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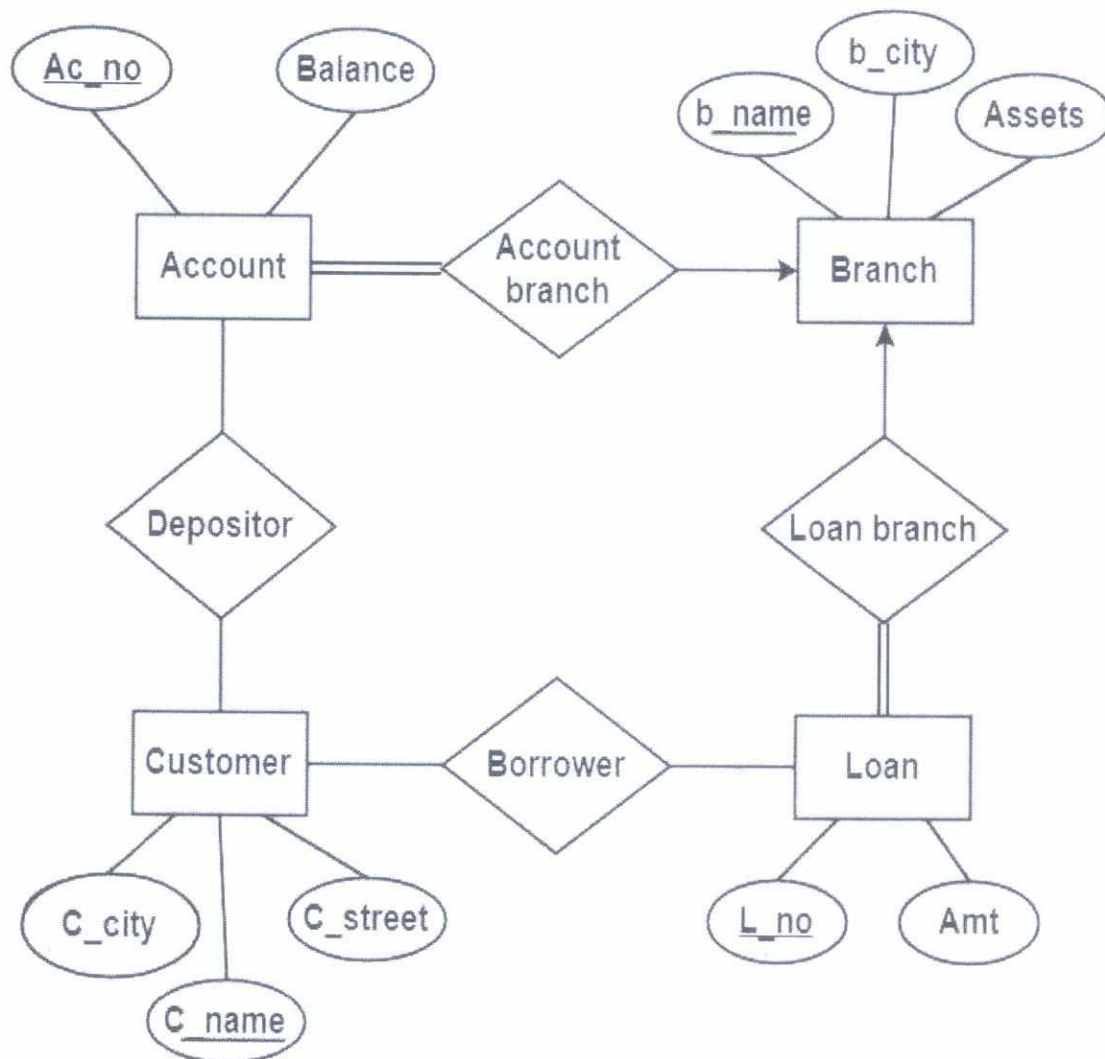
Thapar Institute of Engineering & Technology, Patiala
Computer Science and Engineering Department
MID-SEMESTER EXAMINATION

Course Code: UCT402	Course Name: Database Management System
March 13, 2023	Monday, 10:30 PM – 12:30 PM
Time: 2 Hours, M. Marks: 50	Name of Faculty: Dr. Rajendra Kumar Roul

(Note: Answer all the questions with valid points only, which are most appropriate for your answers. Assume the missing information (if any) suitably. All the symbols used here have their usual meaning.)

- Q1. Explain briefly the following with suitable examples: (5 x 2 = 10M)
- Three levels of data abstractions in DBMS
 - Data Independence in DBMS
 - Integrity rules of DBMS
 - On delete cascade vs. On delete set null
 - Composite attribute vs. multi-value attribute
- Q2. Answer the following with a suitable example: (5 x 2 = 10M)
- Write two major differences between DELETE and TRUNCATE commands in SQL.
 - What is the main difference between UNION and UNION ALL in SQL?
 - How is a correlated sub-query different from a non-correlated sub-query?
 - How does the Exist operator work in SQL?
 - How is Inner join different from Natural join in SQL?
- Q3. Consider the following two tables and answer the following SQL queries. (10 x 2 = 20M)
- Table EMPLOYEE** (emp-id number, emp-name varchar (20), job varchar (20), salary number, dept-id number references DEPARTMENT (dept-id)).
- Table DEPARTMENT** (dept-id number, dept-name varchar (20), join-date date).
- Find the departments where the maximum number of employees are working.
 - Display the employee details of each department for which they are working.
 - Find the departments where most of the 'CLERK' are working.
 - Increment the salary by 500 for those employees whose name's second character is 'b' and last character is 's', and exactly six characters in length.
 - Find the employees who are getting lower salaries than the average salary of their respective departments.
 - Find the day on which an employee joins his respective department.
 - Find the employees who are working as 'CLERK' and their department and salaries are same as the department and salary of 'Ramesh'.
 - Find the department name where more than 20 employees are working, and their total salaries should be more than 20000.
 - Display the employee names and their department names except for 'SALESMAN' people who are working in the same department where 'Ramesh', 'Dinesh', and 'Harish' are working.
 - Find the employees who are neither 'SALESMAN' nor 'CLERK' and working in the 'Mechanical' department.

Q4. a) Find the minimum number of tables required to convert the following ER diagram to relations. Show the structure of each table. 5M



b) Considering the above ER diagram, discuss how the minimum number of tables are generated for the following two cases: 5M

Case 1: (Account, Branch)

Case 2: (Customer, Loan)

(**Note:** To validate your answer, you can take suitable examples for the entities of the above two cases.)
