MSC (CA&IT) - Semester: IV

(Effective from year 2024-25)

Course Code:	CAIT-401	**Course Title:**	Database Management System
Course Credits:	**02**	**Hour of Teaching/Week:**	02
Internal Assessment Marks:	**25**	**External Exam Marks:**	25
Exam Duration	**1Hr**		

Unit	Contents
1.	**Database Management System** Introduction of DBMS, File processing system Vs DBMS **Data Models** Introduction, Object Based Logical Model, Record Base Logical Model, Relational Model, Network Model, Hierarchical Model, Entity Relationship Model, Entity Set, Attribute, Relationship Set, Entity Relationship Diagram (ERD) **Relational Databases** Introduction, Terminology: Relation, Tuple, Attribute, Cardinality, Degree, Domain Keys - Super Key, Candidate Key, Primary Key, Foreign Key Relational Algebra Operations - Select, Project, Union, Difference, Intersection, Cartesian, Product, Natural Join
2.	**Relational Database Design** Introduction, Anomalies of un normalized database, Normalization, Normal Forms: 1 NF, 2 NF, 3 NF, 4 NF, BCNF **SQL (Structured Query Language)** Introduction, Basic Structure, DDL Commands: CREATE, ALTER, DROP, TRUNCATE DML Commands: SELECT, INSERT, UPDATE, DELETE Clauses : FROM, GROUP BY, HAVING, ORDER BY, IN Aggregate Functions: AVG, COUNT, FIRST, LAST, MIN, MAX, SUM, Simple Queries and Nested Queries

References:

1. Database System Concepts By Henry Korth and A. Silberschatz
2. An Introduction to Database System by Bipin Desai
1. SQL, PL/SQL the Programming Language of Oracle,Ivan Bayross,BPB Publications
2. *Fundamentals of Database Systems* · Shamkant Navathe

MSC (CA&IT) - Semester: IV

(Effective from year 2024-25)

Course Code:	CAIT-401-P	**Course Title:**	Lab: Practical Based on CAIT-401
Course Credits:	**02**	**Hour of Teaching/Week:**	04
Internal Assessment Marks:	**25**	**External Exam Marks:**	25
Exam Duration	**1Hr**		

List of Sample Programs

1. Write a SQL statement that performs DDL Queries.
2. Write a SQL statement that displays all the information about all salespeople.

   Sample table: salesman

   salesman_id | name | city | commission

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   5001 | James Hoog | New York | 0.15

   5002 | Nail Knite | Paris | 0.13

   5005 | Pit Alex | London | 0.11

   5006 | Mc Lyon | Paris | 0.14

   5007 | Paul Adam | Rome | 0.13

3. Write a SQL statement to display a string "This is SQL Exercise, Practice and Solution".
4. Write a SQL query to display three numbers in three columns.
5. Write a SQL query to display the sum of two numbers 10 and 15 from the RDBMS server.
6. Write an SQL query to display the result of an arithmetic expression.
7. Write a SQL statement to display specific columns such as names and commissions for all salespeople.
   Sample table: salesman
8. salesman_id | name | city | commission

   ----------+----------+----------+----------

   5001 | James Hoog | New York | 0.15

   5002 | Nail Knite | Paris | 0.13

   5005 | Pit Alex | London | 0.11

   5006 | Mc Lyon | Paris | 0.14

   5007 | Paul Adam | Rome | 0.13

5003 | Lauson Hen | San Jose | 0.12

9. Write a query to display the columns in a specific order, such as order date, salesman ID, order number, and purchase amount for all orders.
Sample table: orders

ord_no	purch_amt	ord_date	customer_id	salesman_id
70001	150.5	2012-10-05	3005	5002
70009	270.65	2012-09-10	3001	5005
70002	65.26	2012-10-05	3002	5001
70004	110.5	2012-08-17	3009	5003
70007	948.5	2012-09-10	3005	5002

10. From the following table, write a SQL query to identify the unique salespeople ID. Return salesman_id.
Sample table: orders

ord_no	purch_amt	ord_date	customer_id	salesman_id
70001	150.5	2012-10-05	3005	5002
70009	270.65	2012-09-10	3001	5005
70002	65.26	2012-10-05	3002	5001
70004	110.5	2012-08-17	3009	5003
70007	948.5	2012-09-10	3005	5002