Register No : _____

THE KAVERY ENGINEERING COLLEGE

(An Autonomous Institution)

M.E DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL-MAY 2025

First Semester

Computer science and Engineering

PCSB2402 - Database Practices

Regulations – 2024

Duration : 3 Hrs ***Maximum : 100 Marks***

PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)

Q.No	*Questions*	*BLT*	*CO*	*Marks*
1.	Write a SQL query to create a table with a primary key and a unique constraint.	L1	1	2
2.	Identify the key components of an ER diagram.	L2	1	2
3.	Difference between centralized and distributed databases.	L2	2	2
4.	How can R be utilized to access and manipulate data in a relational database? Provide a simple use case.	L2	2	2
5.	Predict the use of Document Type Definition (DTD) in an XML document.	L2	3	2
6.	How can XPath be used to query an XML document? Provide a simple example of XPath querying.	L2	3	2
7.	List the characteristics of Document-Based NoSQL Systems.	L1	4	2
8.	Classify the key concepts of storage and distributed systems in HBase	L2	4	2
9.	Identify the key challenges to maintaining Database Security.	L2	5	2
10.	Define Discretionary Access Control.	L1	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

Q.No		*Questions*	*BLT*	*CO*	*Marks*
11.	a	Design and implement a database system for managing a Library Management System. The system should handle information about books, authors, members, borrowing records, and transactions. Perform the following tasks and provide SQL queries for each: I. Create the Book, Author, Member, and Borrowing Record tables. II. Alter tables to add constraints like Primary Key, Foreign Key, Unique, Not Null, and Check on appropriate columns. III. Create a View to display details of books borrowed by a specific member.	L3	1	16
		Or			
	b	Examine how different types of Joins (e.g., Cartesian Product, Equi Join, Left Outer Join, Right Outer Join, and Full Outer Join) can be	L3	1	16

			used in database queries. Provide examples using SQL to demonstrate these operations.			
12.	a		Illustrate the steps involved in a Distributed Transaction and describe how distributed transaction management ensures consistency and reliability across multiple databases.	L2	2	16
			Or			
	b		Propose a design for a Distributed Database that incorporates Row Level and Statement Level Triggers. How would you implement these triggers for an application in PHP, Python, or R?	L2	2	16
13.	a		Critically analyze the implications of using XML querying techniques in modern applications. What are the potential benefits and limitations?	L4	3	16
			Or			
	b		Design a database schema for storing XML Documents in a relational database. Explain how you would publish customized XML documents from pre-existing relational databases.	L4	3	16
14.	a	i	Provide an overview of DynamoDB and the Voldemort Key-Value Distributed Data Store.	L2	4	10
		ii	Compare Document-Based NoSQL Systems like MongoDB with Key-Value Stores such as DynamoDB.	L2	4	6
			Or			
	b	i	Illustrate the use of Cypher Query Language in Neo4j. Write a simple query to retrieve data from a graph database and explain its components.	L2	4	10
		ii	Examine the role of Wide Column NoSQL Systems like HBase in managing big data.	L2	4	6
15.	a		Explain the difference between Discretionary Access Control (DAC) and Mandatory Access Control (MAC). How do these access control models ensure data security?	L3	5	16
			Or			
	b		Discuss the threat posed by SQL Injection attacks. How can these attacks be prevented during application development?	L3	5	16