Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III (NEW) EXAMINATION – WINTER 2021

Subject Code:3130703 Date:21-02-2022

Subject Name:Database Management System

Time:10:30 AM TO 01:00 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 three levels of data abstraction.	**03**
	(b)	Describe Data Definition Language and Data Manipulation Language.	**04**
	(c)	What is integrity constraint? Explain primary key, reference key and check constraint with SQL syntax.	**07**
Q.2	**(a)**	Differentiate single-valued and multi-valued attributes with example.	**03**
	(b)	What is weak entity? How the weak entity can be converted to the strong entity? Show the symbol for representing weak entity.	**04**
	(c)	Why do we require E-R model? Explain the term ‘Generalization’, ‘Specialization’ and ‘Aggregation’.	**07**
		OR	
	(c)	What is the similarity between relational model and E-R model? How the entity, attributes, primary key and relationship are shown in the relational model.	**07**
Q.3	**(a)**	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’. 2) Display name of customers. 3) Retrieve Employee records whose salary is less than 20,000.	**03**
	(b)	Differentiate lossy decomposition and lossless decomposition.	**04**
	(c)	What is redundancy? Explain insert, update and delete anomalies in database with example.	**07**
		OR	
Q.3	**(a)**	Write Relational Algebra syntax for the given queries using the following database. Employee(eno,ename,salary,designation) Customer(cno,cname,address,city) 1) Find out name of employees who are also customers. 2) Find out name of person who are employees but not customers. 3) Display all names who are either employees or customers.	**03**
	(b)	What is the limitation of index-sequential file? Explain with example how B^+ tree overcomes it.	**04**
	(c)	What is the difference between Join and Sub query? Explain any two built-in function for following category. 1) Numeric 2) String 3) Date	**07**
Q.4	**(a)**	What is the view? How does it different from the table?	**03**
	(b)	Explain below mentioned features of concurrency.	**04**

1) Improved throughput 2) Reduced waiting time

	(c)	What is index in the database? Explain sparse indices and Dense indices with proper example.	**07**

OR

Q.4	**(a)**	Differentiate dynamic hashing and static hashing.	**03**
	(b)	What is the atomicity and consistency property of transaction?	**04**
	(c)	What is Query processing? Explain why 'Parsing and translation' and 'Optimization' steps are required for query processing.	**07**

Q.5	**(a)**	How does 'partial commit' state differ from 'commit' state of the transaction?	**03**
	(b)	Enlist and explain user authorization to modify the database schema.	**04**
	(c)	How does two phase locking protocol differ from timestamp based protocol? Explain timestamp-ordering protocol.	**07**

OR

Q.5	**(a)**	Why does the trigger require in database? Write SQL syntax for creating database trigger.	**03**
	(b)	When do we require to use group by clause? How aggregate functions are used with group by clause?	**04**
	(c)	When Join is used in SQL? Explain Left outer, Right outer and Full outer join with SQL syntax.	**07**

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