



QUESTION BANK

Year / Semester: II B.Tech IV Semester

Regulation: R23

Subject and Code: Database Management System - 23CSE242T

SYLLABUS

UNIT 1: INTRODUCTION TO DATABASE MANAGEMENT SYSTEM AND ENTITY RELATIONSHIP MODEL

Database vs File System, Database users & applications, Data models, Schema, Instance, Data Independence, Three-tier architecture, Centralized architecture, Client-Server architecture, ER Model, Entities, Attributes, Relationships, Constraints, Specialization, Generalization.

UNIT 2: RELATIONAL MODEL

Domain, Attribute, Tuple, Relation, Null values, Domain constraints, Key constraints, Integrity constraints, Relational Algebra, Relational Calculus, Basic SQL, CREATE, ALTER, INSERT, DELETE, UPDATE.

UNIT 3: INTRODUCTION TO STRUCTURED QUERY LANGUAGE

SELECT with WHERE clause, Logical operators, Arithmetic operators, SQL Functions (Date, Numeric, String), Key constraints, Integrity constraints, Nested queries, Subqueries, GROUP BY, Aggregation functions, JOINS, Views (Updatable and Non-updatable), Set operations.

UNIT 4: NORMALIZATION

Purpose of Normalization, Functional Dependency, First Normal Form (1NF), Second Normal Form (2NF), Third Normal Form (3NF), Boyce-Codd Normal Form (BCNF), Fourth Normal Form (4NF), Fifth Normal Form (5NF), Lossless join, Dependency preservation, Surrogate key.

UNIT 5: TRANSACTION CONCEPT AND INDEXING CONCEPTS

Transaction states, ACID properties, Serializability, Lock-based concurrency control, Timestamp-based concurrency control, Optimistic protocols, Deadlocks, Recovery, Atomicity, B+ Trees, Hash indexing.



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Max Marks: 10

S.No	CO	Questions	BT
UNIT I – INTRODUCTION TO DBMS & ER MODEL			
1	CO1	Differentiate Data base and file system.	L4
2	CO1	What is data base system? Explain with neat sketch.	L4
3	CO1	What are the advantages and disadvantages of database systems?	L2
4	CO1	Explain about different data models with example.	L4
5	CO1	a. What are the applications of database systems? b. Explain about database languages.	L3
6	CO1	Describe architecture of database management system.	L4
7	CO1	Draw symbols for following in E-R diagram: a. Weak Entity set, Derived attribute, Multivalued b. Relationship Set, and Primary key attribute	L4
8	CO1	Construct E-R diagram of the bank. It provides different kinds of bank accounts and loans. It operates number of branches.	L3
9	CO1	Explain types of attribute with example	L4
10	CO1	What is Entity-Relationship model? Explain the steps to reduce the ER diagram to ER database schema.	L4



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UNIT II – RELATIONAL MODEL			
1	CO2	Illustrate different set operations in Relational algebra with an example.	L2
2	CO2	Explain Extended relational operations with examples.	L4
3	CO2	a. Define a query in Tuple relational Calculus. b. Write a query in TRC to find the names of sailors who have	L4
4	CO2	Discuss about various integrity constraints in SQL.	L4
5	CO2	Discuss importance of NULL values and problems associated with NULL.	L4
6	CO2	What are the operations of DDL, DML, DCL, and TCL with examples?	L4
7	CO2	Explain about database languages with example.	L3
8	CO2	Write relational algebra expressions for given queries.	L3
9	CO2	Write note on different types of constraints in Relational Model with examples.	L3
10	CO2	Write relational algebra expressions for given queries.	L3



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UNIT III – INTRODUCTION TO STRUCTURED QUERY LANGUAGE			
1	CO3	Explain in detail about various SQL functions in detail.	L3
2	CO3	Illustrate Group by and Having clauses with examples.	L3
3	CO3	Differentiate nested queries and correlated subqueries with examples.	L3
4	CO3	Define a View in SQL. Write about updates on views.	L4
5	CO3	Explain different types of Joins in SQL with examples.	L4
6	CO3	a. Differentiate Alter and Update statements. b. Differentiate DELETE and DROP statements.	L4
7	CO3	Write SQL queries involving joins, grouping and subqueries.	L4
8	CO3	Discuss SQL query processing and enforcement of constraints.	L4
9	CO3	Explain about nested queries and sub queries.	L3
10	CO3	Explain SQL functions: Date, Numeric, and String functions with examples.	L4



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UNIT IV – NORMALIZATION			
1	CO4	Explain about Normalization and need for normalization.	L4
2	CO4	Differentiate fully functional Dependencies and Transitive Dependencies.	L3
3	CO4	What are the problems caused by Redundancy? Give an example.	L4
4	CO4	Describe Lossless Join Decomposition with suitable examples.	L4
5	CO4	Define Normalization. Explain about 1NF, 2NF with relevant examples.	L4
6	CO4	Explain about 3NF and BCNF with relevant table structure	L4
7	CO4	Explain the following: a. Multi-valued dependencies b. Fourth normal forms	L4
8	CO4	Explain Fifth Normal Form (5NF) with example.	L4
9	CO4	Define decomposition and how does it address redundancy? Discuss the problems that may be caused by the use of decompositions.	L3
10	CO4	Discuss Surrogate Key and its role in database design.	L3



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S.No	CO	Questions	BT
UNIT V – TRANSACTION CONCEPT AND INDEXING CONCEPTS			
1	CO5	Explain transaction states with suitable example.	L3
2	CO5	Discuss How you implement Atomicity and Durability.	L4
3	CO5	Explain ACID properties of transaction management.	L4
4	CO5	Illustrate Concurrent execution of transaction with examples.	L4
5	CO5	Explain serializability in transaction management	L4
6	CO5	Discuss about lock based and time based locking protocols.	L4
7	CO5	Explain Hash-based indexing with example.	L4
8	CO5	Write note on Recoverability and different types of schedules.	L4
9	CO5	Discuss Recoverability and different types of schedules.	L3
10	CO5	Explain different Indexing Techniques in DBMS.	L4

TEXT BOOKS:

1. Database Management Systems, 3rd edition, Raghurama Krishnan, Johannes Gehrke, TMH (For Chapters 2, 3, 4)
2. Database System Concepts, 5th edition, Silberschatz, Korth, Sudarsan, TMH (For Chapter 1 and Chapter 5)



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REFERENCE BOOKS:

1. Introduction to Database Systems, 8th edition, C J Date, Pearson.
2. Database Management System, 6th edition, Ramez Elmasri, Shamkant B. Navathe, Pearson
3. Database Principles Fundamentals of Design Implementation and Management, Corlos Coronel, Steven Morris, Peter Robb, Cengage Learning.

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