

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV /DEC 2024

Third Semester

Artificial Intelligence and Data Science

AD3391- DATA BASE DESIGN AND MANAGEMENT

Regulations – 2021

Duration : 3 Hrs

Maximum: 100 Marks

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

Q.No	Questions	BLT	CO	Marks
1.	Define the concept of specialization in ER diagram.	RE	1	2
2.	What is sequence diagram? And why do we use it.	AN	1	2
3.	Define the term Relation Schema.	UN	2	2
4.	Why null values might be introduced in to the database.	AN	2	2
5.	What is a partial functional dependency? Give an example.	UN	3	2
6.	What is the lossless join property of decomposition? Why is it important?	AN	3	2
7.	What is a transaction?	RE	4	2
8.	Why must lock and unlock be atomic operations?	EV	4	2
9.	Mention the two kinds of new data types supported in object-database systems.	RE	5	2
10.	Apply and when to use SQL and NOSQL?	AP	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*13 = 65)

Q.No	Questions	BLT	CO	Marks
11.	a i Compare file system with database system.	AN	1	6
	ii Explain the purpose of database systems along with its applications.	RE	1	7
	Or			
	b i Illustrate the concept of UML class diagrams.	UN	1	7
12.	ii State and explain the database system development life cycle with an example.	UN	1	6
	Or			
	a i Analyze all types of Data Models.	AN	2	8
	ii Explain the join and its types.	UN	2	5
13.	Or			
	b i Discuss the entity Integrity and referential integrity constraints. Why are they important? Explain them with suitable examples.	AP	2	8
	ii Explain the concept of view along with its operations.	UN	2	5
	Or			
	a i What are the advantages and disadvantages of ER Modeling?	RE	3	5
	ii What is the need for Normalization? Discuss the various normalization technique used with example?	AP	3	8
	Or			
	b Explain mapping of EER construct to relational mapping with example.	AP	3	13

14.	a i	What is the function of locking protocol? State and explain the two-phase locking with example.	AP	4	7
	ii	Compare binary locks to exclusive / shared locks. Why is the latter type of locks preferable?	AN	4	6
Or					
	b i	Apply ACID properties of transaction.	AP	4	4
	ii	Compare serial and non serial schedule.	UN	4	9
15.	a i	What are collection hierarchies? Give an example that illustrates how collection hierarchies facilitate querying.	UN	5	7
	ii	What are indexes in MongoDB? State and explain different types index with example.	RE	5	6
Or					
	b i	State and explain the Hbase data model and CRUD operations with example.	UN	5	6
	ii	Discuss how a DBMS exploits encapsulation in implementing support for ADTs.	RE	5	7

*PART – C (Marks 1*15 = 15)*

<i>Q.No</i>		<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
16.	a i	Construct an ER diagram for a Hospital with a set of patients and a set of medical doctors. Associate with each patient a log of the various tests and examinations conducted.	AN	1	8
	ii	“Boyce –code normal (BCNF) is found to be stricter than third normal form”. Justify the statement.	UN	3	7
Or					
	b i	During execution, a transaction passes through several states, until it finally commits or aborts. List all possible sequences of states through which transaction may pass. Explain why each state transaction may occur?	AN	4	7
	ii	Explain the CRUD operations of MongoDB.	UN	5	8