximum Marks: 50

Q.No.	Answer all Questions	5X10= 50 Marks

1. If you were designing a Web-based system to make airline reservations and sell airline tickets, which client/server DBMS architecture for DBMS would you choose? Why? Why would the other architectures not be a good choice? Explain the chosen client/server architecture.

2.

Design an E/R diagram for the following database. The database for music stores details of a personal music library, and could be used to manage your MP3, CD, it's relatively simple and stores only the relationships between artists, albums, and tracks.

Requirements for our database:

- ✓ The collection consists of albums.
- ✓ Store the album details album id , album name, when it is purchased and where it is purchased.
- ✓ An album is made by exactly one artist.
- ✓ An artist makes one or more albums.
- ✓ An album contains one or more tracks
- ✓ Artists, albums, and tracks each have a name.
- ✓ Each track is on exactly one album.
- ✓ Each track has a time length, measured in seconds.
- ✓ When a track is played, the date and time the playback began (to the nearest second) should be recorded; this is used for reporting when a track was last played, as well as the number of times music by an artist, from an album, or a track has been played.

3.

Figure below shows an ER schema for a bank database that can be used to keep track of customers account and loan details. Map this schema into a relational schema and specify all primary keys and foreign keys.
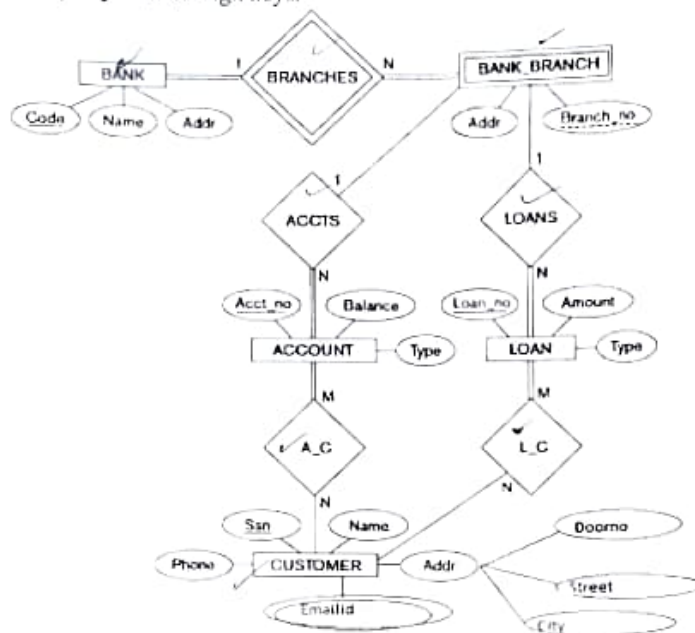
4. Discuss about various constraints in the relational model with appropriate example.

5. Consider the following schema:
Suppliers(sid, sname, address)
Parts(pid, pname, color)
Catalog(sid, pid, cost)

Write the following queries in relational algebra

A. Find the part ID whose cost is more than 1000 Rupees. (2 marks)
B. Count how many parts are there in each color. (2 marks)
C. Find the suppliers ID who supply some red part. (3 marks)
D. Find the names of suppliers who supply some red part. (3 marks)