राष्ट्रीय प्रौधोगिकी संस्थान गोवा
NATIONAL INSTITUTE OF TECHNOLOGY GOA
Farmagudi, Ponda, Goa, 403401

Programme Name: B.Tech

End Semester Online Examinations, December 2021

Course Name: Introduction to Database Management Systems	Course Code: EE509
Date: 13-12-2021	Time: 9.30 AM- 12.30 PM
Duration: 3 Hour	Max. Marks: 100

ANSWER ALL QUESTIONS

1a. With necessary block diagram explain the component model of database management system.

 b. What are the key functions of a Data Definition Language (DDL) and Data Manipulation Language (DML).

 c. Discuss the different drawbacks of file systems.

(8+8+4)

2a. Explain the following relational algebra operations with necessary example:
   i. Natural join   ii. Cartesian product   iii. Division

 b. Define the following concepts with suitable example:
   i. Schema ii. Instance iii. Database model iv. Data abstraction

 c. Explain the Group by and Having class in SQL   (8+8+4)

3a. What is functional dependency? Given a set F of functional dependencies for relation schema R = {A, B, C, D, E} is as follows:
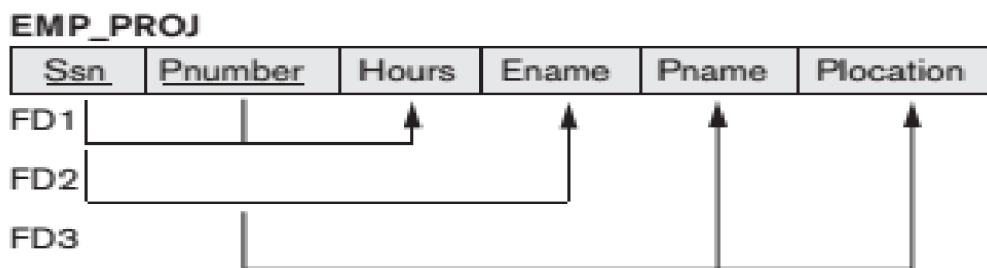
$$A \rightarrow BC$$
$$CD \rightarrow E \quad \text{Then, list the candidate keys for R.}$$
$$B \rightarrow D$$
$$E \rightarrow A$$

 b. Define Second Normal Form (2NF)? Check whether the following relation holds 2NF or not? If not bring the relation to 2NF.

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Ssn	Pnumber	Hours	Ename	Pname	Plocation

FD1

FD2

FD3

 c. Define multivalued dependency. Also give necessary example for it.   (8+8+4)

4a. Explain the three database anomalies with necessary example.

 c. What are the design constraints of generalization and specialization with necessary example?
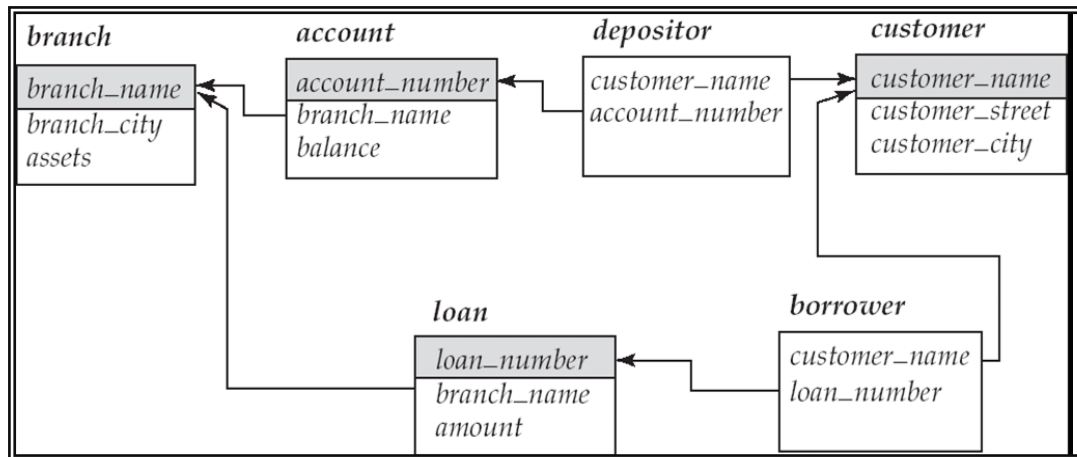
 b. How do you realize the following relationship into tables:
   i. One to One relationship   ii. One to Many relationship iii. Many to Many relationship

(6+8+6)

5a. What are the two different forms of serializable schedules? Explain with necessary example.

  b. What are locks in database systems? Explain the tree based lock system with necessary example.

  c. Consider the following database and Give SQL queries for the following statements:
  i. Find the number of depositors for each branch.
  ii. Find the names of all branches where the average account balance is more than Rs 13000
  iii. Find all branches that have greater assets than some branch located in Panjim.
  iv. List in alphabetic order the names of all customers having a loan in Ponda branch.

(5+5+10)

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