VIT

Vellore Institute of Technology

School of Information Technology and Engineering

Fall Semester 2022-2023 - Fresher

Continuous Assessment Test – I

Programme Name & Branch: MCA

Course Name & code: Database Technologies & ITA5008

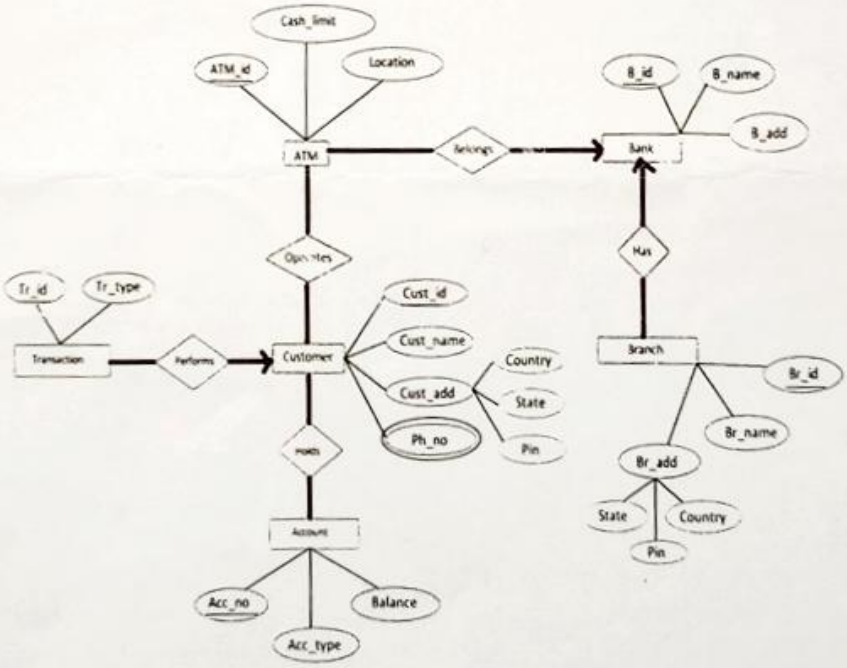
Class Number (s): VL2022230105109 Slot: B2+TB2

Exam Duration: 90 Min. Maximum Marks: 50

Faculty Names: Prof (s). BIMAL KUMAR RAY, SHASHIKIRAN V & VINAY M

Answer ALL the Questions (5 *10 = 50)

1. Explain in detail about Entity type, attributes, and Cardinality Relationships with suitable examples? [10M]
2. **A)** Convert the following ER diagram to set of relational schemas: [5M]



B) Explain the concept of specialization and generalization in extended entity-relationship model with the help of suitable example. [5M]

3. Consider a CONFERENCE_REVIEW database in which researchers submit their research papers for consideration. Reviews by reviewers are recorded for use in the paper selection process. The database system caters primarily to reviewers who record answers to evaluation questions for each paper they review and make recommendations regarding whether to accept or reject the paper. The data requirements are summarized as follows:

- Authors of papers are uniquely identified by e-mail id. First and last names are also recorded.
- Each paper is assigned a unique identifier by the system and is described by a title, abstract, and the name of the electronic file containing the paper.
- A paper may have multiple authors, but one of the authors is designated as the contact author.
- Reviewers of papers are uniquely identified by e-mail address. Each reviewer's first name, last name, phone number, affiliation, and topics of interest are also recorded.
- Each paper is assigned between two and four reviewers. A reviewer rates each paper assigned to him or her on a scale of 1 to 10 in four categories: technical merit, readability, originality, and relevance to the conference. Finally, each reviewer provides an overall recommendation regarding each paper.
- Each review contains two types of written comments: one to be seen by the review committee only and the other as feedback to the author(s).

Design an entity-relationship diagram for the above data requirements. Indicate key constraints, cardinality constraints and participation constraints on the diagram. [10M]

4. **A)** State all first Normal Form, second Normal Form, Third Normal Form and Boyce-Codd Normal Form (BCNF). [7M]

   B) Consider the following relational Schema [3M]

   Emp_Proj (Ssn, Pnumber, Hours, Ename, Pname, Plocation)

   With Functional Dependencies

   Ssn $\longrightarrow$ Ename

   Pnumber $\longrightarrow$ {Pname, Plocation}

   {Ssn, Pnumber} $\longrightarrow$ Hours

   Check weather is in 2NF, If not Convert in to 2NF Relations.

5. Write the following queries in SQL, using the Railway Reservation System schema.

Railway Reservation System -(Redesigning IRCTC database)

Train(train_number, name, source, destination, start_time, reach_time, traveltime, distance, class, days, type)

Ticket(PNR_no,Transactionid, from_station, To_station, date_of_journey, class date_of_booking, total_ticket_fare, train_number)

Passenger(PNR_no, Serial_no, Name, Age, Reservation_status)

Train_Route(Train_no, route_no, station_code, name, arrival_time, depart_time, distance,day)

Train_Ticket_fare(Train_no, class, base_fare, reservation_charge, superfast_charge, other_charge, tatkal_charge, service_tax)

a. Write down an SQL Statement to give a list of trains in ascending order of number. [2M]

b. Write down an SQL Statement to list the senior citizen passenger details. [2M]

c. Write down an SQL Statement to add a suitable constraint to train table to always have train no in the range 1001 to 99999. [2M]

d. Write down an SQL Statement to print the train names in upper case. [2M]

e. Write down an SQL Statement to add a suitable constraint for the class column that it should take values only as 1A, 2A, 3A, SL, C. [2M]