



Program	Bachelor of Vocational (B Voc)	Semester - 1
Type of Course	-	
Prerequisite		
Course Objective	-	

Teaching Scheme (Contact Hours)				Examination Scheme				
Lecture	Tutorial	Lab	Credit	Theory Marks		Practical Marks		Total Marks
				SEE (T)	CIA (T)	SEE (P)	CIA (P)	
3	-	-	3	50	-	-	-	50

SEE - Semester End Examination, CIA - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)

Course Content		T - Teaching Hours W - Weightage	
Sr.	Topics	T	W
1	<p>Introductory concepts of DBMS</p> <p>Introductory concepts of DBMS: Introduction and applications of DBMS, Purpose of database, Data, Independence, Database System architecture- levels, Mappings, Database, users, and DBA</p> <p>Relational Model: Structure of relational databases, Domains, Relations, Relational algebra – fundamental operators and syntax, relational algebra queries, tuple relational calculus</p>	7	20
2	<p>Entity-Relationship model</p> <p>Entity-Relationship model: Basic concepts, Design process, constraints, Keys, Design issues, E-R diagrams, weak entity sets, extended E-R features – generalization, specialization, aggregation, reduction to E-R database schema</p> <p>Relational Database Design: Functional Dependency – definition, trivial and non-trivial FD, closure of FD set, closure of attributes, irreducible set of FD, Normalization – 1NF, 2NF, 3NF, Decomposition using FD- dependency preservation, BCNF, Multi-valued dependency</p>	8	20
3	<p>Query Processing & Query Optimization</p> <p>Overview, measures of query cost, selection operation, sorting, join, evaluation of expressions, transformation of relational expressions, estimating statistics of expression results, evaluation plans, materialized views</p>	5	20
4	<p>Transaction Processing</p> <p>Transaction concepts, properties of transactions, serializability of transactions, testing for serializability, System recovery, Two-Phase Commit protocol, Recovery and Atomicity, Log-based recovery, concurrent executions of transactions and related problems, Locking mechanism, solution to concurrency-related problems, deadlock, , two-phase locking protocol, Isolation, Intent locking</p>	9	20
5	<p>SQL Concepts</p>	13	20



Course Content		T - Teaching Hours W - Weightage	
Sr.	Topics	T	W
	<p>Basics of SQL, DDL, DML, DCL, structure – creation, alteration, defining constraints – Primary key, foreign key, unique, not null, check, IN operator, Functions - aggregate functions, Built-in functions – numeric, date, string functions, set operations, sub-queries, correlated sub-queries, Use of group by, having, order by, join and its types, Exist, Any, All, view and its types. Transaction control commands – Commit, Rollback, Savepoint</p> <p>PL/SQL Concepts: Cursors, Stored Procedures, Stored Functions, Database Triggers</p>		
Total		42	100

Suggested Distribution Of Theory Marks Using Bloom's Taxonomy			
Level	Remembrance	Understanding	Application
Weightage	10	20	20

NOTE : This specification table shall be treated as a general guideline for the students and the teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Course Outcomes	
At the end of this course, students will be able to:	
C01	Recognize the various elements of Database Management Systems.
C02	Given a problem statement, identify the entities and their relations and draw an E-R diagram and design database applying normalization.
C03	Solve the given problem using Relational Algebra, Relational Calculus, SQL and PL/SQL.
C04	Apply and relate the concepts of transaction, concurrency control, recovery and security in database.
C05	Recognize the purpose of query processing, and optimization and demonstrate the SQL query evaluation.

Reference Books	
1.	Database System Concepts By Abraham Silberschatz, Henry F. Korth, S. Sudarshan McGraw-Hill 6th Edition
2.	Fundamentals of Database Systems By R. Elmasri and S. Navathe, Pearson 7th Edition
3.	An Introduction to Database Systems By C J Date, Pearson
4.	Modern Database Management By Hoffer , Ramesh, Topi, Pearson.
5.	Principles of Database and Knowledge – Base Systems By J. D. Ullman Computer Science Press
6.	Understanding SQL By Edwin Elton & Martin Gruber BPB
7.	SQL- PL/SQL By Ivan Bayross