CBCS SCHEME

USN | | | | | | | | | | |

22MCA21

Second Semester MCA Degree Examination, June/July 2025
Database Management System

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	What is Database Management System? Explain the characteristics of DBMS approach.	10	L2	CO1
	b.	Discuss the main activities of actor on the scene and workers behind the scene.	10	L2	CO1
		OR			
Q.2	a.	With a neat diagram, explain the three – schema architecture of DBMS.	06	L2	CO1
	b.	Explain the DBMS interfaces in detail.	06	L2	CO1
	c.	List and explain advantages of using DBMS approach.	08	L2	CO1
		Module – 2			
Q.3	a.	Discuss the characteristics of relations in DBMS.	06	L2	CO1
	b.	Illustrate candidate key and primary key with an example.	04	L2	CO1
	c.	Elaborate on entity integrity and referential integrity constrains with an example.	10	L2	CO1
		OR			
Q.4	a.	Using relational algebra notations, explain equijoin, and natural join with an example.	06	L2	CO1
	b.	Illustrate cartesian product and SELECT operation with an example, in relational Algebra.	04	L2	CO1
	c.	Illustrate ER – to – Relational mapping algorithm with an example.	10	L2	CO1
		Module – 3			
Q.5	a.	Consider the following schema and answer the queries using SQL. STUDENT USN | Name | Address | Age | Branch id | Sem BRANCH Branch id | Bname | HOD BOOK Book id | Book name | Author id | Publisher AUTHOR Author id | A name | Country BORROW USN | Book id | Borrow date i) List the details of 2nd sem, MCA students ii) List the details of Author who has written the book 'Introduction to DBMS'. iii) List the Author details who had written more than 2 books. iv) List the students who have not borrowed any book.	10	L3	CO1
	b.	Explain the following with an example for each. i) ALTER ii) UPDATE iii) INSERT iv)DELETE v) DROP	10	L3	CO1

		OR			
Q.6	a.	Explain stored procedure in SQL.	06	L3	CO4
	b.	Briefly explain the types of jdbc drivers.	04	L3	CO4
	c.	Illustrate views and triggers in SQL.	10	L3	CO4
		Module – 4			
Q.7	a.	Describe functional dependency and six Inference rules for functional dependencies.	10	L2	CO2
	b.	What is Normalization? Illustrate INF, 2NF, and 3NF with an example.	10	L2	CO2
		OR			
Q.8	a.	Write an Algorithm to find minimal cover for set of functional dependencies,, construct minimal cover 'm' for the set of functional dependency which are: E : { B→ A, D→A, AB→D}	10	L2	CO2
	b.	Explain the informal guidelines for relation schema design with an example.	10	L2	CO2
		Module – 5			
Q.9	a.	What is a Transaction? Explain multiprogramming and parallel procuring with an example.	06	L3	CO3
	b.	Describe ACID properties of DBMS.	04	L3	CO3
	c.	Explain state transition diagram of transaction execution.	10	L3	CO3
		OR			
Q.10	a.	Illustrate two phase locking and deadlock prevention protocol with an example.	10	L3	CO3
	b.	Explain Multiversion Concurrency Control Technique with an example.	10	L3	CO3

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