

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***UG/PG DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL-MAY 2026****Second Semester****Master of Computer Applications****PMCVA104 - DATABASE MANAGEMENT SYSTEMS****Regulations - 2024****Duration: 3 Hrs.****Maximum: 100 Marks****PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)**

Q.No	Questions	BLT	CO	Marks
1.	What is the difference between a File System and a Database Management System (DBMS)?	L2	1	2
2.	What is an Entity in E-R modeling? Give an example.	L1	1	2
3.	Define a relation in the relational model.	L1	2	2
4.	What is a view in SQL? How is it useful?	L1	2	2
5.	What is a multivalued dependency?	L1	3	2
6.	Differentiate between 3NF and 4NF.	L2	3	2
7.	State the purpose of locking in DBMS?	L2	4	2
8.	Define Serializability in the context of transaction processing.	L1	4	2
9.	What is indexing and why is it used in databases?	L1	5	2
10.	List out the advantages of multi-level indexing?	L1	5	2

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

Q.No	Questions	BLT	CO	Marks
11. a	i Construct an E-R diagram for a car insurance company whose customers own one or more cars each. Each car has associated with it zero to any number of recorded accidents.	L3	1	10
	ii Convert the designed ER into a relational design.	L3	1	6
	Or			
b	Identify the main categories of data models. What are the basic differences between the relational model, the object model and the XML model?	L3	1	16
12. a	Consider the relational database: employee(empname, street, city) works(empname, companyname, salary) company(companyname, city) manages(empname, managername) Write each of the following queries in Relational Algebra and SQL: (i) Find the names, street addresses, and cities of all employees who work	L3	2	16

for Indian Bank Corporation and earn more than 10 lakhs per annum.

(ii) Insert the tuple ('Felci, Supreme Street, Chennai) in the employee database.

(iii) Delete all employees who work for Indian Bank Corporation.

(iv) Give all managers in this database a 15 percent salary raise.

Or

b	i	Define relational algebra. Construct the basic operations in relational algebra.	L3	2	8
	ii	Develop a functional dependency with an example	L3	2	8
13.	a	What is normalizations? List its benefits and explain briefly about 3NF, 4NF and BCNF with suitable example.	L2	3	16
Or					
b		Given the relation for car dealership given below. Dealership (Uniqueid, Customer-name, Purchase, Address, Newsfeed, Supplier, Price) Normalize the table so that all resulting tables are in 3NF stating the definitions of various normal forms.	L2	3	16
14.	a	i Explain about the two-phase locking protocols for concurrency control.	L2	4	10
		ii With suitable example, explain the concept of conflict serializability	L2	4	6
Or					
b		Define Transaction. Represent the transaction states and explain the various desirable properties of a transaction.	L2	4	16
15.	a	i Examine the reasons for bucket overflow in hashing and outline how to overcome bucket overflow.	L4	5	8
		ii Compare and contrast the features of static and dynamic hashing with suitable examples	L4	5	8
Or					
b		Construct a B+ 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. Construct B+ trees for the cases where the number of pointers that will fit in one node is as follows: a) Four b) Six c) Eight.	L4	5	16
