SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE

(An Autonomous Institution)

(Approved by AICTE, New Delhi & Affiliated to Pondicherry University)

(Accredited by NBA-AICTE, New Delhi, Accredited by NAAC with "A" Grade)

Madagadipet, Puducherry - 605 107

B. TECH END SEMESTER EXAMINATIONS, FEBRUARY 2023

V SEMESTER

MECHATRONICS

DATABASE MANAGEMENT SYSTEM (U20MCE510)

Duration: 3 hrs. **Max. Marks- 75**

Note: B.L – Bloom's Level CO- Course Outcome

Q. No		Marks	B.L	CO's
	PART A (10 x 2=20 Marks) **Answer all the Questions**			
Q.1	What is a data model? List the types of data model used.	2	2	CO1
Q.2	Write any four applications of DBMS.	2	2	CO1
Q.3	Give the properties of decomposition.	2	3	CO2
Q.4	Define the term Entity set and relationship set.	2	2	CO2
Q.5	What are the states of transaction.	2	1	CO3
Q.6	What is meant by log based recovery.	2	2	CO3
Q.7	State the difference between primary key and Foreign key	2	2	CO4
Q.8	State the difference between Unique and Not Null Constraints	2	3	CO4
Q.9	State the Set Operations	2	2	CO5
Q.10	State (i) Commit and (ii) Rollback	2	2	CO5
	PART B (5 x 5 = 25 Marks) **Answer all the Questions**			
Q.11	List the functions of Database administrator?	5	2	CO1
Q.12	What is Normalization? Explain the need for normalization	5	2	CO2
Q.13	When is a transaction said to be deadlocked?	5	4	CO3
Q.14	Explain the following with Example. (i) DDL (ii) DML	5	4	CO4
Q.15	Explain the types of Join's with example.	5	3	CO5
	PART C (3 x 10 =30 Marks) **Answer any THREE Questions**			
Q.16	Neatly draw and explain the architecture of DBMS.	10	2	CO1
Q.17	Explain ER model by taking Hospital management/Banking System/University Database as case study.	10	5	CO2
Q.18	(i)When is a transaction said to be deadlocked? (5) (ii)Explain the deadlock prevention methods (5)	10	2	CO3
Q.19	Consider the following relations for a company Database Application: Employee(Eno, Name, Sex, Dob, Doj, Designation, Basic_Pay, Deptno) Department(Dept_no, Name) Project(Proj_no, Name, Dept_no) Worksfor(Eno, Proj_no, Date, Hours) The attributes specified for each relation is self-explanatory. However the business rules are stated as follows. A department can control any number of projects. But only one department can control a project. An employee can work on any number of projects on a day. However an employee cannot work more than once on a project he she worked on that day. The primary keys are underlined. (i) Identify the foreign keys. Develop DDL to implement the above schema. (3) (ii) (ii) Develop an SQL query to list the department number and the number of employees in each department. (3) (iii) (iii) Develop a view that will keep track of the department number, the number of employees in the department, and the total basis pay expenditure for each department. (4)	10	6	CO4
Q.20	Explain Cursors with your own example.	10	3	CO5

SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE

(An Autonomous Institution)
(Approved by AICTE, New Delhi & Affiliated to Pondicherry University)
(Accredited by NBA-AICTE, New Delhi, ISO 9001:2000 Certified Institution & Accredited by NAAC with 'A' Grade)
Madagadipet, Puducherry - 605 107

B. TECH END SEMESTER EXAMINATIONS, APRIL-MAY 2022
III SEMESTER
COMPUTER SCIENCE AND BUSINESS SYSTEMS
DATABASE MANAGEMENT SYSTEMS (U20CBT305)

Duration: 3 hrs. **Max. Marks- 75**

Note: B.L – Bloom's Level CO- Course Outcome

		Marks	B.L	CO's
	PART A (10 x 2=20 Marks) **Answer all the Questions**			
Q.1	What is the difference between Procedural DML and Non-Procedural DML ?	2	2	CO1
Q.2	What is Data Model?	2	2	CO1
Q.3	Differentiate between Cartesian product and natural join operations used in relational algebra.	2	2	CO2
Q.4	What do you mean by atomicity and aggregation?	2	3	CO2
Q.5	What do you mean by redundancy?How this can be avoided ?	2	2	CO3
Q.6	What is lossy decomposition?	2	2	CO3
Q.7	Define Tree Indexing.	2	2	CO4
Q.8	Define Indexed Sequential Access Method?	2	2	CO4
Q.9	Define DAC.	2	2	CO5
Q.10	Explain RBAC Model.	2	3	CO5
	PART B (5 x 5 = 25 Marks) **Answer all the Questions**			
Q.11	Discuss about different types of Data models?	5	2	CO1
Q.12	Illustrate different set operations in Relational algebra with an example?	5	3	CO2
Q.13	Explain Functional dependency and Trivial functional dependency with examples.	5	2	CO3
Q.14	Explain B+ trees? Discuss about this Dynamic Index Structure?	5	2	CO4
Q.15	Explain intrusion detection method.	5	2	CO5
	PART C (3 x 10 =30 Marks) **Answer any THREE Questions**			
Q.16	Compare and Contrast file Systems with database systems?	10	2	CO1
Q.17	Consider the following relational schema Employee (empno,name,office,age) Books(isbn,title,authors,publisher) Loan(empno, isbn,date) Write the following queries in relational algebra. a. Find the names of employees who have borrowed a book Published by McGraw-Hill? b. Find the names of employees who have borrowed all books Published by McGraw-Hill? c. Find the names of employees who have borrowed more than five different books published by McGraw-Hill? d. For each publisher, find the names of employees who have borrowed?	10	3	CO2
Q.18	Briefly explain about query optimization algorithm with suitable example.	10	3	CO3
Q.19	Consider a B+-tree in which the maximum number of keys in a node is 5. Calculate the minimum number of keys in any non-root node?	10	3	CO4
Q.20	Explain briefly about SQL Injection Method.	10	2	CO5

SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE
(An Autonomous Institution)
(Approved by AICTE, New Delhi & Affiliated to Pondicherry University)
(Accredited by NBA-AICTE, New Delhi, ISO 9001:2000 Certified Institution & Accredited by NAAC with "A" Grade)
Madagadipet, Puducherry - 605 107

B. TECH END SEMESTER EXAMINATIONS, APRIL-MAY 2022
III SEMESTER
INFORMATION TECHNOLOGY
DATABASE MANAGEMENT SYSTEMS (U20ITT306)

Duration: 3 hrs. **Max. Marks- 75**

Note: B.L – Bloom's Level CO- Course Outcome

		Marks	B.L	CO's
	PART A (10 x 2=20 Marks) **Answer all the Questions**			
Q.1	What is a data model? List the types of data model used.	2	2	CO1
Q.2	Write any four applications of DBMS.	2	2	CO1
Q.3	Give the properties of decomposition.	2	3	CO2
Q.4	Define the term Entity set and relationship set.	2	2	CO2
Q.5	What are the states of transaction.	2	1	CO3
Q.6	What is meant by log based recovery.	2	2	CO3
Q.7	Define dense index.	2	1	CO4
Q.8	Mention all the operations of files.	2	2	CO4
Q.9	Mention two features of multimedia databases.	2	3	CO5
Q.10	Is MangoDB better than SQL? If yes state the reasons.	2	4	CO5
	PART B (5 x 5 = 25 Marks) **Answer all the Questions**			
Q.11	List the disadvantages of file systems over database?	5	1	CO1
Q.12	Explain the following with example. (i) Embedded SQL (ii) Triggers	5	3	CO2
Q.13	Decide why BCNF is used and how it differs from 3NF?	5	5	CO3
Q.14	Recommend the need of shadow paging.	5	5	CO4
Q.15	Explain what is noSQL Databases. Name four noSQL databases.	5	3	CO5
	PART C (3 x 10 =30 Marks) **Answer any THREE Questions**			
Q.16	Construct an ER diagram for car insurance company whose customers own one or more cars each. Each car has associated with it zero to any number of recorded accidents. State any assumptions you make.	10	5	CO1
Q.17	List out the operations of relational algebra with suitable example.	10	1	CO2
Q.18	Explain about functional dependencies and its impact of databases.	10	3	CO3
Q.19	Discuss in detail about conflict serializability and view serializability.	10	3	CO4
Q.20	What is the difference between mangoDB and Cassandra? Explain with examples.	10	4	CO5

	iv Find the names, street address, and cities of residence of all employees who work for First Bank Corporation and earn more than $10,000 per annum			
Q.18	Compare and contrast 1NF, 2NF and 3NF with suitable examples.	10	5	3
Q.19	Assess about serializability. How it is tested?	10	5	4
Q.20	Demonstrate how the concurrency problem is overcome by using Time-stamp based protocol.	10	5	5

SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE

(An Autonomous Institution)

(Approved by AICTE, New Delhi & Affiliated to Pondicherry University)

(Accredited by NBA-AICTE, New Delhi, Accredited by NAAC with "A" Grade)

Madagadipet, Puducherry - 605 107

B. TECH END SEMESTER EXAMINATIONS, MARCH 2023

IV SEMESTER

COMPUTER SCIENCE AND ENGINEERING

DATABASE MANAGEMENT SYSTEMS (U20CST408)

Duration: 3 hrs. **Max. Marks- 75**

Note: B.L – Bloom's Level CO- Course Outcome

Q. No		Marks	B.L	CO's
	PART A (10 x 2=20 Marks) **Answer all the Questions**			
Q.1	Identify the types of data model.	2	1	1
Q.2	List the applications of database management systems	2	4	1
Q.3	What is Extended Relational Algebra operation? List the operators.	2	1	2
Q.4	Write the syntax of Create Command in SQL.	2	1	2
Q.5	The INF cannot be applied for all relational database. Justify	2	4	3
Q.6	List the properties of Good database design.	2	4	3
Q.7	Draw the transaction life cycle in a database system.	2	2	4
Q.8	List the advantages of hashing over indexing	2	2	4
Q.9	What are the functions of query evaluation engine in query processing?	2	1	5
Q.10	List the classification of failures in database systems.	2	4	5
	PART B (5 x 5 = 25 Marks) **Answer all the Questions**			
Q.11	Explain ER Model. List the components of ER diagram with suitable examples.	5	5	1
Q.12	List the types of Join operations in SQL. Explain the joins with syntax and example	5	4	2
Q.13	Illustrate the importance of decomposition in normalizing the databases.	5	2	3
Q.14	Explain ACID properties.	5	5	4
Q.15	List any five algorithms used for select operation during query optimization.	5	4	5
	PART C (3 x 10 =30 Marks) **Answer any THREE Questions**			
Q.16	Illustrate the system architecture of database management systems with neat diagram.	10	2	1
Q.17	a) Consider the relational database given below where primary keys are underscored. employee (person name, street, city) works (person name, company_name, salary) company (company name, city) manages (person_name, manager_name) Evaluate the questions using SQL. i. Find the names, street address, and cities of residence of all employees who work for First Bank Corporation. ii. Find the names of all employees in this database who live in the same city as the company for which they work iii. Find names of all employees who earn more than every employee of Small Bank Corporation	10	5	2

SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE

(An Autonomous Institution)
(Approved by AICTE, New Delhi & Affiliated to Pondicherry University)
(Accredited by NBA-AICTE, New Delhi, ISO 9001:2000 Certified Institution & Accredited by NAAC with "A" Grade)
Madagadipet, Puducherry - 605 107

B.TECH DEGREE END SEMESTER EXAMINATION SEPTEMBER 2022

V SEMESTER

INFORMATION TECHNOLOGY

DATABASE MANAGEMENT SYSTEMS (ITT54)

Time: 10.00 am to 01.00 pm **Maximum Marks- 75**

Note: B.L – Bloom's Level; CO's – Course Outcome

Q. No		Marks	B.L	CO's
	PART A (10 x 2 = 20 Marks) **Answer all the Questions**			
Q.1	What are the components of a E-R Diagram?	2	3	CO1
Q.2	Define the concept of super, primary and foreign key constraints. Why primary and foreign keys are used?	2	1	CO1
Q.3	What is meant by weak entity set?	2	3	CO2
Q.4	What is degree of a relation?	2	2	CO2
Q.5	Define referential integrity.	2	2	CO3
Q.6	Define the three Armstrong's Axioms or rules of inference.	2	3	CO3
Q.7	What is hashing file organization?	2	1	CO4
Q.8	List the difference between clustered index and secondary index	2	2	CO4
Q.9	State the two reasons for allowing concurrency.	2	2	CO5
Q.10	Define ACID properties of transaction.	2	4	CO5
	PART B (5 x 11 = 55 Marks) **Answer all the Questions Choosing one question from each unit**			
Q.11	Explain three basic notations in E-R models, with example?	11	2	CO1
	(OR)			
Q.12	Explain the reduction of an E-R Schema to tables	11	5	CO1
Q.13	List all fundamentals operations in the relational algebra and explain each in detail?	11	3	CO2
	(OR)			
Q.14	Outer join expressions can be computed in SQL without using the SQL outer join operation.To illustrate this fact,show how to rewrite the following SQL query without using outerjoin expression. select * from *student* natural left outer join *takes*	11	4	CO2
Q.15	Explain the method of normalization using multivalued dependency?	11	3	CO3
	(OR)			
Q.16	Explain boyce-codd normal form?	11	3	CO3
Q.17	Discuss various RAID levels with neat diagrams.	11	2	CO4
	(OR)			
Q.18	Explain in detail about the structure of a B^+ Tree	11	3	CO4
Q.19	Explain shadow paging and buffer management?	11	2	CO5
	(OR)			
Q.20	Describe the log-based recovery structure for reading database modification?	11	3	CO5

SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE
(An Autonomous Institution)
(Approved by AICTE, New Delhi & Affiliated to Pondicherry University)
(Accredited by NBA-AICTE, New Delhi, ISO 9001:2000 Certified Institution & Accredited by NAAC with "A" Grade)
Madagadipet, Puducherry - 605 107

B. TECH END SEMESTER EXAMINATIONS, OCTOBER 2022

III SEMESTER

COMPUTER SCIENCE AND BUSINESS SYSTEMS

DATABASE MANAGEMENT SYSTEMS (U20CBT305)

Duration: 3 hrs. **Max. Marks- 75**

Note: B.L – Bloom's Level CO- Course Outcome

		Marks	B.L	CO's
	PART A (10 x 2=20 Marks) **Answer all the Questions**			
Q.1	What do you mean by Hierarchical model ?	2	2	CO1
Q.2	What is DDL, DCL, and DML ?	2	2	CO1
Q.3	What are the unary operations in Relational Algebra?	2	2	CO2
Q.4	Explain various operators used in relational algebra.	2	3	CO2
Q.5	What is Multivalued dependency?	2	2	CO3
Q.6	What is 1NF, 2NF, 3NF and BCNF ?	2	2	CO3
Q.7	Define linear hashing?	2	2	CO4
Q.8	What are the ACID properties of a transaction?	2	2	CO4
Q.9	What is authorization? Give relevant example.	2	2	CO5
Q.10	What is secure session management?	2	3	CO5
	PART B (5 x 5 = 25 Marks) **Answer all the Questions**			
Q.11	Define Data Abstraction and discuss levels of Abstraction?	5	3	CO1
Q.12	Discuss additional features of the ER-Models with suitable example.	5	2	CO2
Q.13	Define normalization? Explain 1NF, 2NF, 3NF Normal forms?	5	2	CO3
Q.14	Explain ACID properties and Illustrate them through examples?	5	3	CO4
Q.15	Explain intrusion detection method.	5	3	CO5
	PART C (3 x 10 =30 Marks) **Answer any THREE Questions**			
Q.16	Let E1 and E2 be two entities in an E/R diagram with simple single-valued attributes. R1 and R2 are two relationships between E1 and E2, where R1 is one- to-many and R2 is many-to-many. R1 and R2 do not have any attributes of their own. Calculate the minimum number of tables required to represent this situation in the relational model?	10	3	CO1
Q.17	Open Source and commercial DBMS - discuss.	10	2	CO2
Q.18	Briefly explain about evaluation of relational algebra expressions with suitable examples.	10	2	CO3
Q.19	Describe Transaction Management with its state diagram and properties.	10	2	CO4
Q.20	Explain briefly about SQL Injection Method.	10	2	CO5

SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE
(An Autonomous Institution)
(Approved by AICTE, New Delhi & Affiliated to Pondicherry University)
(Accredited by NBA-AICTE, New Delhi, ISO 9001:2000 Certified Institution & Accredited by NAAC with "A" Grade)
Madagadipet, Puducherry - 605 107

B. TECH END SEMESTER EXAMINATIONS, SEPTEMBER 2022
II SEMESTER
ARTIFICIAL INTELLIGENCE AND DATA SCIENCE
DATABASE MANAGEMENT SYSTEMS (U20ADT202)

Duration: 3 hrs. **Max. Marks- 75**

Note: B.L – Bloom's Level CO- Course Outcome

Q. No		Marks	B.L	CO's
	PART A (10 x 2=20 Marks) **Answer all the Questions**			
Q.1	Define Relational model.	2	1	CO1
Q.2	Differentiate relationship and relationship set	2	2	CO1
Q.3	List the set operations of SQL	2	2	CO2
Q.4	List the table modification commands in SQL	2	2	CO2
Q.5	Justify the need for normalization	2	2	CO3
Q.6	Define multivalued dependency	2	1	CO3
Q.7	What are the properties of B trees?	2	1	CO4
Q.8	Differentiate open hashing and closed hashing	2	2	CO4
Q.9	Analyze how do you measure the cost of query evaluation?	2	4	CO5
Q.10	Define lock in concurrency control	2	1	CO5
	PART B (5 x 5 = 25 Marks) **Answer all the Questions**			
Q.11	Justify why we need DBMS even though we have file management system	5	2	CO1
Q.12	Discuss the set operations and aggregate functions in SQL.	5	1	CO2
Q.13	Write short note on 1-Normal form	5	1	CO3
Q.14	Differentiate B tree and B+ tree indexing techniques	5	2	CO4
Q.15	Explain the various steps involved in Query processing? How would you estimate the cost of query ?	5	2	CO5
	PART C (3 x 10 =30 Marks) **Answer any THREE Questions**			
Q.16	Describe various type of data models in database management system with neat sketch	10	2	CO1
Q.17	For the following relation schema: employee(employee-name, street, city) works(employee-name, company-name, salary) company(company-name, city) manages(employee-name, manager-name) Give an expression in SQL for each of the following queries: a) Find the names, street address, and cities of residence for all employees who work for 'First Bank Corporation' and earn more than $10,000. b) Find the names of all employees in the database who live in the same cities as the companies for which they work. c) Find the names of all employees in the database who live in the same cities and on the same streets as do their managers.	10	3	CO2
Q.18	Consider the following relation that keeps track of the exams taken by students at a University department: Exam(studID, studName, courseID, courseTitle, acadYear, examSession, mark, degreeCourse) Suppose the following functional dependencies hold on the relation: studID → studName, degreeCourse	10	3	CO3

	courseID → courseTitle studID, courseID, acadYear, examSession → mark studID, courseID → acadYear, examSession Apply normalization up to(3NF) and remove the redundant data			
Q.19	Write an insertion algorithm for B+ tree and Construct a tree for the following set of key values: 2, 3, 5, 7, 11, 17, 19, 23, 29, 31 Assume that the tree is initially empty and values are added in ascending order. Let the number of points that will fit in one node to be 5.	10	3	CO4
Q.20	Write algorithm for the following concurrency control protocol and illustrate how it works with suitable example i) Lock-based protocols ii) Time stamp based protocols.	10	2	CO5