# S.E. (Information Technology) 

 DATABASF MANAGEMENT SYSTEM (2019 Patern) (Semester - IV) (214452)Time: $2^{1 ⁄ 2} 2$ Hours]
[Max. Marks : 70

## Instructions to the candidates:

1) Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.
2) Neat diagrams must be drawn wherever necessary.
3) Figures io the right indicates full marks.
4) Assumie suitable data, if necessary.
5) Use of scientific calculator is permitted.

Q1) a) What are different types of joins in SQL? Explain with suitable example.
b) Consider the following Relations It defines the schema of the database application for a bank. 1 manages the branches and customers of the bank. Customers take loansd borrow money) or open accounts (deposit ${ }^{\circ}$ money) at one or more brapches.
Branch (B_No, B_name, B_city, asset), Customer (C_No,C_Namie, C_citystreet)
Loan(Loan_no, B $\_$name, amount), Account (Acc_No, B_name, Balance)

Borrower (C_No, Loan_No), Depositor (C_No,Acc_No)
Answer the following queries in SQL :

1) Find the names and address of customers who, have a loan.
2) Find the total amount of balance of all the accounts
3) List all the customers who are borrowers
4) Find all the accounts of "shivaji nagar." branch of Pune city.
c) What is trigger? State and explain two categories of Triggers.

Q2) a) Explain with suitable example SQLeaggregate functions.
b) Consider the following database.

Doctor (Doctor_no, Doctor_name, Address, City).
Hospital (Hospital_nooName. Street, City).
Doc_Hosp (Doctor@no, Hospital_no, Date).
Construct the following Queries in SQL.

1) Find out all Dôctors who have visited to Hospital in same city in which they dive.
2) Find to which Hospital "Dr. Joshi" has visited.
3) Countmo. of Doctors visited to "Shree Clinic" on 1 st March 2014.
c) What is Cuirsor? State and explain two categories of Cursors and their syntax.

Q3) a) Dêfine Database normalization. Explain anty two normal form with Qhe suitable example.
b) Why is query optimization important for databases?
c) Explain role of "Selection" aperationin query processing.


Q4) a) State \& Explain Armstrong's axioms\& its properties.
b) Define Boyce Code normapform. How does it differ from 3NF? Why is considered a stronger form of 3 NF .
c) What is query processing? Explain query processing steps with meat sketch.

Q5) a) What is transaction? Explain ACID properties of transaction.
b) What is deadlock? Explain how deadlock detection and prevention is done.
c) What is the need of two phase locking protecol? Explain.

Q6) a) What is Serializable schedule? Explain with suitable example the types of serializable schedules.
b) What is concurrency control? Explain time stamp based concurrency control.
c) Write short note on : Shadow paging.

Q7) a) Differentiate between centralized andclient server architecture.
b) State and explain key elements of parallel database.
c) Explain Distributed database architecture with neat sketch.

Q8) a) Explain the concept of speed up and scale up in case of parallel databases.
b) Explain cloud database in detail. Also expalin architecture along with components.

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