SEMESTER IV

Core Paper VII

Relational Database Management Systems

Instructional Hrs: 75 **Sub. Code: 16CSUC407/**
16CAUC407 / 16ITUC511 / 16CTUC304

Max. Marks: CIA – 25; ESE – 75 **Credits: 3**

Objective: To learn the basic principles of database and design, basics of RDBMS, Object Based Databases and database manipulation using SQL

UNIT I **15 Hrs.**

Database Concepts: A Relational approach: Database – Relationships – DBMS – Relational Data Model – Integrity Rules – Theoretical Relational Languages. Database Design: Data Modeling and Normalization: Data Modeling – Dependency – Database Design – Normal forms – Dependency Diagrams – De-normalization.

UNIT II **15 Hrs.**

Oracle9i: Overview: Personal Databases – Client/Server Databases – Oracle9i an introduction – SQL *Plus Environment – SQL – Logging into SQL *Plus - SQL *Plus Commands – Errors & Help – Alternate Text Editors - SQL *Plus Worksheet - iSQL *Plus.

Oracle Tables: DDL: Naming Rules and conventions – Data Types – Constraints – Creating Oracle Table – Displaying Table Information – Altering an Existing Table – Dropping, Renaming, Truncating Table – Table Types – Spooling – Error codes.

Implementing the SQL*Plus Commands using Create, Update, Alter, Drop, Rename, Truncate and Spooling

UNIT III **15 Hrs.**

Working with Table: Data Management and Retrieval: DML – adding a new Row/Record – Customized Prompts – Updating and Deleting an Existing Rows/Records – retrieving Data from Table – Arithmetic Operations – restricting Data with WHERE clause – Sorting – Revisiting Substitution Variables – DEFINE command – CASE structure.

Writing queries to Add, Update, Delete records, Retrieving data from a table using Where and ORDERBY Clause.

UNIT IV **15 Hrs.**

Functions and Grouping: Built-in functions –Grouping Data. Multiple Tables: Joins and Set operations: Join – Set operations. ***Designing queries using Built in functions.***

PL/SQL: A Programming Language: History – Fundamentals – Block Structure – Comments – Data Types – Other Data Types – Declaration – Assignment operation – Bind variables – Substitution Variables – Printing – Arithmetic Operators.

UNIT V **15 Hrs.**

Control Structures and Embedded SQL: Control Structures – Nested Blocks – SQ L in PL/SQL – Data Manipulation – Transaction Control statements.

Implementing the basic control structures in PL/SQL – sequential structure, selection structure and looping structure.

PL/SQL Cursors and Exceptions: Cursors – Implicit & Explicit Cursors and Attributes – Cursor FOR loops – SELECT…FOR UPDATE – WHERE CURRENT OF clause – Cursor with Parameters – Cursor Variables – Exceptions – Types of Exceptions. **PL/SQL Named Blocks :** Procedures – *Functions* – Packages –Triggers.

Declaring Cursor, Exception, Functions and Triggers.

Note: Lab activities are denoted in ***Bold Italics.***

TEXTBOOK

Nilesh Shah, *Database Systems Using Oracle,* 2nd edition, PHI, 2008.

(UNIT I: Chapters 1 & 2 UNIT II: Chapters 3 & 4 UNIT III: Chapters 5 & 6 UNIT IV: Chapters 10 & 11 UNIT V: Chapters 12, 13 & 14)

REFERENCE BOOKS

1. **Arun Majumdar, Pritimoy Bhattacharya**, *Database Management Systems,* TMH, 2007.
2. **Gerald V. Post**, *Database Management Systems,* TMH, 3rd edition. 2008.

SEMESTER V

Core Paper XII

Core Paper XII : Android Programming

Instructional Hrs. : 75 **Sub. Code : 16CSUC512 / 16CAUC512 / 16CTUC614**

Max. Marks : 100 **CIA - 25;** **ESE - 75** **Credits: 4**

Objective: To learn the appropriate tools for Android development and gain experiences in developing applications on mobile platform.

UNIT I **15 Hrs.**

Introduction to Android Operating System: Android - Open Handset Alliance - Android Ecosystem - Android versions - Android Activity - Features of Android - Android Architecture - Stack Linux Kernel. Create the First Android Application: Directory Structure. Android User Interface: Understanding the components of a screen.

UNIT II **15 Hrs.**

Designing User Interface with View: TextView - Button - A Standard push button - ImageButton - EditText - CheckBox - ToggleButton - RadioButton and RadioGroup - Progress Bar - Autocomplete TextView - Spinner - ListView - GridView - ImageView - ScrollView - Custom Toast Alert - Time and Date Picker. Activity: Introduction - Intent - Intent Filter - Activity Lifecycle - Broadcast Lifecycle –Service.

UNIT III **15 Hrs.**

Multimedia: Android System Architecture - Play Audio & Video - Text to Speech. SQLite Database in Android: SQLite Database - SQLite - Creation and Connection of the database - Extracting value from a Cursors - Transactions.

UNIT IV **15 Hrs.**

Telephoning and Messaging: SMS Telephony. Location - Based Services: Creating the Project - Getting the maps API Key - Displaying the Map - Navigating to a Specific Location.

UNIT V **15 Hrs.**

JSON: JSON - XML and JSON - Use of JSON - Syntax and rule of JSON - JSON Name/Value pairs - JSON Values - JSON Objects - JSON Arrays - JSON uses JavaScript syntax - Parsing JSON and XML.

TEXT BOOK

Prasanna Kumar Dixit, **Android**, Vikas Publishing House Pvt Ltd, 1st Edition, 2014.

REFERENCE BOOK

Reto Meier, **Professional Android 4 Application Development**, Wiley India Pvt Ltd., 2012.

SEMESTER V

Practical Lab V : Android Programming Lab

Instructional Hrs. : 75 **Sub. Code : 16CSUCP05/16CAUCP05/16CTUCP06**

Max. Marks: 100 **CIA: 40;** **ESE: 60** **Credits: 3**

Objective : To create mobile apps using Android

1. Create an Android Application to demonstrate any five UI components functionality.
2. Creating Simple Converter Application in Android.
3. Creating Calculator App in Android using multiple layouts.
4. Creating Simple Android Camera Application.
5. Create an Android Application to send SMS and auto detects the value.
6. Creating Basic List View Demo in Android.
7. Creating an Audio Player using Media Player when button is clicked the following events has to occur
   (i) Play Song (ii) Pause Song (iii) Stop Song
8. Create an Android Application using Google map and add markers to your home, College and few other locations.
9. Create, insert and update records using SQLite.
10. Create a Simple Login Application using JSON data.

SEMESTER VI

Core Paper XIII : Software Testing

Instructional Hrs. : 75 **Sub. Code : 16CSUC613**

Max. Marks: CIA -25; ESE -75 **Credits: 4**

Objective: To learn various software testing strategies and metrics.

UNIT I **14 Hrs.**

Software Development Life Cycle models: Phases of Software project – Quality, Quality Assurance, Quality control – Testing, Verification and Validation – Process Model to represent Different Phases - Life Cycle models.

UNIT II **15 Hrs.**

White-Box Testing: Static Testing – Structural Testing. Black-Box Testing: What is Black-Box Testing? - Why Black-Box Testing? –When to do Black-Box Testing? – How to do Black-Box Testing: Requirements Based Testing, Positive and Negative Testing, Boundary Value Analysis, Decision Tables, State Based or Graph Based Testing, Compatibility Testing and Domain Testing.

UNIT III **15 Hrs.**

System and Acceptance Testing: System Testing Overview – Why System testing is done? – Functional versus Non-functional Testing - Functional System Testing: Design / Architecture Verification, Deployment Testing, Beta Testing. Non-functional Testing: Reliability Testing, Stress Testing. Acceptance Testing.

UNIT IV **15 Hrs.**

Performance Testing: Factors Governing Performance Testing – Methodology of Performance Testing – Process for Performance Testing.

UNIT V **16 Hrs.**

Test Planning, Management, Execution and Reporting: Test Planning – Test Management – Test Process – Test Reporting.

TEXT BOOK

Srinivasan Desikan & Gopalswamy Ramesh, **Software Testing Principles and Practices,** Pearson Education, Seventh Edition, 2009.

REFERENCE BOOKS

1. Renu Rajani, Pradeep Oak, **Software Testing**, TMH, Fifth Edition, 2007.
2. William E.Perry, **Effective Methods of Software Testing**, Wiley India, Third Edition, 2008.

SEMESTER V

Practical V: GUI DESIGN LAB

Instructional Hrs: 75 **Sub. Code: 16ITUCP05**

Max. Marks: CIA – 40; ESE – 60 **Credits: 3**

Objective: To gain programming skill in GUI.

1. Develop a VB Project to Check User Name & Password Given by User.
2. Develop a VB Project to Add & Remove Items From List Box.
3. Develop a VB Project to Copy all Items in a List Box to Combo Box.
4. Develop a VB Project to Enter and Display Student Information.
5. Develop a VB Project to Scroll Text from Left to Right Using Timer.
6. Develop a VB Project to Mini Calculator Functions.
7. Develop a VB Project to Documents typing using MDI Form.

Use Employee Information For the Following Projects.

8. Develop a VB Project to Search a Record in MS-ACCESS database using data control.
9. Develop a VB Project to Delete a Record from MS-ACCESS database using data control.
10. Develop a VB Project to Perform following Operations in MS-ACCESS database using DAO. A). Move First Record. B).Move Next Record C).Move Previous Record. D).Move Last Record.
11. Develop a VB Project to Insert a Record in MS-ACCESS database using ADO.
12. Develop a VB Project to modify a record in MS-ACCESS database using ADO

SEMESTER III

Core Paper VI: Operating System

Instructional Hrs: 90 **Sub. Code: 16CTUC306**

Max. Marks: CIA – 25; ESE – 75 **Credits: 4**

Objective: To learn the basic concepts and functions of Operating System.

UNIT I **15 Hrs.**

Introduction: What is an Operating System? – Process Concepts – Asynchronous Concurrent Processes**. Deadlock and Indefinite Postponement-**Introduction-Resource Concepts-Four necessary conditions for Deadlock-Major Areas of Deadlock Research

UNIT II **15 Hrs.**

Storage Management Real Storage- Introduction-Storage Organization-Storage Management-Storage Hierarchy-Storage Management Strategies-Contiguous Vs Noncontiguous Storage Allocation-Single User Contiguous Storage Allocation-Fixed Partition Multiprogramming-Variable Partition Multiprogramming- Multiprogramming with Storage Swapping.

UNIT III **15 Hrs.**

Virtual Storage Organization: Introduction – Evolution of Storage Organizations – Virtual Storage – Multilevel Storage Organization – Block Mapping – Paging – Segmentation – Paging / Segmentation Systems.

UNIT IV **15 Hrs.**

Virtual Storage Management: Introduction - Virtual Storage Management Strategies – Page Replacement Strategies – Locality – Working Sets – Page Fault Frequency Page Replacement – Demand Paging. **Job and Processor Scheduling:** Introduction – Scheduling levels – Objectives – Criteria – Preemptive vs Nonpreemptive Scheduling – Interval Timer – Priorities – Deadline Scheduling – FIFO – RR – Quantum Size – SJF – SRT – HRN – Multilevel Feedback Queues.

UNIT V **15 Hrs.**

Disk Performance Optimization: Introduction – Operation of Moving-Head Disk Storage – Need for Disk Scheduling – Seek Optimization – Rotational Optimization – System Consideration – Disk Caching – Other Performance – Enhancement Techniques – RAM and Optical Disks.

File and Database Systems : Introduction – The File System – File System Functions – The Data Hierarchy – Blocking and Buffering – File Organization – Queued and Basic Access Methods – Allocating and Freeing Space – File Descriptor – Access Control Matrix – Access Control by User Classes – Backup and Recovery.

Note: Self study topics are denoted in *Italics*

TEXT BOOK

Deitel H.M, Operating Systems, Pearson Education Publication, , 2nd Edition, 2005.

REFERENCE BOOK

1. **Achyut S Godbole,** Operating System, TMH Publications, 2003.
2. **Schillbertz,** Operating System, Fifth Edition, 1998.