Reg.No.:												

VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 50014

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2025
Third Semester
Computer Science and Engineering
U19CS305 – DATABASE MANAGEMENT SYSTEMS
(Regulation 2019)

Time: Three Hours | Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	Define Database and list the applications of Database Systems.	2	K1	CO1
2.	Define Entity – Relationship Model.	2	K1	CO1
3.	What are aggregate functions? List the aggregate functions supported by SQL.	2	K2	CO2
4.	List the relational algebraic operations.	2	K1	CO2
5.	State the First Normal Form and its advantage.	2	K1	CO3
6.	What are tracks and sectors in hard disc?	2	K1	CO3
7.	Differentiate static and dynamic hashing.	2	K2	CO4
8.	Define transaction and give the states of transaction.	2	K1	CO4
9.	State the difference between a shared lock and an exclusive lock.	2	K2	CO5
10.	List the types of Serializability.	2	K1	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.		Questions	Marks	KL	CO
11.	a)	Explain the Three Schema Architecture of a database and their interactions with neat diagram.	13	K2	CO1

(OR)

	b)	Construct E-R diagram for a hospital with a set of patients and medical doctors. Associate with each patient a log of various tests and examinations conducted.	13	K2	CO1
12.	a)	State and explain the usage of the commands in DDL, DML and DCL with suitable examples.	13	K2	CO2
		(OR)			
	b)	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 1 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?	13	K3	CO2
13.	a)	Explain Normalization and also discuss first normal form, second normal form and third normal with an example.	13	K2	CO3
		(OR)			
	b)	i. Write short notes on: a. Sequential file organization b. Clustering file organization ii. Explain various index methods with example.	13	K2	CO3
14.	a)	Explain about static and dynamic hashing with an example.	13	K2	CO4
		(OR)			
	b)	Explain ACID properties and illustrate them through examples.	13	K2	CO4
15.	a)	Explain two phase locking protocol and discuss about log based recovery process.	13	K2	CO5
		(OR)			
	b)	Explain Recovery with Early Lock Release and Logical Undo Operations with example.	13	K2	CO5

PART – C

(1 x 15 = 15 Marks)

Q.No.			Questions	Marks	KL	CO
16.	a)	i.	Explain why would you choose a database system instead of simply storing data in operating system files? When would it make sense not to use a database system?	8	K2	CO1
		ii.	Explain the difference between logical and physical data independence.	7		
			(OR)			
	b)	i.	Analyse about the B+ Tree file organization in detail.	5	K4	CO4
		ii.	Create a B+ tree to insert the following key elements (order of the tree is 3) 5, 3, 4, 9, 7, 15, 14, 21, 22, 23.	10		