PRESIDENCY UNIVERSITY
BENGALURU

School Of Computer Science and Engineering & Information Science

End-Term Examinations, Aug 2024

Fourth Semester (4LCA) B.Tech Lateral Entry

Odd Semester: 2023 - 24

Course Code: CSE2074

Course Name: Database Management System

Department: CSE

Date: 12-08-2024

Time: 09.30am to 12.30pm

Max Marks: 100

Weightage: 50%

Instructions:

(i) Read the all questions carefully and answer accordingly.

(ii) Do not write any matter on the question paper other than roll number.

Q. No		Questions	Marks	CO	RBT
1	a.	What are the different types of database end users? Discuss the main activities of each.	4	CO1	L1
	b.	With neat Diagram describe the three-schema architecture.Why do we need mappings between schema levels?	6	CO1	L2
	c.	Draw an E-R Diagram for the hospital management system Assume your own entities (Minimum of 5 entities), attributes and relations. Explain in detail.	10	CO1	L3

OR

2	a.	Discuss the different types of DBMS languages used by the DBMS users.	4	CO1	L1
	b.	Explicate concept of a weak entity used in data modeling? Define the terms owner entity type, weak entity type, identifying relationship type, and partial key	6	CO1	L2
	c.	Draw an E-R diagram for Banking System. Assume your own entities (Minimum of 5 entities), attributes and relations, Mention cardinality sratio.	10	CO1	L3

3	a.	Discuss the various types of inner join operations. Why is theta join required?	4	CO2	L1
	b.	Explicate the following operations in Relational Algebra and give one example for each i)Left Outer Join ii)Right Outer Join iii)Full Outer Join	6	CO2	L2
	c.	Discuss the various update operations on relations and the types of integrity constraints that must be checked for each update operation	10	CO2	L3

OR

	a. Explicate the select and project operations as used in relational algebra.	4	CO2	L1
4	b. Explicate the following operations in Relational Algebra and give one example for each i) Rename ii) Natural join iii) Division	6	CO2	L2
	c. Discuss how each of the following constructs is used in SQL, and discuss the various options for each construct. Specify what each construct is useful for. i. Aggregate functions ii. Triggers. iii. Assertions and how they differ from triggers.	10	CO2	L3

	a. Write Armstrong's inference rules in their basic form.	4	CO3	L1
5	b. Discuss informal guidelines for a relational schema design. What happens when the guidelines are violated?	6	CO3	L2
	c. Explain the different types of Normalizations 1NF, 2NF, 3NF and BCNF in detail	10	CO3	L3

<div align="center">OR</div>

	a. Define Boyce-Codd normal form. How does BCNF differ from 3NF?	4	CO3	L1
6	b. Explicate the following i)Insertion Anomaly ii) Deletion Anomaly iii) Modification Anomaly	6	CO3	L2
	c. Consider the universal relation R = {A, B, C, D, E, F, G, H, I, J} and the set of functional dependencies F={ {A,B} -> {C},{A} -> {D,E},{B}->{F},{F} ->{G,H},{D} -> {I,J}}. What is the key for R? Decompose R into 2NF, then 3NF relations.	10	CO3	L3

	a. Discuss the desirable properties of a transaction.	4	CO4	L1
7	b. Describe the different states for transaction execution with a neat state transition diagram.	6	CO4	L2
	c. Explicate the problems that can occur when concurrent transactions are executed. Give examples	10	CO4	L3

<div align="center">OR</div>

	a. What is a schedule? What are recoverable, cascadeless, and strict schedules?	4	CO4	L1
8	b. Discuss the actions taken by the read_item and write_item operations on a database.	6	CO4	L2
	c. Define serializability. How can serializability be ensured? Do you need to restrict concurrent execution of transaction to ensure serializability? Justify your answer.	10	CO4	L3

9	a.	Discuss the main characteristics of the database approach and how it differs from traditional file systems.	4	CO1	L1
	b.	What is a system log? What is its significance?	6	CO1	L2
	c.	Consider the following tables: WORKS (Pname, Cname, Salary) LIVES (Pname, Street, City) LOCATED-IN (Cname, City) MANAGER (Pname, mgname) Write the SQL query for the following: i) Find the names of all persons who live in the city 'Mumbai'. ii) Retrieve the names of all person of 'Infosis' whose salary is between Rs.30,000 and Rs.50,000. iii) Find the names of all persons who live and work in the same city. iv) List the names of the people who work for 'Wipro' along with the cities they live in. v) Find the average salary of all 'Infosians'.	10	CO1	L3

<div align="center">OR</div>

10	a.	Discuss the advantages of the database approach.	4	CO2	L1
	b.	Explicate joins and views in SQL with suitable examples	6	CO2	L2
	c.	Consider the following schema and write the relational algebra expressions for thequeries given below: / IS 06CS54 -8 SAILORS(Sid, Sname, rating, age) BOATS(bid, bname, color) RESERVES(sid, bid,day) (i) Find names of sailors who reserved green boat (ii) Find the colors of boats reserved by "Ramesh" (iii) Find names of sailors who have reserved a red or a green boat. (iv) Find the "sid" of sailors with age over 20 who have not registered red boat.	10	CO2	L3