SARDAR VALLABHBHAI PATEL EDUCATION SOCIETY'S
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Program Name: Int. M.Sc. (I.T.)
Level: Post Graduate
Branch: Information Technology
Subject Code: 1BS303
Subject Name: Relational Database Management System RDBMS

w. e. f. Academic Year:	2025-26
Semester:	03
Category of the Course:	Major Course

Prerequisite:	DBMS
Rationale:	This course covers basic understanding of relational database management systems, overview of PL/SQL, cursors, triggers, stored procedures, functions.

Course Outcome:

After Completion of the Course, Student will be able to:

No	Course Outcomes
01	Describe Codd's Rules and relational algebra operations.
02	Perform Advanced SQL concept and query.
03	Explore the concept of PL/SQL block and control structure.
04	Demonstrate the use of cursors in PL/SQL for managing data.
05	Implement triggers in PL/SQL for efficient database management.
06	Utilize functions and stored procedures for real world problems.

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
L	**T**	**PR**	**C**	Theory		Tutorial / Practical		
				SEE (TH)	IAT	CCE	SEE (P)	
2	0	4	4	70	30	20	30	150

Where SEE: Semester End Examination, IAT: Internal Assessment Test, CCE: Continuous and Comprehensive Evaluation

Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1	**Unit-1 Introduction of Relational model** 1.1 Codd's Rules 1.2 Relational operations Algebra 1.3 Transaction control language 1.4 Data Control language	4	15%
2	**Unit-2 Advanced SQL** 2.1 Data types 2.2 ROWID pseudo column & DUAL table 2.3 DATE Functions 2.4 Concepts of Index 2.5 Join Queries 2.6 Nested Queries	4	15%
3	**Unit-3: PL/SQL and Conditional Statements** 3.1 Introduction to PL/SQL 3.2 Variables, Constants and Data Type 3.3 Assigning Values to Variables 3.4 User Defined Record 3.5 Conditional Statements 3.6 Iterative statements	7	20%
4	**UNIT 4: Introduction to Cursor** 4.1 Introduction to Cursor 4.2 Types of Cursors 4.3 Cursor Declaration 4.4 Cursors Operations 4.5 Advantages and Disadvantages of Cursor	4	15%
5	**UNIT 5: Concepts of Triggers** 5.1 Introduction to Triggers	4	15%

	5.2 Types of Triggers 5.3 Trigger Events 5.4 Trigger Creation 5.5 Advantages and Disadvantages of Trigger		
6	**UNIT 6: Function and Stored Procedure:** 6.1 Introduction to Function and Procedure 6.2 Creation of Function and Procedure 6.3 Calling of Function and Procedure 6.4 Advantages and Disadvantages of Function and Procedure	7	20%
	Total	**30**	**100**

Distribution of Theory Marks (%)					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
20	**40**	**40**	-	-	-

Suggested Specification Table with Marks (Theory):
 Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create
(as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:
(a) Books:
1. Database Management Systems by Raghu ramakrishnan and Johannes Gehrke
2. SQL in 10 Minutes, Sams Teach Yourself by Ben Forta
3. Oracle Database 12c SQL by Jason Price
4. PL/SQL: The Definitive Guide by Jonathan Gennick
5. SQL Performance Explained by Markus Winand

(b) Open-source software and website:
1. https://www.mysql.com/
2. https://www.postgresql.org/
3. https://www.sqlite.org/
4. https://firebirdsql.org/
5. https://db.apache.org/derby/

Suggested Course Practical List:

Sr. No.	Name of Practical
1.	Write an SQL query to find the second highest salary from the "Employees" table.
2.	Create a table named "Customers" with the following columns: CustomerID (int, primary key), Name (varchar), Email (varchar), DateOfBirth (date), and Phone (varchar).
3.	Write a query to retrieve the names of all employees who have worked on a project, including the project name. (Use the "Employees" and "Projects" tables.)
4.	Given a set of unnormalized data (e.g., a table storing customer orders with multiple products in one record), normalize the data to 1NF (First Normal Form).
5.	Create a trigger that automatically updates the "last_updated" timestamp in the "Employees" table whenever an employee's salary is updated.
6.	Write an explicit cursor to fetch all employees' names and salaries from the "Employees" table and display them.
7.	Create a stored function to calculate the total salary for an employee given their EmployeeID.
8.	Write a transaction block to transfer money from one account to another (with proper rollback in case of error).
9.	Create a stored procedure to delete a customer's record from the "Customers" table only if no orders are placed by that customer.
10.	Write a query to get the list of all customers who have not placed any orders from the "Customers" and "Orders" tables.

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