Exam Number: _____

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B.E. SEMESTER – III (NEW) REMEDIAL EXAMINATION MAY-2024

Subject Name: Database Management Systems **Subject Code: CT306-N**

Date: 08/05/2024 (Wednesday) **Time: 12:00 p.m. to 03:00 p.m.** **Total Marks: 70**

Instructions:

1. **All questions are compulsory.**
2. **Figures to the right indicate full marks.**
3. **Indicate clearly, the options you attempt along with its respective question number.**
4. **Use the last page of main supplementary for rough work.**

Section-I

Q.1	(A)	Explain three level architecture of DBMS.	[5]
	(B)	List the relational algebra operators. Discuss any two such algebra operator with suitable example.	[5]
	(C)	Explain Armstrong's Axioms in detail.	[5]
		OR	
	(C)	What is normalization? Explain 2NF	[5]
Q.2	(A)	List and explain DML statements with suitable examples.	[5]
	(B)	Draw ER diagram for the university database consisting four entities Student, Department, Class and Faculty.	[5]
		OR	
Q.2	(A)	Enlist and explain the advantages of DBMS over traditional file system.	[5]
	(B)	Why do we require E-R model? Explain the term 'Generalization', 'Specialization' and 'Aggregation'.	[5]
Q.3	(A)	What is decomposition? Explain Lossy and Non-loss decomposition with suitable example.	[5]
	(B)	Write Relational Algebra syntax for the following queries. Employee(eno,ename,salary,designation) Customer(cno,cname,address,city) 1) Find out name of employees who are 'Manager'.	[5]

2) Display name of customers.

3) Retrieve Employee records whose salary is less than 20,000.

OR

Q.3 (A) What is redundant functional dependency? Explain trivial and non trivial functional dependency with example. [5]

(B) Compute the closure of the following set F of functional dependencies for relation schema [5]

R = (A, B, C, D, E).

$A \rightarrow BC$

$CD \rightarrow E$

$B \rightarrow D$

$E \rightarrow A$

List the candidate keys for R.

Section-II

Q.4 **(A)** Explain various steps involved in query processing with example. [5]

(B) Explain different join operations with example. [5]

(C) What is database index? Explain primary index with its types. [5]

OR

(C) Explain Hashing with its types. [5]

Q.5 **(A)** List and explain ACID properties with respect to Database transaction. [5]

(B) Explain log based recovery with check point concept. [5]

OR

Q.5 **(A)** Explain the concept of View Serializable with suitable schedules [5]

(B) Explain Candidate, Primary and Foreign key with example. [5]

Q.6 **(A)** Write short note on Two Phase locking protocol. [5]

(B) List and explain commands of TCL (Transaction Control Language). [5]

OR

Q.6 **(A)** What is SQL injection. How it works? [5]

(B) What is Trigger? Explain types of Trigger. [5]