



Roll no

# National Institute of Technology Goa

## B.Tech End Semester Online Examinations December 2020

Course Name: Database Systems

Date: 15-12-2020

Duration: 3 Hours

Course Code: CS301

Time: 2.00 P.M- 5.00 P.M

Max. Marks: 100

### ANSWER ALL QUESTIONS

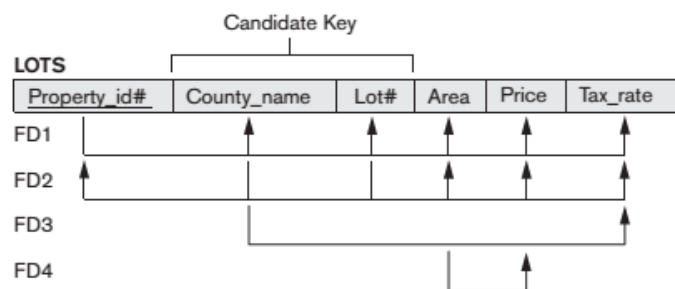
1a. What are cursor attributes? Discuss any five cursor attributes. Write a cursor for the following details (Use Fig. Q1\_Q5 Database):

Compute all customers who have an account and loan at all branches located in "Ponda".

1b. Define (with suitable example) Super Key, Primary Key, Foreign Key and Candidate Key.

(10+10)

2a. Justify that "BCNF is stricter than 3NF". Bring the following relation schema to Boyce Cods Normal Form.



2b. What is multivalued dependency? Explain with necessary example.

2c. Discuss the different cardinality constraints with necessary example.

(8+6+6)

3a. What are the four issues which may arise when concurrent transactions are executed? Explain with necessary example.

3b. Justify with necessary example that conflict serializability is a subset of view serializability

(10+10)

4a. What is schema? Explain three schema architecture with necessary block diagram.

4b. What is database model? Explain the major four database models with necessary example.

4c. What are the fundamental operations in the relational algebra? Explain with necessary example.

4d. What are lock based protocols? Explain the two phase locking protocol with necessary lock matrix.

(5+5+5+5)

5. Give SQL and relational algebra queries for the following statements (Use Fig.Q1\_Q5 Database).

i. Find the loan number for each loan of an amount more than Rs 20000.

ii. Find the names of all customers who have a loan at the "Farmagudi Branch".

iii. Find the names of all customers who have account and loan at the "Ponda Branch".

iv. Find the names of all customers who have a loan at the "North Goa Branch" but do not have an account at any branch of the bank.

v. Find all customers who have an account from at least the "Main Branch" and the "Sub Branch" of "Ponda".

(5x4=20)

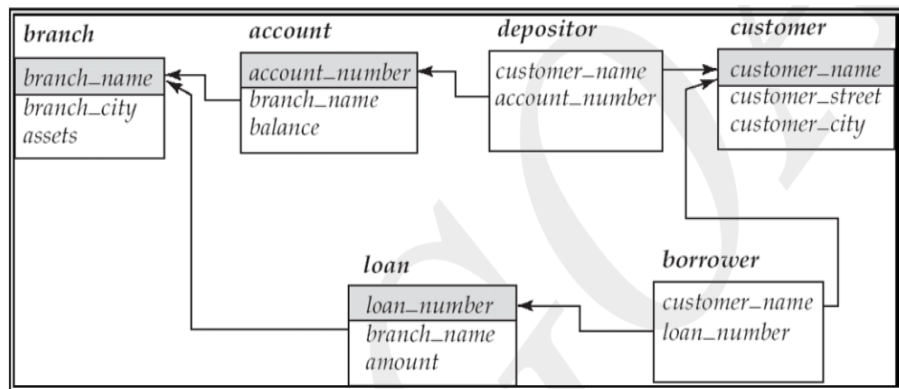


Fig. Q1\_Q5 Database

----- ALL THE BEST -----