Roll No. ....

BCA–501(N)

B. C. A. (Fifth Semester)
EXAMINATION, Dec., 2017

(New Course)

Paper First

INTRODUCTION TO DBMS

Time : Three Hours]   [*Maximum Marks : 75*

Note : Attempt questions from all Sections as directed.

Inst.   :   The candidates are required to answer only in serial order. If there are many parts of a question, answer them in continuation.

Section—A

(Short Answer Type Questions)

Note : All questions are compulsory. Each question carries 3 marks.

1. (A) Discuss the mechanism used to read data from or write data to the disk.

   (B) Discuss the techniques for record deletion.

   (C) What is the two-phase locking protocol ?

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(D) What is meant by the concurrent execution of database transaction in a multiuser system ?

(E) List the types of privileges available in SQL.

(F) What is meant by revoking a privilege ?

(G) What is a functional dependency ? Why can we not infer a FD automatically from a particular relation state ?

(H) List the data types that are allowed for SQL attributes.   http://csjmuonline.com

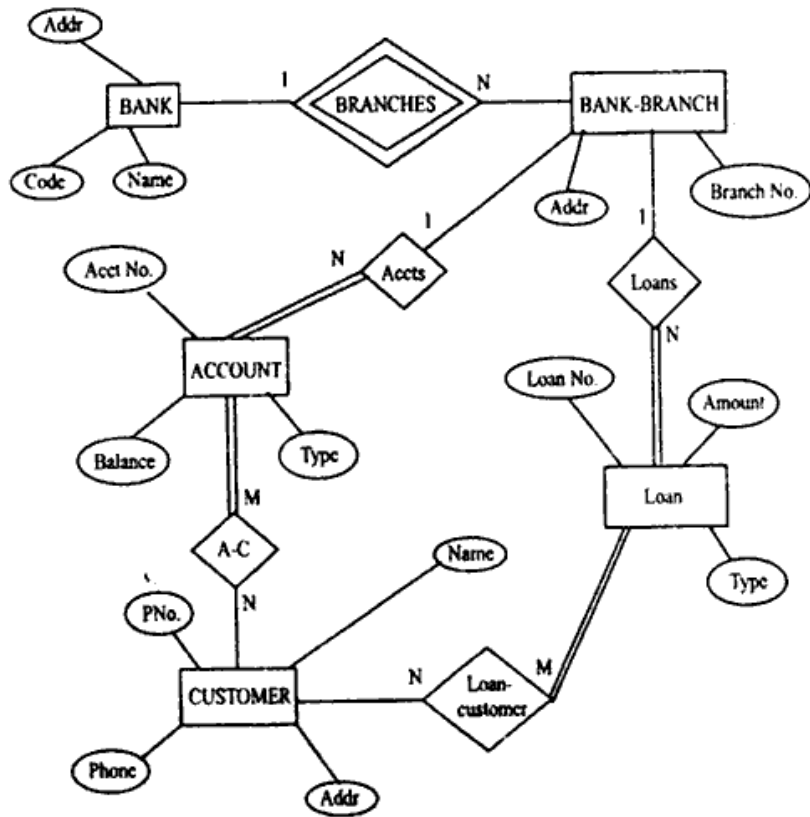(I) Discuss the entity integrity and referential integrity constraints. Why is each considered important ?

Section—B

(Long Answer Type Questions)

Note : Attempt any *two* questions. Each question carries 12 marks.

2. Consider the ER diagram shown in figure for part of a bank database. Each bank can have multiple branches and each branch can have multiple accounts and loans.

    (a) List the (non weak) entity types in the ER diagram.

    (b) Is there a weak entity type ? If so, give its name, partial key and identifying relationship.

    (c) List concisely the user requirements that led to this ER schema design.

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(d)   List the names of all relationship types :

3. Describe the three-schema architecture. Why do we need mapping between schema levels ? How do different schema definition language support thin architecture ?

4. Discuss the capabilities that should be provided by a DBMS. What are the responsibilities of the DBA and the database designers ?

5. Consider the following relations for a database that keep track of business trips of salespersons in a sales office.

SALESPERSON (Sid, Name, Start-Year, Dept_No)

TRIP (Sid, From_City, To_City, Departure_Date, Return_Date, Trip-ID)

EXPENSE (Trip-ID, Account #, Amount)

Specify the foreign keys for thin schema, stating any assumption you make.

Section—C

(Long Answer Type Questions)

Note : Attempt any *two* questions. Each question caries 12 marks. http://csjmuonline.com

6. Consider the following database relation containing the attributes Book_Id, subject_catgory_of_book, Name_of_author and nationality_of_author with book_id as the primary key :

    (a)   What is the highest normal form satisfied by this relation ?

    (b)   Suppose the attributes books_title and author-address are added to the relation, and the primary Key is changed to {name-of-author, Book-title}. What will be the highest normal form satisfied by relation ?

7. (a)   What is the difference between static and dynamic files ?

P. T. O.

(b)   How does B-tree differ from a B$^+$ tree ? Why is a B$^+$ tree usually preferred as an access structure to a data file ?

8.   What is pseudo code of searching for a record with search key field value K, using a B$^+$ tree in any preferred programming language ?

9.   What are the typical security classification ? Discuss the simple security property and the * property and explain the justification behind these rules for enforcing multilevel security.