

**VIT<sup>®</sup>**Vellore Institute of Technology  
(Approved as a University under section 3 of UGC Act, 1956)**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****X**

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.

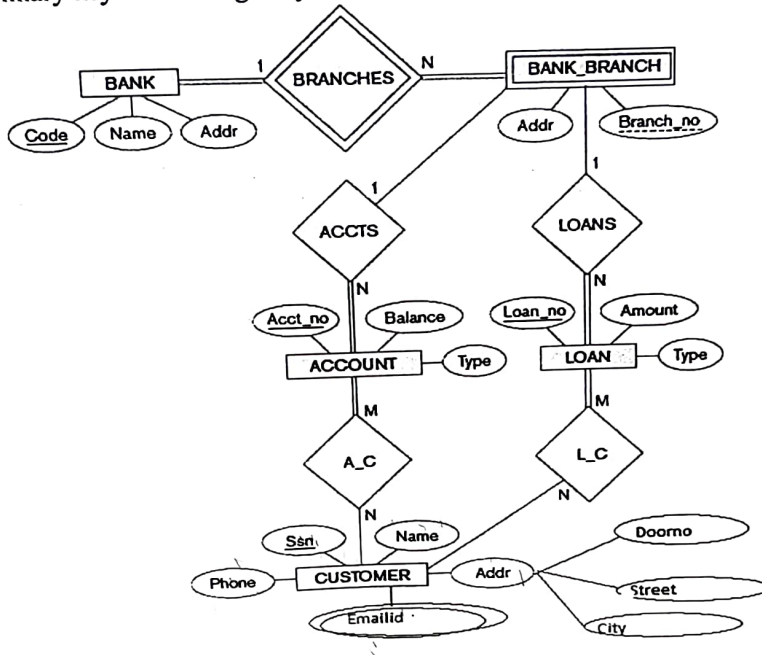
**2.**

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.

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

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