Sardar Patel Institute of Technology

Bhavan's Campus. Munshi Nagar, Andheri (West), Mumbai-400058, India

(Autonomous College Affiliated to University of Mumbai)

End Semester Evaluation (Make up)

July 2019

Max. Marks: 60 | **Duration: 180 Min**

Class: S.E. | **Semester: IV**

Course Code: CE42 and IT43 | **Branch: Computer and IT**

Name of the Course: Database Management System

Instruction:

(1) All questions are compulsory

(2) Assume suitable data if necessary

Q No.		Max. Marks	CO
Q.1 (A)	Explain any five Codd's Rules. **OR** Database can be typically seen with three abstraction levels,Take an example and show how the same will be seen on three abstraction levels of database.	5	CO1
Q.1 (B)	Draw the Entity-Relationship diagram : **Bioinformatics Application case study** - Patient has a unique MSP number, name, Date of Birth, a Tissue Type and an indicator denoting whether the tissue is cancerous or normal. - A patient library associates a patient with multiple tags. - Each tag has a unique tag number and a unique nucleotide sequence. - For each tag in the patient library, a count is given to record the number of times the tag occurs in the library. -In general, the same tag can be associated with any number of patients. - A tag may be mapped to a gene. Each gene has a unique gene name and a type. - In general, multiple tags may be mapped to the same gene. However, two different genes cannot be mapped to the same tag. - Finally, an article is identified by a unique number and a journal name.	7	CO2
Q.2 (A)	Write queries for the following Bank schema: i. branch(branch_name,branch_city,assets) ii. customer(customer_name,custome_street, customer_city) iii. account(account_number,branch_name,balance) iv. loan(loan_number,branch_name,amount) v. depositor(customer_name,account_number) vi. borrower(customer_name,loan_number) Write Tuple Relational queries for (a) and (b) Write Relational algebra queries for (c), (d) and (e)	2 3	CO3

	Solve following queries. a)Find the names of all customers who have a loan, an account, or both, from the bank. b) Find the names of all customers who have a loan and an account at bank. c) Find customer name,city and account number. d) Find customer name who have deposited more than one lakh. e) Find customer name and city of customers who have deposited more than one lakh.		
Q.2 (B)	Consider the above Bank Schema to solve following SQL queries: a)Find the names of those customers who have only borrowed but no deposited in the bank. b) Find the names of all customers who have a loan at the Perryridge branch but do not have an account at any branch of the bank. c) Find the largest account balance. d) Find branch-wise average balance. e) Find the count of those accounts that have balance greater than Rs.5,000. f) Find account number and balance of those accounts that have balance greater than average balance. g) Find the account number with maximum balance.	7	CO2
Q.3 (A)	Let R=(A,B,C,D,E) and FD's are (AB $\rightarrow C, A \rightarrow D, D \rightarrow E, AC \rightarrow B$) $Compute A+, D+, B+, (AB)+$ **OR** Prove or disprove the following FDs. Let F=(P $\rightarrow Q, QR \rightarrow S$) $a) PR \rightarrow S$ $b) Q \rightarrow S$	4	CO1
Q.3 (B)	What are the anomalies in 3NF. Let R(A,B,C,D,E,F,G,H,I,J) and FD's are F=(A,B)$\rightarrow C, (A) \rightarrow (D, E), (B) \rightarrow (F), (F) \rightarrow (G, H), (D) \rightarrow (I, J)$ What is the key of R? Decompose R in 2NF and 3NF.	2 2 4	CO4
Q.4 (A)	Describe the database privileges. Write SQL statement for the following. a) To create a Role of Manager. b) To allow create table and create view privilege to manager, c) To take away a create view privilege from manager.	2 3	CO4

Q.4 (B)	What is Event-Condition-Action in a trigger. Write a SQL query to replace a trigger on insert in a table with suitable example. **OR** What are virtual relations ? write a SQL query to create any virtual relation. And also a SQL command to remove the same virtual relation from the database.	7	CO3
Q.5 (A)	Draw and explain state diagram of a transaction **OR** Write Lock Compatibility Matrix. Explain 2-phase Locking protocol by taking relevant schedule as an example	5	CO4
Q.5 (B)	What is checkpoint in the recovery system. How checkpointing is performed during recovery procedure.	7	CO5