Enrolment No._____

SILVER OAK UNIVERSITY (1530)

Regular/Remedial B.TECH – CE/CSE/CE-ML-AI/ CSE-CS/CSBS/IT SEMESTER _III_ EXAMINATION-WINTER '23

(0232097)

Subject Code: 1010043223 **Date: 07/12/23**

Subject Name: DATABASE MANAGEMENT SYSTEMS

Time: 02:30PM TO 4:30 PM **Total Marks: 60**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

			Marks
Q.1	**(a)**	Enlist Application Of DBMS.	**03**
	(b)	Explain steps of query processing with the help of a neat diagram.	**04**
	(c)	Draw and explain the three level architecture of DBMS.	**08**
Q.2	**(a)**	Explain cryptography techniques to secure data.	**03**
		OR	
	(a)	What is DDL,DML,DCL?	**03**
	(b)	Define: Primary Key, Foreign key, and NOT NULL.	**04**
		OR	
	(b)	Write the steps in proper sequence in order to convert an ER diagram into tables.	**04**
	(c)	Explain Selection and Projection Operator with example.	**08**
		OR	
	(c)	What is meant by normalization? Write its need. List and discuss various normalization forms.	**08**
Q.3	**(a)**	What is B-tree and benefits of it?	**03**
	(b)	Explain evaluation expression Process in query optimization.	**04**
	(c)	Define transaction. Explain various states of transaction with suitable diagram.	**08**
		OR	
Q.3	**(a)**	Explain Indexing in DBMS.	**03**
	(b)	Explain linear search algorithm for selection operation.	**04**
	(c)	Discuss ACID properties of transactions.	**08**
Q.4	**(a)**	Discuss Authentication and Authorization.	**03**
	(b)	Describe GRANT and REVOKE commands	**04**
	(c)	List and explain aggregation functions with suitable example	**08**
		OR	
Q.4	**(a)**	Discuss DAC, MAC RBAC models.	**03**
	(b)	Explain numeric functions.	**04**
	(c)	Explain stored procedures with proper examples.	**08**

Enrolment No._____

SILVER OAK UNIVERSITY

B.TECH CE/IT SEMESTER-III REMEDIAL END SEMESTER EXAMINATION-SUMMER '24

S20

S24MO416

Subject Code: 1010043223 **Date: 16/05/2024**

Subject Name: Data Base Management Systems

Time: 10:30AM to 12:30PM **Total Marks: 60**

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

			Marks
Q.1	(a)	Explain selection operators of Relational Algebra with example.	03
	(b)	What is Data Abstraction? Explain 3 Levels of Data Abstraction.	04
	(c)	1. Describe the two-phase locking protocol in detail. 2. Explain Generalization and Specialization in ER Diagram.	08
Q.2	(a)	What is the difference between Open Source and CommercialDBMS.	03
		OR	
	(a)	What is functional dependency? Define its types in detail	03
	(b)	Explain Domain Relational Calculus? Explain	04
		OR	
	(b)	Describe Domain and data dependency	04
	(c)	What are Armstrong's axioms? expailn	08
		OR	
	(c)	Describe ACID property.	08
Q.3	(a)	Explain Multi version and optimistic Concurrency Control schemes.	03
	(b)	Describe Locking and timestamp based schedulers	04
	(c)	What is Authentication, Authorization and access Control ? Explain.	08
		OR	
Q.3	(a)	Explain the concept of hashing in the context of database management systems.	03
	(b)	TABLE Worker(WORKER_ID INT NOT NULL PRIMARY KEY,FIRST_NAME CHAR(25), LAST_NAME CHAR(25),SALARY INT(15),JOINING_DATE DATETIME,DEPARTMENT CHAR(25)); TABLE Bonus(WORKER_REF_ID INT,BONUS_AMOUNT INT(10),BONUS_DATE DATETIME,FOREIGN KEY (WORKER_REF_ID),REFERENCES Worker(WORKER_ID)); TABLE Title(WORKER_REF_ID INT,WORKER_TITLE CHAR(25), AFFECTED_FROM DATETIME,FOREIGN KEY (WORKER_REF_ID)REFERENCES Worker(WORKER_ID));	04

		Consider above 3 tables ,assume appropriate data and solve following SQL queries 1. Print details of the Workers who are also Managers. 2. SQL query to clone a new table from another table. 3. Fetch the list of employees with the same salary. 4. Fetch "FIRST_NAME" from Worker table in upper case.	
	(c)	Write SQL statements (Query) for following tables: T1(rollno, stuname, age, city, branchcode) T2(branchcode, branchname) 1. Retrieve students' details whose branchcode is 5. 2. Find an average age of all students. 3. Add a new branch in the T2 table. 4. Display roll no, std, name and age of students whose city is chennai 5. Change the age of the student to 20 whose rollno is 1. 6. Delete student details whose age is 18.	**08**
Q.4	**(a)**	Explain the concept of B-trees in the context of database management systems	**03**
	(b)	Explain the concept of query execution plans. How are they generated, and what factors are considered?	**04**
	(c)	Consider the following relational schemas: EMPLOYEE (EMPLOYEE_NAME, STREET, CITY) WORKS (EMPLOYEE_NAME, COMPANYNAME, SALARY) COMPANY (COMPANY_NAME, CITY) Give an expression in SQL for each of queries below:: (1) Specify the table definitions in SQL. (2) Find the names of all employees who work for first Bank Corporation. (3) Find the names and company names of all employees sorted in ascending order of company name and descending order of employee names of that company. (4) Change the city of First Bank Corporation to 'New Delhi'	**08**
		OR	
Q.4	**(a)**	Explain the concept of query equivalence briefly and its importance in database query optimization.	**03**
	(b)	Explain Query optimization algorithms.	**04**
	(c)	Consider following schema and write SQL for given statements. Student (RollNo, Name, DeptCode, City) Department (DeptCode, DeptName) Result (RollNo, Semester, SPI) 1. Display the name of students with RollNo whose name ends with 'sh'. 2. Display department wise total students whose total students are greater than 500. 3. List out the RollNo, Name along with CPI of Student. 07 3 4. Create RollNo field as primary key for existing Student table. 5. Display student name who got highest SPI in semester 1. 6. Display the list of students whose DeptCode is 5, 6,7,10. 7. Create table Student_New from student table without data.	**08**

Enrolment No._____

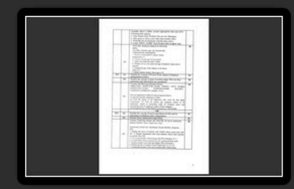
SILVER OAK UNIVERSITY

B.TECH CE/IT SEMESTER-III REMEDIAL END SEMESTER EXAMINATION-SUMMER '24

Subject Code: 1010043223 **Date: 16/05/2024**
Subject Name: Data Base Management Systems
Time: 10:30AM to 12:30PM **Total Marks: 60**
Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

			Marks	CO (Course Outcome)	Cognitive Level (As per Bloom's Taxonomy)	Attribute	Unit No.
Q.1	(a)	Explain selection operators of Relational Algebra with example.	03	CO3	(U)	(R/U/A)	
	(b)	What is Data Abstraction? Explain 3 Levels of Data Abstraction.	04	CO1	(U)	(U/A)	
	(c)	1. Describe the two-phase locking protocol in detail. 2. Explain Generalization and Specialization in ER Diagram.	08	CO2	(U)	(U/A)	
Q.2	(a)	What is the difference between Open Source and Commercial DBMS.	03	CO2	(R)	(U)	
		OR					
	(a)	What is functional dependency? Define its types in detail	03	CO2	(U)	(R/U)	
	(b)	Explain Domain Relational Calculus? Explain	04	CO2	(U)	(U/A)	
		OR					
	(b)	Describe Domain and data dependency	04	CO2	(R)		
	(c)	What is Armstrong's axioms?	08	CO2	(U)	(U/A)	
		OR					
	(c)	Explain ACID property In Details	08	CO3	(U)	(U/A)	
Q.3	(a)	Explain Multi version and optimistic Concurrency Control schemes.	03	CO4	(U)	(R/U/A)	
	(b)	Describe Locking and timestamp based schedulers	04	CO3	(U)	(U/A)	
	(c)	What is Authentication, Authorization and access	08	CO5	(U)	(U/A)	



		Control ? Explian in Details.					
		OR					
Q.3	(a)	Explain the concept of hashing in the context of database management systems.	**03**	**CO4**	**(U)**	**(R/U/A)**	
	(b)	TABLE Worker(WORKER_ID INT NOT NULL PRIMARY KEY,FIRST_NAME CHAR(25), LAST_NAME CHAR(25),SALARY INT(15),JOINING_DATE DATETIME,DEPARTMENT CHAR(25)); TABLE Bonus(WORKER_REF_ID INT,BONUS_AMOUNT INT(10),BONUS_DATE DATETIME,FOREIGN KEY (WORKER_REF_ID),REFERENCES Worker(WORKER_ID)); TABLE Title(WORKER_REF_ID INT,WORKER_TITLE CHAR(25), AFFECTED_FROM DATETIME,FOREIGN KEY (WORKER_REF_ID)REFERENCES Worker(WORKER_ID)); Consider above 3 tables ,assume appropriate data and solve following SQL queries 1. Print details of the Workers who are also Managers. 2. SQL query to clone a new table from another table. 3. Fetch the list of employees with the same salary. 4. Fetch "FIRST_NAME" from Worker table in upper case.	**04**	**CO5**	**(A)**	**(U/A)**	
	(c)	Write SQL statements (Query) for following tables: T1(rollno, stuname, age, city, branchcode) T2(branchcode, branchname) 1. Retrieve students' details whose branchcode is 5. 2. Find an average age of all students. 3. Add a new branch in the T2 table.	**08**	**CO5**	**(A)**	**(U/A)**	

		4. Display roll no, stuname and age of students whose city is Chennai. 5. Change the age of the student to 20 whose rollno is 1. 6. Delete student details whose age is 18.					
Q.4	**(a)**	Explain the concept of B-trees in the context of database management systems	**03**	**CO4**	**(U)**	**(R/U/A)**	
	(b)	Explain the concept of query execution plans. How are they generated, and what factors are considered?	**04**	**CO3**	**(U)**	**(U/A)**	
	(c)	Consider the following relational schemas: EMPLOYEE (EMPLOYEE_NAME, STREET, CITY) WORKS (EMPLOYEE_NAME, COMPANYNAME, SALARY) COMPANY (COMPANY_NAME, CITY) Give an expression in SQL for each of queries below:: (1) Specify the table definitions in SQL. (2) Find the names of all employees who work for first Bank Corporation. (3) Find the names and company names of all employees sorted in ascending order of company name and descending order of employee names of that company. (4) Change the city of First Bank Corporation to 'New Delhi'	**08**	**CO5**	**(A)**	**(U/A)**	
		OR					
Q.4	**(a)**	Explain the concept of query equivalence briefly and its importance in database query optimization.	**03**	**CO3**	**(U)**	**(R/U/A)**	
	(b)	Explain Query optimization algorithms.	**04**	**CO3**	**(U)**	**(U/A)**	

	(c)	Consider following schema and write SQL for given statements. Student (RollNo, Name, DeptCode, City) Department (DeptCode, DeptName) Result (RollNo, Semester, SPI) 1. Display the name of students with RollNo whose name ends with 'sh'. 2. Display department wise total students whose total students are greater than 500. 3. List out the RollNo, Name along with CPI of Student. 07 4. Create RollNo field as primary key for existing Student table. 5. Display student name who got highest SPI in semester 1. 6. Display the list of students whose DeptCode is 5, 6,7,10. 7. Create table Student_New from student table without data.	08	CO5	(A)	(U/A)	

Important Note:
1. Refer the course curriculum document at (Link)
2. Strictly follow percentage weightage of marks in course outcome (Cos) and cognitive level as per Bloom's Taxonomy.
3. There should not be (_+)5% variation in allocated weightage in Cos and Cognitive level.
4. Duration of Question Paper One Twenty min.

Subject Name (Subject Code)												
	CO-Attainment						Bloom's Taxonomy					
	CO 1	CO 2	CO 3	CO 4	CO 5	-	Creating(C)	Evaluating(E)	Analyzing(AN)	Applying(A)	Understanding(U)	Remembering(R)
	Marks(Percentage)											
End Semester Exam	3.8	28.57	24.76	8.57	34.58	-	0	0	0	34.28	59.04	6.66