SARDAR PATEL UNIVERSITY
Programme & Subject: B.Sc. (CA & IT) – M.Sc. (CA & IT) Dual Degree
Semester: III
Syllabus with Effect from : June-2017

Paper Code: PS03CIIT01		Total Credit: 3
Title Of Paper: Operating Systems - I		
Unit	Description in detail	Weightage (%)
I	**Introduction to Operating Systems** Concept of Operating system. Operating system operations. Types of Operating system. Operating system structure:Monolithic structure, Layered system, Virtual machine, Client-server model.	25%
II	**CPU Scheduling** Process: Concept, Process state, Process control block. Process Scheduling: concept, Scheduling queues, Schedulers, Context Switch. CPU Scheduler. Non-preemptive and Preemptive Scheduling. Dispatcher, Scheduling Criteria. Scheduling Algorithm: First Come First Serve , Shortest Job First, Priority, Round- Robin.	25%
III	**Process Synchronization & Deadlock** Concept of Co-operating Process. Introduction to Process Synchronization. Producer-Consumer Problem. Critical – Section Problem. Peterson's Solution. Semaphores. Introduction to deadlock. Deadlock characterization. Deadlock Prevention. Deadlock Avoidance. Banker's algorithm.	25%
IV	**Disk Scheduling** Overview of Mass - Storage Structure. Disk Structure. Introduction to Disk scheduling. Disk scheduling algorithm: FCFS Scheduling SSTF Scheduling SCAN Scheduling C- SCAN Scheduling. RAID Structure.	25%

Basic Text & Reference Books:-

Operating system concepts, 8th edition by Abraham Silberschatz , Peter B. Galvin, Greg Gagne Publisher -Wiley

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Paper Code: PS03CIIT02	Total Credit: 3	
Title Of Paper: Advanced Data And File Structure		
Unit	Description in detail	Weightage (%)
I	**Arrays and Trees** Introduction to arrays, one and two-dimensional arrays Representation of arrays in memory : row-major and column-major order Address calculation of elements of one and two-dimensional arrays Sparse array, applications of arrays Introduction to trees Definitions of basic terms : Tree, Directed Tree, Root, Leaf, Branch, Level, Node Applications of a tree	25%
II	**Binary Trees and Graphs** Binary trees : introduction, linear and linked representations Preorder, inorder and postorder traversal of a binary tree Insertions and deletions in a lexically ordered binary tree The concept of a graph and basic terminology	25%
III	**Sorting & Searching** Introduction to sorting, applications of sorting Basic sorting techniques - bubble sort, insertion sort, quick sort, selection sort and merge sort Implementation of sorting techniques Introduction to searching, applications of searching Basic searching techniques - sequential search and binary search Implementation of searching techniques Sorting vs. searching	25%
IV	**File Organizations** Terminology, definitions and concepts in file organization The structure of sequential files Processing sequential files Direct files, Processing direct files Indexed sequential files The structure of indexed sequential files Processing indexed sequential files	25%

Basic Text & Reference Books:-

Tremblay J. & Sorenson P. G. : An Introduction to Data Structures with Applications, 2nd Edition, McGraw-Hill International Edition, 1987.

Singh Bhagat & Naps Thomas : Introduction to Data Structures, Tata McGraw-Hill Publishing Co. Ltd.,1985.

R. B. Patel: Data Structure using C – Khanna Publications. ISBN: 81-87522-41-0

Additional Reference Books :

    D. Samantha : Classis Data Structures – PHI Publication

    G. S. Baluja : Data Structures through C 4th Edition – Danpat Rai & Co.

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Paper Code: PS03CIIT03	Total Credit: 3
Title Of Paper: Object Oriented Programming & C++	

Unit	Description in detail	Weightage (%)
I	**Object Oriented Programming (OOP) Concepts and Introduction to C++** structured programming vs. object oriented programming Basic OOP concepts : objects , classes , encapsulation , data hiding , inheritance, polymorphism Introduction to C++: structure of a C++ program , data types , variables, constants, expressions, statements and operators Usage of header files Control flow statements : if else, for loop, while loop, do while loop, switch, break and continue	25%
II	**Input/Output, Arrays and Working with Classes** Basic I/O in C++ Arrays in C++ : introduction, declaration, initialization of one , two and multidimensional arrays, operations on arrays Working with strings : introduction, declaration, string manipulation and arrays of string Classes and objects in C++ Constructors : default, parameterized, copy, constructor overloading and destructor Access specifiers, implementing and accessing class members Working with objects : constant objects, nameless objects, live objects, arrays of objects	25%
III	**Functions, Function Overloading and Inheritance** Introduction to functions, library and user-defined functions, parameters passing, default arguments Functions overloading , inline functions, friend functions and virtual functions Inheritance: Introduction , derived class declaration, forms of inheritance Inheritance and member access ability, constructor and destructor in derived class, construction invocation and data member initialization.	25%
IV	**Operator Overloading, Pointers and Files** Operator overloading : Introduction, overloaded operators, unary operator overloading, operator keyword, operator return values, binary operators overloading, overloading with friend function Usages of Pointers in C++ : basic overview Dynamic memory allocation Files : introduction and applications File operations : open, read, write, seek and close	25%

Basic Text & Reference Books:-

E Balagurusamy : Object Oriented Programming in C++, Tata McGraw-Hill Publishing Co. Ltd.
Robert Lafore : Object Oriented Programming in Turbo C++, Guide, Galgotia Pub. (P) Ltd.

Books For Additional Reading :

Barkakati N. : Object Oriented Programming in C++, PHI.
OOP's using C++ for Dummies.

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Paper Code: PS03CIIT04		Total Credit: 3
Title Of Paper: Relational Database Management System - I		
Unit	**Description in detail**	Weightage (%)
I	**Introduction to Relational Database Theory and Data Modeling** The three-schema architecture for a Database Management System (DBMS) Introduction to data models (hierarchical, network, relational) Examples of current RDBMS products The relational data model: concepts and terminology, operations on data (DDL, DML), relationships and relationship types Integrity constraints Codd rules Entity-relationship modeling (different types of entities, attributes, relationships and their representation in the E-R diagram) Case studies of data modeling using E-R modeling	25%
II	**Introduction To Sql** Sql - Introduction , Advantages And Disadvantages Data Types – Built-In (Number, Char, Varchar2, Date, Raw, Long Raw) Types Of Sql Statements : Ddl (Data Definition Language), Dml (Data Manipulation Language), Dcl (Data Control Language), Tcl (Transaction Control Language) Working With Sql*Plus – Overview And Basic Commands Like Ed, Start, Get, Save, Exit, Connect, Set Line Size, Set Page Size And Host Creating Table And Inserting Data - Create Table, Insert, Retrieving Data Using Query – Select, Manipulating Data – Delete And Update, Modifying And Removing Table – Alter Table And Drop Table.	25%
III	**Data Constraints And Functions** Pseudo Columns – Rowid, Rownum, User, Uid, Sysdate Null Values, Tab Table, Dual Table Operators – Arithmetic, Relational, Logical, Range Searching, Pattern Matching And Set Data Constraints – Introduction, Advantages And Disadvantages Type Of Data Constraints – Not Null, Unique, Primary Key, Foreign Key And Check Modifying Constraints, Working With Data Dictionary And Use Of User_Constraints Functions – Introduction, Merits And Demerits, Types Of Functions (Scalar And Aggregate) Scalar : Numeric Functions (Abs, Floor, Mod, Power, Round, Sign, Sqrt And Trunc), Character Functions (Chr, Ascii, Concat, Initcap, Lower, Substr,Trim, Upper), Date Functions (Add_Months, Last_Day, Next_Day, Months_Between), Conversion Functions (To_Number, To_Char And To_Date) Aggregate Fun : Avg, Count, Max, Min, Sum Miscellaneous Functions – Nvl, Decode, Coalesce	25%

| IV | Query, Sub Query, Joins, Transaction Management And Reporting Through Sql*Plus
Query And Sub Query, Types Of Sub Query
Creation And Manipulation Of Database Objects – Indexes, Views, Sequences And Synonym
Joining Tables, Types Of Joins (Cross Join, Natural Join, Inner Join, Equijoin, Outer Joins, Self Join.
Data Control Language Statements – Grant And Revoke
Transaction Control Language Statements – Commit, Rollback And Savepoint
Overview Of Sql*Plus Report
Building A Simple Report
Reporting Commands – Remark, Setheadsep, Ttitle, Btitle, Column, Breakon, Compute, Spool, Set Pause. | 25% |

Basic Text & Reference Books:-

An introduction to Database Systems : Bipin C. Desai, Galgotia Poblications Pvt. Ltd.
Ivan Bayross : SQL,PL/SQL The programming language of Oracle, 3rd revised edition, BPB
 Publications
Kevin Loney, George Koch, Oralegi The Complete Reference , Oracle Press

Books For Additional Reading:

Understanding Database Management Systesm : S. Parthsarthy and B.W.Khalkar, First edition –
 2007, Master Academy
P. S. Deshpande : SQL/PLSQL for Oracle9i, dreamtech press, reprint edition 2009

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Paper Code: PS03CIIT05		Total Credit: 6
Title Of Paper: Practicals - III		
	Description in detail	**Weightage (%)**
	Practical Based on PS03CIIT03 (C++)	50%
	Practical Based on PS03CIIT04 (Oracle)	50%

Paper Code: PS03EIIT01		**Total Credit: 2**
Title Of Paper: Business Information System		
Unit	**Description in detail**	**Weightage (%)**
I	**Business Information System** Introduction to BIS. Features of BIS. Users of BIS. Component of BIS. Characteristics Features of new IT Infrastructure Changing the corporate Environment.	25%
II	**Business Functions and Information Needs of Business** Introduction to Basic Business Functions. Marketing Function and Information Needs. Finance Function and Information Needs. Production Function and Information Needs. Human Resource Management and Information Needs. Information Management as Business Function.	25%
III	**Information System and Managerial Process** Introduction to Managerial Process. Managerial Decision Making Approaches to Managerial Decision Making Decision Making Environment. Implications for Information System.	25%
IV	**Planning for IT Infrastructure** Introduction to Planning for IT Infrastructure. Portfolio Approach. Identifying IT applications. Techniques of Evaluating IT Investments. Assessing Risk In Realization of Benefits.	25%

Basic Text & Reference Books:-

Business Information System By. Muneesh Kumar, Publisher : Vikas Publishing House Pvt Ltd.

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Paper Code: PS03EIIT02	Total Credit: 2	
Title Of Paper: RDBMS for Small Scale Organizations		
Unit	**Description in detail**	Weightage (%)
I	**Introduction to the RDBMS Package** RDBMS for small scale organizations – Introduction and applications Working with menus, toolbars and other components Working with databases – creation and saving Creating a table object	25%
II	**Working with Data Operations and Establishing Relationships** Inserting data into tables Operations on data – adding, deleting, editing, sorting, etc. Creating a primary key Creating Relationship between tables	25%
III	**Working with Queries, Forms and Reports** Working with Query – creation, editing, saving, specifying criteria, multipletable queries, different types of queries Using forms and reports – creating, modifying, saving, etc. Using Auto Form, Auto Report	25%
IV	**Using Miscellaneous Features** Creating mailing labels and charts Data Import and Export facility Database security Database utilities Overview of macros and modules	25%

Basic Text & Reference Books:-

Virginia Andersen : Microsoft Office Access 2003 : The complete reference, McGraw Hill, 2003

Progue, Irwin, Roardon :Microsoft Office Access 2003 Bible,Wiley Publishing Inc., 2004

Manuals of relevant software packages

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Paper Code: PS03FIIT01	Total Credit: 4	
Title Of Paper: Financial & Accounting Management		
Unit	**Description in detail**	**Weightage (%)**
I	**Introduction to Accounting & Accounting Process** Definition of accounting, book keeping, need of accounting. Some basic terms : debtor, creditor, solvent, insolvent, bad debts, bad debts recoverable, income, expenditure, trade discount and cash discount Objectives, advantages and scope of accounting. System of book keeping, classification of accounts and rules for debit and credit. Journal : purpose, format, ruling, example, advantages and disadvantages. Ledger : purpose, format, posting, closing ledger accounts, advantages and disadvantages Trial Balance : purpose, format, advantages and disadvantages	25%
II	**Subsidiary Books, Final Accounts & Depreciation** Subsidiary books : Cash books, Purchase books and Sales books Trading account and profit and loss account, balance sheet (each with purpose, format, examples) Adjustment entries : interest on capital, interest of loan, depreciation on fixed assets Depreciating concept and methods (straight line, double decline and sum of the year's digit)	25%
III	**Introductions to Financial Management and Introduction to Ratio Analysis** Introduction, scope of finance, finance functions financial manager's role, financial goal, profit versus wealth, conflict of goals, management versus owners Financial goal and firm's objectives Organization of the finance functions - Financial ratio analysis: introduction, users, uses and limitation	25%
IV	**Ratio Analysis And Cost-Volume-Profit (CVP) Analysis** Types of ratio : liquidity ratios, leverage ratios, activity ratios, profitability ratio. Introduction, Break-Even Analysis, Cash Break-even point, Operating leverage and risks Profit-analysis : impact of changing factors CVP analysis for a multi-product firm - Utility and limitations of CVP analysis	25%

Basic Text & Reference Books:-

A text Book of Accounting for management by S N Maheshwari and S K Maheshwari, vikas publishing house pvt ltd.

Financial management eight edition IM Pandy

Naheshgwari S. N. : Introduction to Accounting, Vikas Pub. House 1986

Books for Additional Reading:

R.L. Gupta : Principles and practices of accounting

Rana & Dalal : Advances Accounting and Auditing :III Sudhir Prakashan Ahmedabad.

J.C.Gandhi :Marketing : A managerial Introduction Tata McGraw Hill Publishing CO. Ltd. New Delhi

Double Entry Book-keeping by T.S. Grewal

Financial Accounting & Management for BCA by Rana & Dalal - B.S Shah Prakashan.(4th Edition).