CS-16: RDBMS Using ORACLE

Objectives:

- To provide the basic concept, theory and practices in design and implementation of DBMS.
- To be able to handling different type of data transaction by using SQL commands.

Prerequisites:

- Theoretical as well as practical knowledge of database management system.

Unit No.	Topic	Detail
1	**DBMS Overview, SQL, SQL *PLUS**	• Introduction to DBMS and RDBMS • Dr. E. F. Codd Rules • Importance of E. R. Diagram in RDBMS • Normalization • Introduction to SQL • SQL Commands and Datatypes • Introduction to SQL *PLUS • SQL *PLUS formatting commands • Operator and Expression • SQL v/s SQL *PLUS
2	**Managing Tables and Data, Data Control and Transaction Control Command**	• Creating, Altering & Dropping tables • Data Manipulation Command like Insert, update, delete • Different type of constraints and applying of constraints • SELECT statement with WHERE, GROUP BY and HAVING, ORDER BY, DISTINCT, Special operators like IN, ANY, ALL, BETWEEN, EXISTS, LIKE • Join (Inner join ,outer join, self join) • subquery, minus, intersect, union • Built in functions Numeric Functions: abs, ceil, cos, decode, exp, floor, greatest, least, log, max, min, rem, round , sin, sqrt, tan, trunc Character Functions: chr, concat, initcap, lower, lpad, ltrim, replace, rpad, rtrim, substr, trim, upper Date Functions: add_months, last_day, next_day, months_between, round (date), sysdate, trunc (date), systimestamp, to_date, to_char Aggregate Functions: Sum, Count, AVG, MAX, MIN • Creating user & role • Grant, Revoke command • What is transaction? • Starting and Ending of Transaction Commit, Rollback,

		SavePoint
3	**Other Oracle Database Objects, Concurrency control using lock**	• View • Sequence • Synonyms • Database Links • Overview of Index and their types • Cluster • Snapshot • Locks, Overview of Locking Issues, Lock types
4	**Introduction to PL/SQL, Advanced PL/SQL**	• SQL v/s PL/SQL • PL/SQL Block structure • Language construct of PL/SQL (Variable, Basic and Composite Data Type, Conditions, Looping etc.) • %Type and %Rowtype • Using Cursor (Implicit, Explicit) • Exception Handling • Creating and Using Procedure • Package • Trigger • Creating Objects • Object in Database – Table • PL/SQL Tables, Nested Tables, Varrays
5	**Oracle Database Structure**	• Instance Architecture • Creating and Altering Database • Opening and shutdown Database • Initialization Parameter • Control Files, Redo Log Files • Concept of Tablespace • Rollback Segment • Import • Export • SQL *Loader

Seminar - 5 Lectures
Expert Talk - 5 Lectures (Managing a Multitenant Environment using Oracle 12c)
Test - 5 Lectures

Total Lectures 60 + 15 = 75

Reference Books:

- Oracle Database 12c The Complete Reference (Oracle Press) by Bob Bryla , Kevin Loney – Oracle Press
- Oracle Database 12c SQL – Jason Price – Oracle Press
- Oracle Database 12c PL/SQL Programming by McLaughlin – Oracle Press
- SQL, PL/SQL The programming - Lang.Of Oracle Ivan Bayross – BPB

Course outcomes:

- Describe the fundamentals of data design and relation database concepts
- Design entity-relationship diagrams to represent database application scenarios
- Develop relational database
- Apply normalization techniques on relational database
- Describe the knowledge of transaction processing and various concurrency problems
- Apply knowledge of SQL queries to perform various database related operations
- Develop various PL/SQL programs