Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– III (NEW) EXAMINATION – SUMMER 2022

Subject Code:3130703 Date:15-07-2022

Subject Name:Database Management Systems

Time:02:30 PM TO 05:00 PM Total Marks:70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	Explain Program Data Independence supported by DBMS.	**03**
	(b)	Explain two tier & three tier client/server architecture of DBMS in brief.	**04**
	(c)	Discuss the main characteristics of database approach and how it differs from traditional file systems.	**07**
Q.2	**(a)**	Compare Single,Multi-valued & Composite attributes in E-R Model	**03**
	(b)	Explain Cardinality Ratio & Participation constraint in E-R Modeling.	**04**
	(c)	Explain Three Layer Schema Architecture of DBMS.	**07**
		OR	
	(c)	Explain Following Constraints supported by DBMS: 1. Primary Key 2. Foreign Key / Referential Integrity Constraints 3. Not NULL	**07**
Q.3	**(a)**	Consider a relation R(A,B,C,D,E) with following dependencies: AB→C, CD→E, DE→B . Is AB a candidate key of this relation?	**03**
	(b)	Explain Inference Rules for Functional Dependency.	**04**
	(c)	Explain Specialization, Generalization and Categorization in EER Modeling.	**07**
		OR	
Q.3	**(a)**	Explain ACID Properties of transaction with appropriate example.	**03**
	(b)	Explain Update anomalies with example.	**04**
	(c)	Explain various types of JOIN operation in Relational Algebra.	**07**
Q.4	**(a)**	Explain Cursors in PL/SQL with example.	**03**
	(b)	Explain Lost update & Dirty Read problem in Transaction Processing.	**04**
	(c)	Explain Normalization with 1NF, 2NF and 3NF in brief.	**07**
		OR	
Q.4	**(a)**	Explain the Rollback and commit commands.	**03**
	(b)	Explain Triggers in PL/SQL with example.	**04**
	(c)	Explain working of two phase commit protocol.	**07**
Q.5	**(a)**	What is Serial & Serializable Schedule in Transaction Processing.	**03**
	(b)	Explain state transition Diagram for Transaction Processing in DBMS.	**04**
	(c)	Explain Conflict Serializability with precedence graph in Transaction Processing.	**07**
		OR	
Q.5	**(a)**	What is a query execution plan?	**03**
	(b)	Explain handling of aggregate functions with GROUP BY clouse in SQL.	**04**
	(c)	Consider Following 3 Tables for library database and Write SQL Queries. 1. Books (BookID, BookTitle, Price, Author, Publisher)	**07**

2. Students (StudID, StudName, DOB, Gender, Branch, Sem, Address)
3. Issue_Books (StudID, BookID, Issue_Date)

Query1: List all Books whose Title contains word 'DBMS'.
Query2: Display all Publisher Name & Total Price of Books of that publisher.
Query3: Display list of all books which are not issued to any students.
Query4. Display the author name whose number of books is maximum in library.
Query5: Display all Books assigned to student with name "RAJESH".

****