PSG College of Arts & Science

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B.Sc. INFORMATION TECHNOLOGY

2016 - 2019

BSc INFORMATION TECHNOLOGY
Scheme of Examinations
(For students admitted from 2014-2015 & onwards)

CODE NO.	SUBJECT	Exam duration	Max. Marks			Credit points
			CA	CE	Total	
First Semester						
	PART –I					
14LAU01 12LAU01 14LAU01	Tamil – I OR Hindi – I OR French-I	3	25	75	100	3
	PART – II					
14EU01	Communicative English – I Interpersonal Communication	3	25	75	100	3
	PART – III					
14ITU01	Programming in C	3	25	75	100	3
14ITU02	Fundamentals of Digital Computers	3	25	75	100	3
14ITU03	Fundamentals of Information Technology	3	25	75	100	3
14ITU04	Lab-I (C Programming Lab)	3	40	60	100	2
14ITU05	Lab-II (Office Automation Lab)	3	40	60	100	2
Second Semester						
	PART –I					
14LAU02 12LAU02 14LAU02	Tamil – II OR Hindi – II OR French-II	3	25	75	100	3
	PART – II					
14EU02	Communicative English II– Academic Communication	3	25	75	100	3
	PART – III					
14ITU06	Object Oriented Programming using C++	3	25	75	100	3
14ITU07	Data Structures	3	25	75	100	3
14ITU08	Mathematics **(Allied-MA)**	3	25	75	100	4
14ITU09	Lab-III (C++ Programming Lab)	3	40	60	100	2
14ITU10	Lab-IV (Data Structures using C Lab)	3	40	60	100	2
	PART – IV					
14VEU01	Value Education	--	100	--	100	2

CODE NO.	SUBJECT	EXAM DURA-TION (Hrs)	Max. Marks			Credit points
			CA	CE	Total	
Third Semester						
	PART-III					
14ITU11	Programming in JAVA	3	25	75	100	3
14ITU12	Relational Database Management System	3	25	75	100	3
14ITU13	System Analysis and Design	3	25	75	100	3
14ITU14	Industrial and Organizational Psychology**(Allied-PS)**	3	25	75	100	4
14ITU15	Statistics and Operations Research**(Allied – ST)**	3	25	75	100	4
14ITU16	Lab-V (JAVA Programming Lab)	3	40	60	100	2
14ITU17	Lab-VI (RDBMS Lab)	3	40	60	100	2
	PART-IV					
14ESU01	Environmental Studies	--	100	--	100	2
Fourth Semester						
	PART – III					
14ITU18	VB.Net Programming	3	25	75	100	3
14ITU19	Computer Graphics	3	25	75	100	3
14ITU20	Computer Networks	--	100	--	100	3
14ITU21	Accountancy**(Allied - CO)**	3	25	75	100	4
14ITU22	Microprocessor and its Applications **(Allied- EL)**	3	25	75	100	3
14ITU23	Lab-VII (VB.Net Programming Lab)	3	40	60	100	2
14ITU24	Lab-VIII (Microprocessor Lab)**(Allied- EL)**	3	40	60	100	1
	PART-IV					
14SBU01	**Skill Based Subject: Internet Security**	_	100	--	100	2
Placement training to be completed in IV semester (Mandatory)						

Four weeks for Mini Project during Summer Vacation.

CODE NO.	SUBJECT	EXAM DURA-TION (Hrs)	Max. Marks			Credit points
			CA	CE	Total	
Fifth Semester						
	PART – III					
14ITU25	Web Technology	3	25	75	100	3
14ITU26	Operating System	3	25	75	100	3
14ITU27	Mobile Computing	3	25	75	100	4
14ITU28	TCP/IP Protocol suite	--	100	--	100	3
14ITU29A 14ITU29B	***Core Elective I*** **:** Knowledge Management System OR Grid Computing	3	25	75	100	4
14ITU30	Lab- IX(Web Technology Lab)	3	40	60	100	2
14ITU31	Lab-X (Operating System Lab)	3	40	60	100	2
14ITU32	Mini Project	--	40	60	100	4
	PART-IV					
14NME01	**Non-Major Elective(1):** EDC	--	100	--	100	2
14NME02	**Non-Major Elective(2):** General Awareness(On-line Test)	1½	--	100	100	2
Sixth Semester						
	PART – III					
14ITU33	PHP and MySQL	3	25	75	100	4
14ITU34	Information System Security	3	25	75	100	4
14ITU35A 14ITU35B	***Core Elective II***: Extreme Programming OR Cloud Computing	3	25	75	100	4
14ITU36	Lab-XI (PHP and MySQL Lab)	3	40	60	100	2
14ITU37	Major Project	--	80	120	200	8
					Total Credits	**136**

14ITU01 **SEMESTER- I**

PROGRAMMING IN C

OBJECTIVES: **Total Hours: 45**

To make the students proficient in:

- C language elements, Expressions, Functions, Pointers, Structures, File concepts.
- Solving the problem using C.

UNIT I **(9 Hours)**

INTRODUCTION TO C: The C Character Set – Identifiers and Keywords – Data Types – Constants – Variables and Arrays – Declarations – Expressions – Statements – Symbolic Constants.

OPERATORS AND EXPRESSIONS: Arithmetic Operators – Unary Operators – Relational and Logical Operators – Assignment Operators – The Conditional Operator.

UNIT II **(9 Hours)**

INPUT AND OUTPUT STATEMENTS: Single Character Input – Single Character Output – Entering Input Data – Writing Output Data – The Gets and Puts Function.

CONTROL STATEMENT: Branching – Looping – Nested Control Structures – Switch Statement – Break Statement – Continue Statement – Comma Operator – GO TO Statement.

UNIT III **(9 Hours)**

FUNCTIONS: Defining a Function – Accessing a Function – Function Prototypes – Passing Arguments to a Function – Recursion.

PROGRAM STRUCTURE: Storage Classes – Atomic Variables – Global Variables- Static Variables.

ARRAYS: Defining an Array – Passing Arrays to Functions – Multidimensional Arrays.

UNIT IV **(9 Hours)**

STRINGS: Defining a String – NULL Character – Initialization of Strings – Reading & Writing a String – Processing a String – Searching and Sorting of Strings.

POINTERS: Pointer Declarations – Passing Pointers to a Function – Dynamic Memory Allocation – Array of Pointers.

STRUCTURES AND UNIONS: Definition of Structures – User- Defined Data Types – Structures and Pointers – Passing Structures to Functions – Unions.

UNIT V **(9 Hours)**

FILE HANDLING: Opening and Closing a File – Reading and Writing a Data File – Processing a Data File – Unformatted Data Files - Concepts of Binary Files.

LOW LEVEL PROGRAMMING: Register Variables – Bitwise Operations – Bit Fields.

ADDITIONAL FEATURES OF C: Enumerations – Command Line Parameters.

TEXT BOOK:

1. Byron Gottfried**,** "Programming with C", McGraw Hill Education (India) Pvt Ltd., Third Edition, 2013.

REFERENCE BOOKS:

1.Yashavant Kanetkar "Let Us C" , BPB Publications, 9th Revised & Updated edition, Tata McGraw Hill,2013.

2. Venugopal K.R, Sudeep R.P, "Programming with C", Tata McGraw Hill, 2000.

14ITU02 **SEMESTER – I**

FUNDAMENTALS OF DIGITAL COMPUTERS

OBJECTIVES: **Total Hours: 45**

Introducing digital fundamentals and organization to:

- Enable the students to have knowledge on digital circuits.
- Understand the computer system architecture.

UNIT – I **(9 Hours)**

BINARY SYSTEMS – Digital computers and digital systems – Binary Numbers – Number base conversion – Octal and Hexadecimal numbers – Complements – Binary codes – Binary Storage and Registers – Binary Logic – Integrated circuits.

BOOLEAN ALGEBRA AND LOGIC GATES – Basic definitions – Digital logic gates.

UNIT – II **(9 Hours)**

SIMPLIFICATION OF BOOLEAN FUNCTIONS – The map methods – NAND and NOR implementation.

COMBINATION LOGIC AND SEQUENTIAL LOGIC – Adders – Subtractors – BCD adder – Decoders – Demultiplexers – Encoders – Multiplexers – Flip-Flops : RS, D, JK, T, Master Slave – Shift registers.

UNIT – III **(9 Hours)**

REGISTER TRANSFER AND MICRO OPERATIONS – Bus and memory transfers – Arithmetic Micro operations – Logic Micro operations – Shift Micro operations – Arithmetic logic shift unit.

UNIT – IV **(9 Hours)**

CENTRAL PROCESSING UNIT – General register organization – Stack organization – Instruction formats – Addressing Modes – Data transfer and manipulation – Program control.

UNIT – V **(9 Hours)**

INPUT-OUTPUT ORGANIZATION – Asynchronous data transfer – Direct Memory Access.

MEMORY ORGANIZATION – Memory hierarchy – Main Memory – Auxiliary memory – Associative memory – Cache memory – Virtual memory.

TEXT BOOKS:

1. Morris Mano, “Digital Logic and Computer Design”, Prentice Hall of India, 2007. (Unit - I & II).
2. Morris Mano, “Computer System Architecture”, Prentice Hall of India, 3rd Edition, 2007. (Unit – III, IV & V).

REFERENCE BOOKS:

1. Thomas C.Bartee,”Digital Computer Fundamentals”, Tata McGraw Hill, Reprint 2007.
2. John D. Carpinelli, “Computer Organization & Architecture”, Pearson Education, 2007.

14ITU03 **SEMESTER-I**

FUNDAMENTALS OF INFORMATION TECHNOLOGY

OBJECTIVES: **Total Hours: 45**

- Understand the basic knowledge about the computers.
- To work with the Internet.
- They can able to work with the DOS Commands.

UNIT-I **(9 Hours)**

THE COMPUTER SYSTEM – An Overview **–** Introduction – History of the Computer – Generations of Modern Computers – Computers in Society**.**

COMPUTER ORGANIZATION AND PROCESSING OF DATA – Introduction – CPU – Types of CPU Memory – ROM Chip – CMOS RAM – RAM.

INPUT AND OUTPUT DEVICES – Input devices – Output devices. Storage devices concepts **–** drives are storage media – floppy drive – Hard disk – Optic media.

UNIT-II **(9 Hours)**

COMPUTER SOFTWARE – Software types – Software creation and programming Languages – Operating System – User interface – System Software – File Systems – Partitioning with FDISK – Loader and linker – Compiler – assembler and interpreter – Types of operating systems – Application software.

COMPUTER VIRUS – Introduction – Virus Working Principles – Types of Viruses – Viruses – Worms – Virus Detection and Prevention.

UNIT-III **(9 Hours**)

DATA COMMUNICATION AND NETWORKS – Data Communications Model – Data Communication Channels – Data communications media – Computer Networks – Types of Networks – Networks Topologies – Hardware used in data communication.

DISK OPERATING SYSTEM – Set the date and time – Check the date and time – Directory command – Recall a DOS command – Check for a single File – Check for a group of files – Create a file with DOS – Copy a file – Type a file with DOS – Working with files and directories – Using MS-DOS commands – MS-DOS batch commands.

UNIT-IV **(9 Hours)**

FILE ORGANISATION AND ACCESS CONCEPTS – Representation of data – data types – The Logical Representation of data – Simple data type – Integer – Real – Character – Composite Data type – String – Array – Record – File system – Text, binary, and code files – Master –transaction – Temporary files – Program files.

UNIT-V **(9 Hours)**

APPLICATION OF INFORMATION TECHNOLOGY - Education and training – science and Technology – Metrology – Space technology – Communication- Simulation – Artificial Intelligence – Defense application – Recreation and entertainment – Business and Industry – Computer applications for the future.

TEXT BOOK:

1) Jaiswal .A, “Fundamentals of Computers & Information Technology”, New Delhi Dreamtech, 2006 Edition.

REFERENCE BOOK:

1) Dr. Sushila Madan, “Information Technology”, Taxmann Allied Services Private Limited, August 2005 Edition.

14ITU04 **SEMESTER –I**

LAB-I (C PROGRAMMING LAB)

1. Students Mark Sheet preparation.
2. Convert decimal to binary and binary to decimal using menu.
3. Find the factorial of a given number using Recursion.
4. Reverse an array element.
5. Find the number of vowels, consonants, digits and white spaces in a given string.
6. Find the Length of a string using Pointers.
7. Prepare an Electricity Bill using Structure.
8. Read ‘n’ characters from a given text file from EOF position.
9. Create an Employee Information System using File Concept.
10. Find the sum of given numbers using Command line arguments.

14ITU05 **SEMESTER -I**

LAB-II (OFFICE AUTOMATION LAB)

MS-WORD

1. Mail Merge
2. Prepare a newspaper for two column format (Page which includes border, background, Pictures, Header and Footer)

MS-EXCEL

3. Analyze a sample Sales Information System using Pivot Table and Pivot Chart.
4. Prepare an employee Pay slip and Calculate the Net pay using the formula (BP: 8000, HRA: 12%, PF: 5%, DA: 2%, TA 2.5%)
5. Implement Grouping Concept in MS-Excel.

MS-ACCESS

6. Create a database for Student Information System and Create necessary Query, Forms, and Reports
7. Create a database for Library Information System and Create necessary Query, Forms, and Reports.

MS-POWER POINT

8. Prepare 10 to 15 slides on any of the topic of current IT trend with all necessary formats.
9. Prepare a presentation which imports pictures & videos.
10. Prepare 10 slides for an Advertisement Company to exhibit its features.

14ITU06 **SEMESTER – II**

OBJECT ORIENTED PROGRAMMING USING C++

OBJECTIVES: **Total Hours: 38**

- To know about the object oriented programming concepts.
- To understand the concepts of Files, Error handling and Templates.

UNIT-I **(7 Hours)**

INTRODUCTION TO C++: Object Oriented Technology - Key Concepts of Object Oriented Programming - Advantages of OOP.

INPUT AND OUTPUT IN C++: Streams In C++ - Predefined Streams - Buffering - Stream Classes - Member Functions of Istream Class - Unformatted Console I/O Operations - Formatted Console I/O Operations - Manipulators - User-Defined Manipulators - Manipulators With Parameters. C++ Declarations - Types of Tokens - Data Types in C++ - Typecasting - Operators of C And C++ - Control Structures.

UNIT-II **(7 Hours)**

FUNCTIONS IN C++: Introduction - Parts of Function - Passing Arguments - Default Arguments -Const Arguments - Inline Functions - Library Functions.

CLASSES AND OBJECTS: Introduction - Classes In C++ - Declaring Objects - Defining Member Function - Characteristics of Member Function - Data Hiding or Encapsulation - Classes, Objects and Memory - Static Member Variables and Functions - Array of Objects - Friend Function - Local Classes - Overloading Member Function.

CONSTRUCTORS AND DESTRUCTORS: Introduction - Characteristics of Constructors and Destructors - Constructors with Argument - Copy Constructors - Destructors.

UNIT-III **(8 Hours)**

OPERATOR OVERLOADING AND TYPE CONVERSION: Introduction - Overloading Unary Operators - Overloading Binary Operators - Rules for Overloading Operators.

INHERITANCE: Types of Inheritance - Virtual Base Class - Object as Class Member - Overloading Member Function.

POINTERS AND ARRAYS: Introduction - Pointer Declaration - Void Pointers - Pointer to Class - this Pointer - Pointer to Members - Accessing Private Members with Pointers - Arrays - Characteristics of Arrays.

UNIT-IV **(8 Hours)**

C++ AND MEMORY: The New and Delete Operators - Dynamic Objects.

BINDING POLYMORPHISM AND VIRTUAL FUNCTIONS: Binding in C++ - Virtual Functions - Rules for Virtual Functions - Array of Pointers - Abstract Classes - Working of Virtual Functions.

APPLICATION WITH FILES: Introduction - File Stream Classes - Steps of File Operations - File Opening Modes - Sequential Read and Write Operations - Random Access Operation - Error Handling Functions - Command Line Arguments.

UNIT-V **(8 Hours)**

TEMPLATES: Definition of Class Template - Working of Function Templates - Function Templates with more Arguments.

EXCEPTION HANDLING: Principles of Exception Handling - The Keyword Try, Throw and Catch - Exception Handling Mechanism.

WORKING WITH STRINGS: Introduction - Declaring And Initializing String Objects - Handling String Objects - Comparing and Exchanging Strings.

TEXT BOOK:

1. Ashok N. Kamthane, "Object - Oriented Programming with C++", Dorling Kindersley Pvt Ltd, Seventh impression, 2009.

REFERENCE BOOKS:

1. Bruce Eckel, "Thinking in C++", Pearson education Inc, 2007.
2. Herbert Schildt, "C++: The Complete Reference", Tata McGraw Hill Publishing Company, 3rd edition,2008.

14ITU07 **SEMESTER – II**

DATA STRUCTURES

OBJECTIVES: **Total Hours: 38**

- To study specific data structures such as static and dynamic lists, linear and non-linear data structures.
- To learn efficient searching and sorting techniques.

UNIT - I **(7 Hours)**

INTRODUCTION: Basic Terminology, Data Structure, Time and Space Complexity-Array-Structures-Pointers-Matrices-Sparse Matrices-Application – String Processing.

UNIT - II **(8 Hours)**

SORTING: Bubble Sort-Insertion Sort-Selection Sort-Merge Sort-Radix Sort-Quick Sort-Time and Space Complexity.

SEARCHING: Binary Search - Sequential Search - Index Search-Hashing.

UNIT - III **(7 Hours)**

LINKED LIST: Linked List - Dynamic Memory Allocation - Representation-Insertion, Deletion and Searching-Traversing in a List-Doubly Linked List.

UNIT - IV **(8 Hours)**

STACK: Stack-Linked Stack-Application-Expression-Infix-Prefix-Postfix-Conversion & Evaluation-Recursion.

QUEUE: Queue-Linked Queue-Circular Queue-Dequeue-Priority Queue-Application.

UNIT - V **(8 Hours)**

TREES: Binary Trees-Traversal- BST-Traversing- Insertion and Deletion of Nodes

AVL SEARCH TREES : Introduction –Application of all Trees-Heap Sort.

GRAPH: Terminology-Representation-Traversing-Shortest Path Problem.

TEXT BOOK:

1. Seymour Lipschutz – Schaum Series: “Theory and Problems of Data Structures”, Tata McGraw Hill Publishing Company, New Delhi, 2002.

REFERENCE BOOKS:

1. Ellis Horowitz, Sartaj Sahni,” Fundamentals of Data Structures”, Galgotia Publications, 2000.
2. Tremblay Sorenson, “An Introduction to Data Structures with Applications”, Tata McGraw Hill Publishing Company, Second Edition, 2010.

14ITU08/14CAU08 **MATHEMATICS**
(BSc IT and BCA)

Total Hours:45

Unit I : Chapter III (Sections 3.2 to 3.4) **9hrs**

Matrices: Rank of matrices-Consistency and inconsistency -Eigen values and Eigen vectors.

Unit II Sections: (2.1 to 2.4, 4.5.1,4.5.3, 4.5.4, 4.6) **9hrs**
Differential equations: Second order Ordinary Differential Equations with constant coefficients - First order Partial Differential Equations(Standard I, III & IV) - Lagrange's Differential Equations.

Unit III: Chapter IV(Sections :4.1, 4.2, 4.6 & 4.7)(Problems only) **9hrs**
Numerical methods:
Solution of System of Simultaneous Algebraic Equations : Gauss Elimination Method - Gauss Jordan Method - Gauss Jacobi Iterative Method - Gauss Seidal Iterative Method.

Unit IV :Chapter V(Sections : 5.1 to 5.10, 6.1 to 6.5) (Problems only) **9hrs**
Numerical methods:
Difference table – Interpolation - Newton's Forward Interpolation formula - Newton's Backward Interpolation Formula - Construction of polynomials - Equidistant terms with one or more missing values .

Unit V (Sections: 9.1 to 9.3, 9.8 , 9.10) (Problems only) **9hrs**
Numerical methods:
Numerical Differentiation:
Newton's Forward and Newton's Backward formula to compute the Derivatives.
Numerical Integration:
The Trapezoidal rule - Simpson's $1/3^{rd}$ and $3/8^{th}$ rule.

Text Book:

1. S. Narayanan and T.K. Manickavachagam Pillai ,"Ancillary Mathematics" (For Unit I), S. Viswanathan (Printers & Publishers) Pvt Ltd, 2012
2. S. Narayanan and T.K. Manickavachagam Pillai, " Calculus" Volume III (For Unit II),S. Viswanathan (Printers & Publishers) Pvt Ltd, 2011
3. Dr. M.K. Venkataraman "Numerical methods in Science and Engineering" (For Unit III, IV,V), The National Publishing Company , 2013

14ITU09 **SEMESTER – II**

LAB - III (C++ PROGRAMMING LAB)

1. Prepare employee pay slip using class.
2. Implement the concept of inline and static functions.
3. Implement the concept of friend function by adding two complex numbers.
4. Create library management system using array of objects. Each object will have book name, author name, publisher name, no of copies and available copies.
5. Implement string manipulation using operator overloading.
6. Implement the concept of multiple constructors.
7. Prepare the student mark list using inheritance.
8. Implement virtual function to display the area of circle and area of triangle.
9. Implement templates to read a set of integers and floats and find average, min and max value.
10. Compare contents of two files using command line arguments.

14ITU10 **SEMESTER – II**

LAB - IV (DATA STRUCTURES USING C LAB)

1. Implement the concept of Bubble sort.
2. Implement the concept of Insertion Sort.
3. Implement the concept of Selection sort.
4. Implement the concept of Quick sort.
5. Search a given number using Binary search.
6. Search a given number using Linear search.
7. Implement Stack operations using Linked list.
8. Implement Queue operations using Linked list.
9. Convert an Infix expression to the Postfix expression.
10. Create a Binary Search tree and traverse it using function.

14ITU11 **SEMESTER – III**

PROGRAMMING IN JAVA

OBJECTIVES: **Total Hours: 45**

- To learn Object Oriented Concepts.
- To learn Graphical Interface and Database connectivity

.UNIT-I (9 Hours)

AN OVERVIEW OF JAVA : Object-Oriented programming – Lexical issues – Java class libraries.

DATA TYPES, VARIABLES AND ARRAYS : Simple types – Integer, Floating point types, Characters, Boolean –Literals – Variables – Type conversion and Casting – Automatic type promotion in Expressions – Arrays.

OPERATORS : Arithmetic operators, Bit wise operators, Relational operators, Boolean Logical operators, The Assignment operators, The?: Operators – Operators precedence – Using Parenthesis.

CONTROL STATEMENTS : Selection Statements – Iteration Statements – Jump Statements.

UNIT–II (10 Hours)

INTRODUCING CLASSES: Class Fundamentals – Declaring objects – Assigning object reference variables – Introducing Methods – Constructors – this keyword – Garbage collection – Finalize () method – A stack class.

STRING HANDLING : The string constructors - String length - Special string operations - Character extraction – String comparison – Searching strings – Modifying a string - String buffer.

INHERITANCE: Inheritance basis – Using super – Creating a multilevel hierarchy – When constructors are called – Method Overriding – Dynamic method dispatch – Using abstract classes – Using final with Inheritance – The object class.

PACKAGES & INTERFACES : Packages, Access protection – Importing packages – Interfaces.

UNIT–III (10 Hours)

EXCEPTION HANDLING: Exception handling fundamentals – Exception types – Uncaught exceptions – Using try and catch – Multiple catch clauses – Nested try statements – Throw – Throws – Finally – Java's built in exceptions – Creating your own exceptions subclasses – Using exceptions.

MULTITHREADED PROGRAMMING : The java threads method – Thread priorities – Synchronization – Inter thread communication – Suspending, Resuming and Stopping threads.

INPUT/OUTPUT : Files - Stream Classes – The Byte streams – The character streams – Using stream I/O.

UNIT–IV **(9 Hours)**

APPLET CLASS: Applet Basics – Applet Architecture – An Applet Skeleton – Simple Applet Display Methods – Requesting Repainting – Using the status window – The HTML Applet tag – Passing parameters to applets.

EVENT HANDLING : The Event handling mechanisms – The delegation event model – Event classes – Sources of events – Events listener interfaces – Using the delegation event model – Adapter classes – Inner classes.

SWING : JApplet – Icons and Labels – Text Fields – Buttons – Combo Boxes – Tabbed Panes – Tables.

UNIT–V **(7 Hours)**

JDBC CONNECTIVITY: JDBCPackage – Types of JDBC Drivers – JavaSoft Framework – Driver Interface and DriverManager Class – The Essential JDBC program – Using PreparedStatement Object.

TEXT BOOKS:

1. Herbert Schildt "The Complete Reference JAVA ™ 2", Mc-Graw Hill Limited, Fifth Edition.(Unit I,II,III & IV)
2. Kogent Learning Solutions, "Java 6 Programming Black Book", Dreamtech Press 6th Edition (Unit V)

REFERENCE BOOK:

1. Patrick Naughton, Herbert Schildt, "Java 2: The Complete Reference", Mc Graw Hill Limited.

14ITU12 **SEMESTER – III**

RELATIONAL DATABASE MANAGEMENT SYSTEM

OBJECTIVES: **Total Hours: 45**

To impart the knowledge of:

- Basics about the Databases and their structures.
- Various Constraints that can be applied to various Databases.
- Structured Query Language
- Relational databases, Oracle Databases, Stored Functions, Stored Procedures & Triggers.

UNIT- I **(8 Hours)**

INTRODUCTION: Purpose of Database Systems - View of Data - Database Languages - Relational Databases – Database Design – Data Storage and Querying - Transaction Management - Database Architecture – Data Mining and Information Retrieval – Specialty Databases – Database Users and Administrators.

UNIT-II **(10 Hours)**

RELATIONAL DATABASES: Structure of Relational Databases – Database Schema – Keys – Relational Query Languages – Relational Operations.

FORMAL RELATIONAL QUERY LANGUAGES: The Relational Algebra.

DATABASE DESIGN AND THE E-R MODEL: The Entity-Relationship Model – Constraints – Entity-Relationship Diagrams.

RELATIONAL DATABASE DESIGN: Atomic Domains and First Normal Form – Decomposition Using Functional Dependencies.

UNIT-III **(9 Hours)**

INTERACTIVE SQL: Invoking SQL * plus- Data manipulation in Database Management Systems – Oracle Data Types – Two Dimension Matrix Creation- Insertion of data into tables- Updating the contents of a table – Deletion operations – The many faces of the Select command- Modifying the structure of the table – Removing/Deleting/Dropping tables – Data constraints – Computations in expression lists used to select data – Logical operations – Range searching – Pattern matching – Oracle functions – Grouping data from tables in SQL – Manipulating dates in SQL – Joins – Sub queries.

UNIT-IV **(9 Hours)**

Using The Union, Intersect and Minus Clause**:** Indexes – Views – Sequences- Granting permissions- Revoking the permissions given – Creation of reports in SQL* plus.

PL/SQL:Introduction – Execution – PL/SQL syntax, Oracle transaction locks – Cursors.

STORED PROCEDURES: Introduction-Creating Stored Procedures – An application using a Procedure - Deleting a Stored Procedure.

UNIT-V **(9 Hours)**

STORED FUNCTIONS: Introduction- Advantages of Functions –Creating a Stored Function – An application using a Function – Deleting a Stored Function

DATABASE TRIGGERS: Types of Triggers –Creating Triggers – Deleting Triggers.

TEXT BOOKS:

1. Silberschatz A, Korth H F, S.Sudarshan "Database System Concepts", McGraw-Hill Publishing Company, Sixth Edition, 2011 (Unit I & II)
2. Ivan BayRoss, "Commercial Application Development Using ORACLE Developer 2000", BPB Publication, New Delhi, 2007 (Unit III, IV & V)

REFERENCE BOOKS:

1. Ramez Elmasri, Shamkant B.Navathe, "Fundamentals of Database Systems", Pearson Education, Fifth Edition, 2008.
2. Raghu Ramakrishnan, Johannes Gehrke, "Database Management Systems", McGraw Hill Education, 2003.

14ITU13 **SEMESTER – III**

SYSTEM ANALYSIS AND DESIGN

OBJECTIVES: **Total Hours: 45**

To impart the knowledge of:

- System Development Life Cycle
- System Analysis, Design and Implementation

UNIT-I **(9 Hours)**

SYSTEMS CONCEPTS: The system concept – The elements of system – Types of Systems.

System Development Life Cycle – The role of system analyst.

UNIT-II **(9 Hours)**

SYSTEMS ANALYSIS: Information gathering tools – The tools of Structured Analysis – Feasibility Study – Cost/Benefit Analysis.

UNIT-III **(9 Hours)**

SYSTEM DESIGN: Input/Output and Forms Design – File Organization and database design.

UNIT-IV **(9 Hours)**

SYSTEM IMPLEMENTATION: System Testing and Quality Assurance – Implementation and Software Maintenance –Primary Activities of a Maintenance Procedure-reducing Maintenance costs.

UNIT-V **(9 Hours)**

Hardware/Software Selection and the computer contract – Project Scheduling and Software.

TEXT BOOK:

1. Elias M.Awad, “Systems Analysis and Design”, Galgotia Publications(P) Ltd., 2010

REFERENCE BOOK:

1. Alan Dennis,Barbara Haley Wixom, Roberta M.Roth,”Systems Analysis and Design”, John Wiley & Sons, 4th Edition, 2010.

14CMU21/14ITU14/14CAU14 INDUSTRIAL AND ORGANIZATIONAL PSYCHOLOGY

(**Offered to BSc – IT, Computer Science A & B and BCA** by the Department of Psychology with **Retrospective effect from 2014 – 15 onwards**)

Objectives: To enable the students to understand…

- The importance of Psychology in industry and organization and the use of various psychological tests,
- The methods of training and ways to develop inter/intrapersonal skills,
- The various methods involved in Performance Appraisal and its uses,
- The nature and structure of organization and team,
- The concept of motivation, importance of leadership styles and the ways to identify and manage stress.

UNIT – I INTRODUCTION AND PERSONNEL SELECTION (12 Hours)

Industrial / Organizational Psychology: Definition – Fields – Job Analysis – Job Evaluation – Job Performance Criteria. **Personnel Selection:** Recruitment – **Methods of Personnel Selection:** Interviews – Assessment Centers – Work Sample – Biographical Information – Psychological Tests – Graphology – Polygraph

(*Classroom Learning Exercises Only: Personality Test (BIG 5, MBTI), Aptitude Test (CAPS, General Mental Ability Test)

UNIT – II TRAINIG AND MANAGEMENT DEVELOPMENT (10 Hours)

Training: Meaning – **Methods**: Computer based training – Non-Computer based training:- Role Play – Behaviour Modeling – Business Games – **Management Development:** Meaning – Management Development Issues - Developing Interpersonal and Intrapersonal Skills – Mentoring – Executive Coaching

(*Classroom Learning Exercises Only: Emotional Intelligence Test, Role Play, Communication and Presentation Skills)

UNIT – III PERFORMANCE MANAGEMENT (10 Hours)

Performance Management: Meaning – **Performance Appraisal:** Meaning – **Methods:** Rating Scales - Employee Comparison method – Behavioural Checklist and Rating Scales; **Rating Errors:** Halo error – Leniency error – Central Tendency error; Self and Peer Assessment – 360 Degree Feedback. Feedback to Employees – Uses of Performance Appraisals

(*Classroom Learning Exercises Only: Performance Appraisal, Feedback – Giving Constructive Criticism)

UNIT – IV ORGANIZATIONAL CHANGE AND TEAMS (12 Hours)

Organization: Meaning – Structure – **Components of Social Systems:** Roles – Norms – Culture. **Organizational Change:** Meaning – Resistance to Change – Managing Resistance to Change. **Teams:** Meaning – Types – Principles – Team Process – Virtual Teams.

(*Classroom Learning Exercises Only: Organizational Citizenship Behaviour Scale, Team Effectiveness Scale)

UNIT – V WORK MOTIVATION, LEADERSHIP AND STRESS (12 Hours)

Motivation: Meaning – **Theories:** Need Hierarchy theory – Equity theory – Expectancy theory – Reinforcement theory. **Leadership:** Meaning – Styles. **Stress:** Meaning – Causes – Consequences – Coping with stress – Management of Stress.

(*Classroom Learning Exercises Only: Achievement Motivation Inventory, Leadership Questionnaire, Perceived Stress Scale)

*** - Not for Question Paper Setting**

TEXT BOOK:

- Muchinsky, P. M. (2007): Psychology Applied to Work. New Delhi: Thompson Wadsworth

REFERENCES:

1. Christine E. Doyle (2012): Work and Organizational Psychology (1st Edition). New Delhi, India: Nutech Photolithographers.
2. John Hayes, (2012): Interpersonal Skills at Work (2nd Edition). New Delhi, India: Nutech Photolithographers.

14CMU22/14ITU15/14CAU03

STATISTICS AND OPERATIONS RESEARCH

Common for BCA, BSc (IT) & BSc (Computer Science)

Semester – I, III,IV

Objective:

To study about the fundamentals of statistics and operations research concepts.

UNIT I: (12 Hours)

Statistics – its applications in computers – Methods of collecting primary and secondary data and preparation of questionnaire – Classification and Tabulation of data – Diagrammatic and graphical representation of data- Bar, Pie, Histogram, Frequency polygon, Frequency curve and Ogives.

UNIT II: (12 Hours)

Measures of Central Tendency: Mean, Median, Mode – definition, Calculation for ungrouped and grouped data – merits and demerits – Absolute & Relative Measures of Dispersion: Range, QD, MD and SD- calculation for ungrouped and grouped data – merits and demerits – simple problems.

UNIT III: (12 Hours)

Time Series: Concept – estimation of trend by moving average method & method of least squares – Measuring seasonal variations by method of simple average & ratio – to – moving average method - simple problems.

UNIT IV: (12 Hours)

Linear Programming Problem: Definition, Canonical Form, Standard Form & Formation of LPP – Methods of solving LPP – Graphical method and Simplex Methods – simple problems.

UNIT V: (12 Hours)

Transportation Problem: Attaining IBFS using NWC Rule and Vogel's Approximation Methods (VAM).

Network Analysis – Construction of Networks – Concepts and problems in CPM & PERT models – simple problems.

Note: Proof and derivation are excluded. Theory carries 30 marks and problems carries 45 marks.

TEXT BOOKS:

1. "Business Statistics '' by S,P.Gupta & M.P.Gupta, SultanChand & Sons, New Delhi for Units I, II & III
2. Statistical methods: SP Gupta, Sultan Chand & Sons.
3. "Operations Research'', by Kanitswarup, P.K.Gupta & Manmohan, SultanChand & Sons, New Delhi for Units IV & V.

14ITU16 **SEMESTER – III**

Lab-V (JAVA PROGRAMMING LAB)

1. Calculate students mark sheet and display the grade sheet along with the best student detail.
2. Perform String operation using string and String Buffer Class.
3. Implement inheritance concept .
4. Prepare an employee pay slip for the employees and throw exceptions when
    a) Basic pay<5000 and >30,000
    b) Differences between Date of joining and Date of Birth is greater than 25
    c) Invalid date
5. Implement File operations.
6. Design an applet for Multithreading .
7. Design an Applet to display the welcome message.
8. Design a Registration Form using Swing Classes.
9. Create a user defined package in java which consists of the following classes:
    a) Random Number generation
    b) Calculation of Area for various geometrical figures
    c) Import this package into another class that requires these operations and use these classes.
10. Design a login form with username and password and validate it .

14ITU17 **SEMESTER – III**

LAB-VI (RDBMS LAB)

1. Creation of tables using the SQL statement with constraints and do the following Operations:
    a) Insert
    b) Delete
    c) Alter
    d) Drop
2. Generate queries using the following statements
    a) Select
    b) Update
    c) Insert from already existing table
3. Generate queries using the following:
    a) Sub queries
    b) Joins
    c) Nested Queries
4. Generate queries using the following:
    a) Date functions
    b) Library functions
5. Generate queries using the following:
    a) Group by statement
    b) Order by statement
6. Creation of Report for Mark Sheet Preparation.

PL/SQL

7. Calculate total and percentage of marks of the students in four subjects.
8. Create a Row trigger to insert the existing values of the salary table into a new table when the salary table is updated.
9. Create a Stored function that accepts the department number and returns the total Salary of the department to the calling program and display it.
10. Create a cursor for manipulating Employee details.

14ITU18 **SEMESTER-IV**

VB.Net PROGRAMMING

OBJECTIVES: **Total Hours: 45**

- Introducing the Graphical User Interface environment for programming.
- Introducing the basics of Visual Basic.Net.
- Imparting the basics of Visual Basic.Net toolbars, controls & Menu system.

UNIT -I **(7 Hours)**

INTRODUCTION : Understanding Visual Basic.Net –What is .Net - Programming in .Net frame work - The .NET Languages-Command line compilation.

UNIT- II **(9 Hours)**

INTRODUCING PROJECTS, FORMS, AND BUTTONS: Types of projects- Starting and configuring Visual Studio.NET-Adding a Windows form- Running a project-Adding a form Controls- Using If Statements-Using Form Properties-Setting Background and foreground Colors – Understanding Event-Driven Programming-Monitoring Events.

UNIT- III **(9 Hours)**

WORKING WITH FORMS, METHODS AND MODULES : Using form methods-Working with forms – Working with Graphics Object-Working with the Toolbox – Adding Picture Box Controls – Adding Checkbox Controls – Using For..Next Statements-Using Arrays in VB.Net-Working with Combo Boxes, List Boxes and checked List Boxes.

UNIT –IV **(10 Hours)**

ADDING STATUS BARS, TOOL BARS, TOOL TIPS, TABBED DIALOGS: Working with StatusBars-Working with ToolBars-Adding ToolTips-Using Common Dialog Controls-Using the SaveFileDialog and OpenFileDialog Controls – Working with the Timer Component-Using the MainMenuControl – Creating Menus Interactively.

UNIT- V **(10 Hours)**

ERRORS, EXCEPTION AND DEBUGGING : Understanding the Errors and Exceptions – Syntax errors – Runtime Errors – Logical Errors – Exceptions.

WORKING WITH DATA AND ADO.NET: Reviewing Database Basics-Using the data Components – Creating a Dataset with Data Components – Building Controls to data

TEXT BOOK:

1. Harold Davis," Visual Basic .NET Programming", BPB Publication, 2006 Edition

REFERENCE BOOKS:

1. Shrish Chavan, "Visual Basic .NET Programming", BPB Publication, 2009 Edition.
2. Jeffrey R. Shapiro, "The Complete Reference-Visual Basic.NET", Tata Mc Graw-Hill Edition 2002.

14ITU19 **SEMESTER – IV**

COMPUTER GRAPHICS

OBJECTIVES: **Total Hours: 45**

- To know the basics of computer graphics
- Input/output graphical devices, Two dimensional Transformations
- To explore the 3D display methods and color models

UNIT-I **(9 Hours)**

OVERVIEW OF GRAPHICS SYSTEM: Video display devices – Refresh Cathode Ray Tubes – Raster Scan Displays – Random Scan Displays – Color CRT Monitors – DVST – Flat Panel Displays - Input devices - Hard copy devices - Graphics software.

OUTPUT PRIMITIVES: Line drawing algorithms - Circle Generating algorithms.

UNIT-II **(9 Hours)**

ATTRIBUTES OF OUTPUT PRIMITIVES: Line attributes – Curve attributes - Color and Grayscale levels - Area fill attributes - Character attributes - Inquiry functions.

TWO DIMENSIONAL GEOMETRIC TRANSFORMATIONS: Basic transformations - Matrix representations - Composite transformations - Other transformations.

UNIT-III **(9 Hours)**

TWO DIMENSIONAL VIEWING: Window-to-Viewport Co-ordinate Transformation - Clipping Operations-Point Clipping – Line Clipping – Cohen Sutherland Line Clipping – Polygon Clipping – Sutherland-Hodgeman Polygon Clipping – Curve Clipping – Text Clipping.

UNIT-IV **(9 Hours)**

THREE -DIMENSIONAL CONCEPTS : Three dimensional display methods – Projections - Depth Cueing - Visible line and surface identification – Surface Rendering – Three-Dimensional and Stereoscopic Views.

THREE-DIMENSIONAL OBJECT REPRESENTATIONS: Bezier Curves – B-Spline Curves.

UNIT-V **(9 Hours)**

THREE DIMENSIONAL VIEWING: Viewing pipeline – Parallel Projections – Perspective Projections.

COLOR MODELS: Properties of Light – RGB Color Model – YIQ Color Model – CMY Color Model – HSV Color Model – Conversion between HSV and RGB Models – HLS Color Model – Color Selection and Applications.

TEXT BOOK:

1. Donald D Hearn , M. Pauline Baker, “Computer Graphics C Version”, Pearson Education, Second Edition, 2011.

REFERENCE BOOK:

1. Amarendra N.Sinha, Arun D Udai, “ Computer Graphics”, Tata McGraw Hill Publishing Company, 2007.

14ITU20 **SEMESTER – IV**

COMPUTER NETWORKS

OBJECTIVES: **Total Hours: 45**

- To have the basic knowledge about different types of Networks.
- To inculcate the knowledge about transmission of data.
- To impart the basic concepts like routers, switching & TCP/IP Protocol Suite.

UNIT-I **(8 Hours)**

INTRODUCTION - Why study Data Communication – Data Communication – Networks – Protocols and Standards – Standards organizations.

BASIC CONCEPTS - Line configuration – Topology – transmission mode – categories of Networks – Internet works.

THE OSI MODEL- The model – Functions of the layers .

UNIT-II **(9 Hours)**

ENCODING AND MODULATING – Digital – To –Digital Conversion – Analog - To – Digital Conversion – Digital –To – Analog Conversion – Analog -To – Analog Conversion.

TRANSMISSION MEDIA - Guided media – Unguided media.

MULTIPLEXING - Many to one/one to many – Frequency-Division Multiplexing (FDM)- Wave-Division Multiplexing (WDM) – Time-Division Multiplexing (TDM)

UNIT-III **(9 Hours)**

ERROR DETECTION AND CORRECTION - Types of errors – Detection –Vertical Redundancy Check (VRC) – Longitudinal Redundancy Check (LRC) – Cyclic Redundancy Check (CRC) – Checksum

DATA LINK CONTROL - Line Discipline –Flow control – Error control.

LOCAL AREA NETWORK - Ethernet – Token bus – Token Ring – FDDI

UNIT-IV **(9 Hours)**

SWITCHING - Circuit switching – Packet switching –Message switching.

NETWORKING AND INTERNETWORKING DEVICES - Repeaters – Bridges – Routers – Gateways – Routing algorithms – Distance vector routing – Link state routing.

TRANSPORT LAYER - Duties of the transport layer.

UPPER OSI LAYERS - Session layer – Presentation layer –Application layer.

UNIT-V **(10 Hours)**

FRAME RELAY – Introduction – Frame Relay Operation – Leaky Bucket Algorithm.

ATM – Design Goals – ATM Architecture – ATM Layers – ATM Applications.

TEXT BOOK:

1. Behrouz A. Forouzan, “Data Communications and Networking”, Tata McGraw-Hill Edition, 2nd Edition (update), 19th reprint 2007.

REFERENCE BOOK:

1. Andrew S.Tanenbaum, “Computer Networks”, PHI, 2006.

14ITU21 **ACCOUNTANCY - (ALLIED)** **Semester IV**

(For B.Sc Information Technology)

Learning objective: To provide knowledge in the basic concepts of Accounting.

Hours

UNIT I - Double Entry Book Keeping **8**

Double Entry Book Keeping – Meaning – Accounting - Objectives Of Accounting, Uses And Limitations Of Accounting - Principles , Conventions And Concepts Of Accounting – Journal.

UNIT II - Double Entry System – Ledger & Trial Balance **10**

Ledger – Meaning – Format – Posting and Balancing Ledger Accounts from Proper Journal. Trail Balance – Meaning and Definitions – Advantages and Limitations – Debit and Credit Balance – Preparation of Trail Balance. (simple problems only). **10**

UNIT III - Subsidiary Books

Subsidiary Books: Sales Book – Purchases Book, Sales Return Book - Purchase Return Book.

UNIT IV - Final Accounts **10**

Final Accounts with adjustments – Preparation Of Trading And Profit And Loss Account – Balance Sheet.(simple problems only).

UNIT V - Cost Accounting **10**

Cost Accounting – Meaning – Scope, Objectives – Advantages And Limitations Of Cost Accounting. Difference Between Cost Accounting And Financial Accounting – Elements Of Cost Sheet – Preparation Of Cost Sheet.

Distribution of Marks: 80% Problems and 20% Theory .

Text Books

1. Grewal .T.S., "Double Entry Book keeping", S.Chand & Co.Ltd, New Delhi .
2. Jain & Narang., "Cost Accounting", Kalyani Publishers, New Delhi .

Reference Books

1. Gupta R.L., "Advanced Accountancy", Sultan Chand & Son's, New Delhi
2. Jain.S.P., Narang.K.L., "Advanced Accountancy", Kalyani Publishers, New Delhi

14ITU22 **IV SEMESTER**

MICROPROCESSOR AND ITS APPLICATIONS

(FOR B. Sc., IT)

Objective

To develop programming skills in 8085 ALP.
To understand the concept of microprocessor based system design and interfacing

Unit – I - Microcomputer System **(8 Hrs)**

Microprocessor Architecture and its Operations – Microprocessor Initiated Operations and 8085 bus organization- Internal data operations and the 8085 registers - Peripheral initiated operations – Memory classifications.

Unit – II - Microprocessor Architecture and Memory Interfacing **(9 Hrs)**

8085 microprocessor - Microprocessor communications and bus timing - Demultiplexing the bus - Generating control signals - The 8085 MPU and its architecture - Memory interfacing - Memory structure and its requirements - Basic concepts in memory interfacing - Address decoding and memory addresses.

Unit –III - Instruction and Programming Techniques **(10 Hrs)**

Data transfer instruction – Arithmetic operations – Logic operations – Branch operations – Programming techniques – Looping, counting and indexing - Additional data transfer and 16-bit arithmetic instruction – Arithmetic operations related to memory – Rotate logic operations – Compare instruction.

Unit – IV - Software Development **(9 Hrs)**

Addition of two 8 bit numbers - addition of two 16 bit numbers - Subtraction of two 8 bit numbers- subtraction of two 16 bit numbers - ones and twos complement of 8 bit numbers - ones and twos complement of 16 bit numbers - - To find largest number in an array - To find smallest number in an array – sorting numbers in Ascending order - sorting numbers in descending order - Sum of series of 8-bit numbers - Multiplication of two 8-bit data - Division of two 8-bit data - Block data transfer.

Unit – V - Interfacing **(8 Hrs)**

8255 PPI – Block diagram – Control word – I/O mode operation - Masking of least significant bits an 8-bit data – Masking of most significant bits an 8-bit data -Design of binary counter- Design of ring counter - Water level indicator using 8255 PPI.

Text Books

1. Ramesh S Gaonkar, "***Microprocessor Architecture, Programming and Applications with 8085/8080A***", Wiley Eastern Ltd, 2nd Edition, 1995. (Unit-I,II,III,IV)

2. B. Ram, "***Fundamental of Microprocessor and Microcomputers***", Dhanpat Rai Publications, 5th Edition, 2003. (Unit-IV,V)

14ITU23 **SEMESTER-IV**

LAB-VII (VB .Net PROGRAMMING LAB)

1. Generate the Temperature Conversion Application (Celsius to Fahrenheit, Fahrenheit to Celsius).
2. Implement scientific calculator using button controls.
3. Select image from list and display it in the picture box using Image control.
4. Create a File Menu with Menu items New, Open, Save, Print and Exit & Edit Menu with Menu items Cut, Copy, Paste and Find and Undo using Menu Editor.
5. Add a Textbox entry to a Combo Box using button controls.
6. Create Digital Clock using Timer control.
7. Create an Application for Employee details to read and display the data using ADO. Net
8. Implement a Library Information System using ADO. Net.
9. Create an application for College Admission and test user input at the field level to determine if it is valid, and display messages to help the user to correct invalid data using ADO. Net.
10. Create a status bar to provide users with feedback about an application using text editor and validation control.

14ITU24 **IV SEMESTER**

MICROPROCESSOR LAB
(FOR B. Sc., IT)

ANY 10 EXPERIMENTS

1. Addition of two 8-bit numbers
2. Subtraction of two 8-bit numbers
3. Multiplication of two 8-bit numbers
4. Division of two 8-bit numbers
5. 1's and 2's complement of a given 8-bit data
6. Largest/smallest in an array
7. Positive/negative numbers in an array
8. Number of ones and zeros in a data
9. ODD/EVEN numbers in an array
10. Ascending/ Descending order
11. Block data transfer
12. Reading/writing of data using 8255 PPI
13. Binary counter/ring counter using 8255 PPI

14ITU25 **SEMESTER- V**

WEB TECHNOLOGY

OBJECTIVES: **Total Hours: 45**

- Web Design Tools for Internet programming.
- Provides Web Design Solutions.
- Provides Technologies and Techniques of web design using various scripting Languages.

UNIT-I (9 Hours)

INTRODUCTION : Web Design – Defining Web Design - Web Design Themes - The Medium of Web – Web Users- Building a Usable site.

UNIT-II (9 Hours)

THE WEB MEDIUM : Core Web technologies- Web browsers - Markup Languages – Style Sheet Technologies – Programming Technologies – Client Side Programming-Server Side Technologies.

UNIT-III (9 Hours)

HTML & DHTML: HTML – Basic concepts – Introduction common HTML – Linking in HTML – HTML image basics – Fonts – Colors – Backgrounds – Layout with tables - Frames – Layers – Style sheet basics – Style sheet properties – Positioning with style sheet – The <Form> element – Form controls – DHTML.

UNIT-IV (8 Hours)

XML : XML – Introduction to XML architecture – XML structure and syntax -Well formed documents - Introduction to document type definition - XML schema -Introduction and significance – Data types in XML namespaces.

UNIT-V (10 Hours)

JAVASCRIPT: Introduction – Data types – Variables – Operators – Expression – Looping – Branching – Working with Strings and numbers – Built in objects: Array object – String object - Data object – Java Script math.

DOM (DOCUMENT OBJECT MODEL): Navigator object- window object- frame object- location object- form controls and event handling – Java script and nesting – Changing styles dynamically- Swapping image dynamically.

TEXT BOOKS:

1. Thomas A Powell, “The Complete Reference-Web Design”, Tata McGraw Hill 2009 Edition. (Unit I & II).
2. Thomas A Powell, “The Complete Reference-HTML”, Tata McGraw Hill 2009 Edition (Unit III & IV).
3. Thomas A Powell, Fritz Schneider, “Java Script: The Complete Reference”, Tata McGraw-Hill publishing limited, Second Edition Reprint-2006. (Unit V).

REFERENCE BOOKS:

1. Shelly Powers, “Dynamic Web Publishing”, Techmedia.
2. Danny Goodman, “JavaScript Bible”, Comdex Computer Publishing.

14ITU26 **SEMESTER – V**

OPERATING SYSTEM

OBJECTIVES: **Total Hours: 45**

The students will be taught:

- The basics of operating system and its structure.
- Process management, deadlock management strategies.
- Memory management techniques & virtual memory concepts
- File System implementation.

UNIT-I **(9 Hours)**

PROCESSES : CPU Scheduling – Types of scheduling – Scheduling algorithms – Scheduling criteria – FCFS- Round Robin- Shortest job first- Priority scheduling- multilevel queue scheduling- multilevel feedback queue scheduling.

DEADLOCKS: Prevention – Detections – Avoidance – Recovery from Deadlock.

UNIT-II **(9 Hours)**

MEMORY MANAGEMENT : Paging – Segmentation – Segmentation with paging. **VIRTUAL MEMORY :** Demand paging – Page replacement algorithms – Demand segmentation.

UNIT-III **(9 Hours)**

SECONDARY STORAGE STRUCTURES : Disk structure – Disk scheduling- Disk management- File system interface- File system implementation- File allocation methods.

UNIT-IV **(9 Hours)**

LINUX : An Introduction to Unix - Linux and GNU – Programming Linux –Shell Programming - Pipes and redirection – Shell as a programming Language – Shell Syntax .

WORKING WITH FILES : Linux File Structure – System Calls and device drivers- library functions – low level file access – standard I/O library – Formatted Input and Output - File and directory maintenance – Scanning directories – Errors.

UNIT-V **(9 Hours)**

THE LINUX ENVIRONMENT : Program arguments – Environment variables – Time and date.

TERMINALS: Reading from and writing to the terminal – using /dev/tty – Hardware model –Terminal output- The termios structure– Deducting keystrokes.

TEXT BOOKS:

1. Silberscatz Galvin, “Operating Systems”, Prentice Hall of India, 6th Edition. (Unit I, II & III)
2. Neil Matthew, Richard Stones, “Beginning Linux programming”, Wiley Publishing, 3rd Edition.(Unit IV & V).

REFERENCE BOOKS:

1. Stallings W, “Operating Systems”, Prentice Hall of India, 4th Edition, New Delhi, 2002.
2. Satya Sai Kolachina, “Linux Application Development for the Enterprise”, Dreamtech Press, 2004 Edition.

14ITU27 **SEMESTER-V**

MOBILE COMPUTING

OBJECTIVES: **Total Hours: 45**

- To provide an in depth understanding in the field of mobile computing and mobile communication technology and application.
- Learn networking concepts relevant to modern wireless systems.
- Learn emerging mobile computing ideas and best practices.

UNIT-I **(9 Hours)**

INTRODUCTION : Wireless the Beginning- Mobile Computing – Dialogue Control – Networks – Middleware and Gateways – Application and services.

MOBILE COMPUTING ARCHITECTURE : Architecture for mobile computing – Mobile computing through Internet.

UNIT-II **(9 Hours)**

WAP:MMS-MMS architecture-MMS Transaction Flows.

WIRELESS LAN : Advantages – Applications – Mobility in Wireless LAN - Mobile Ad Hoc Networks and Sensor Networks-Wifi Versus 3G.

UNIT-III **(9 Hours)**

GSM : GSM Architecture – Call routing in GSM – GSM Addresses and Identifiers – Network aspects in GSM – GSM Frequency allocations – SMS Architecture – SMMT – SMMO.

UNIT-IV **(9 Hours)**

GPRS:GPRS and packet data network – GPRS network architecture – GPRS network operations – Application for GPRS- Limitations of GPRS.

UNIT-V **(9 Hours)**

MOBILE COMPUTING THROUGH TELEPHONY : Mobile Computing through telephone – Developing an IVR Application – TAPI.

EMERGING TECHNOLOGIES: Blue Tooth – Radio Frequency Identification (RFid) – Java Card.

TEXT BOOK:

1. Asoke K Talukder, Roopa R Yavagal, “Mobile Computing”, Tata McGraw Hill, 2005.

REFERENCE BOOKS:

1. Jochen Schiller, “Mobile Communications”, Addison-Wesley, Second Edition, 2004.
2. Stojmenovic and Cacute, “Handbook of Wireless Networks and Mobile Computing”, Wiley, 2002.

14ITU28 **SEMESTER – V**

TCP/IP PROTOCOL SUITE

OBJECTIVE: **Total Hours: 45**

- To have basic knowledge about TCP/IP protocol
- To have brief knowledge about the IP address and remote login

UNIT-I **(7 Hours)**

THE OSI MODEL AND THE TCP/IP PROTOCOL SUITE: Layers in the OSI Model – TCP/IP protocol suite –Addressing

UNDERLYING TECHNOLOGIES: Wired Local Area Networks-Wireless LANS – Point-to-Point WANS – Switched WANS – Connecting Devices.

UNIT-II **(11 Hours)**

IPV4 ADDRESSES: Introduction - Classful addressing-classes and blocks-Two level Addressing- Three level Addressing- super netting -Classless addressing- Variable length blocks – Two level Addressing- Block allocation-sub netting.

DELIVERY AND FORWARDING OF IP PACKETS: Delivery – forwarding – structure of a router.

INTERNET PROTOCOL VERSION 4(IPV4): Introduction – Datagram fragmentation – options – checksum –IP over ATM - IP package.

UNIT-III **(9 Hours)**

USER DATAGRAM PROTOCOL: Introduction-User Datagram – UDP services - Process-to-process communication– UDP Applications-UDP Package.

TRANSMISSION CONTROL PROTOCOL: TCP services – TCP features – Segment – TCP connection – State Transition Diagram – TCP timers – TCP package.

UNIT-IV
(9Hours)

REMOTE LOGIN: TELNET- Concepts – Network Virtual Terminal (NVT) – embedding – Options – Sub option Negotiation – Controlling the Server – Out-of-Band Signaling – Mode of Operation – User Interface – Security Issue.

MULTIMEDIA: Digitizing Audio and Video-Audio and Video Compression

UNIT-V **(9 Hours)**

IPV6 PROTOCOL: Introduction-Packet format- Base Header-Flow label -Comparison between IPV4 and IPv6 Headers-Extension Headers-Comparison between IPv4 and IPv6.

TEXT BOOK:

1.Behrouz A. Forouzan, "TCP/IP Protocol Suite" Tata McGraw-Hill Fourth Ed.

REFERENCE BOOK:

1.Libor Dostalek Alena kabeova, "Understanding TCP/IP A Clear and Comprehensive guide to TCP/IP Protocols",PACKT publishing,2006.

14ITU29A **SEMESTER – V**

CORE ELECTIVE-I :KNOWLEDGE MANAGEMENT SYSTEM

OBJECTIVES: **Total Hours: 45**

- Know how to enhance organizational knowledge through Information management and Organizational learning.
- Understand the strategies for successful implementation of Knowledge management system.

UNIT-I **(9 Hours)**

ESSENTIALS OF COMPUTING : Birth of computing – evolution of modern computing - What is data? – Information processing – Information Technologies – Evolution of Information Systems – Implementation of organizational 'IS' – Organizational learning – Traditional Organizational Information Systems – Modern Organizational Information Systems – Deployment of Information Systems.

QUALITY , REENGINEERING METHODOLOGIES AND BUSINESS PARADIGMS : Introduction – Industrial evolution – quality methodologies – Total quality management – Artificial Intelligence – Emerging Business paradigms – Knowledge organization .

UNIT-II **(9 Hours)**

KNOWLEDGE MANAGEMENT – AN INSIGHT : Knowledge management evolution – why now? – Knowledge management imperatives – Organizational knowledge management - The need – organizational knowledge management drivers – knowledge management -The future – organizational knowledge management approaches – Learning organization.

ESSENTIALS OF KNOWLEDGE MANAGEMENT : Introduction – Knowledge - Basic types of knowledge – Organizational knowledge management – knowledge conversion – Organizational Meta knowledge.

UNIT-III **(9 Hours)**

KNOWLEDGE MANAGEMENT TECHNIQUES, SYSTEMS AND TOOLS : Introduction – organizational knowledge creation – Organizational knowledge acquisition/capture – knowledge analysis – Organizational knowledge dissemination.

UNIT-IV **(9 Hours)**

ORGANIZATIONAL KNOWLEDGE MANAGEMENT ARCHITECTURE & IMPLEMENTATION STRATEGIES: Introduction – developing a KM frame work – KM system components – Implementation strategies – Organizational organic capabilities architecture – Organizational knowledge management architecture – KM applications.

UNIT-V **(9 Hours)**

K-CAREERS : Introduction – Knowledge management roles – New Organizational roles – Organizational K-role classifications – Knowledge management job opportunities.

TEXT BOOK:

1. Sudhir Warier. E, "Knowledge Management", Vikas Publishing House pvt., Ltd., New Delhi, 2006 Edition.

REFERENCE BOOKS:

1. Elias M.Awad, Hassan M.Ghaziri, "Knowledge Management", Pearson Education, 2005 Edition.
2. Stuart Barnes, "Knowledge Management Systems- Theory & Practice", Thomson Learning, 2005 Edition.

14ITU29B **SEMESTER – V**

CORE ELECTIVE-I :GRID COMPUTING

OBJECTIVES: **Total Hours: 40**

- To understand the genesis of grid computing.
- To know the applications of grid computing.

UNIT-I **(9 Hours)**

GRIDCOMPUTING : Introduction-Early Grid Activities – Current Grid Activities-An Overview of Grid Business Areas - Grid Applications - Grid Infrastructure.

UNIT-II **(9 Hours)**

GRID COMPUTING WORLD WIDE INITIATIVES: Grid Computing Organizations and Their Roles: Organizations Developing Grid Standards and Best Practice Guidelines-Organizations Developing Grid Computing Toolkits and the Framework- Organizations Building and Using Grid-Based Solutions to Solve Computing, Data, and Network Requirements-Commercial Organizations Building and Using Grid Based Solution.

The Grid Computing Anatomy: The Grid problem-The Grid Computing Road Map: Autonomic Computing-Business On Demand and Infrastructure Virtualization-Service oriented Architecture and Grid-Semantic Grids.

UNIT-III **(9 Hours)**

THE NEW GENERATION OF GRID COMPUTING APPLICATIONS : Merging the Grid Services Architecture with the Web Services Architecture – Service Oriented architecture-Web Service Architecture-XML, Related Technologies, and Their Relevance to Web Services-XML Messages and Enveloping-Service Message Description Mechanisms-Relationship between Web Service and Grid Service- Web Service Interoperability and the Role of the WS-I Organization.

UNIT-IV **(9 Hours)**

THE GRID COMPUTING TECHNOLOGICAL VIEW POINTS: Open Grid Services Architecture: Introduction-OGSA Architecture and Goal. Some Sample Use Cases that Drive the OGSA: Commercial Data Center-National Fusion Collaboratory – Online Media and Entertainment. The OGSA Platform Components: Native Platform Services and Transport Mechanisms-OGSA Hosting Environment-Core Networking Services Transport and Security-OGSA Infrastructure-OGSA Basic Services.

UNIT-V **(9 Hours)**

OPEN GRID SERVICES INFRASTRUCTURE : Introduction-Grid services-A High Level Introduction to OGSI-Technical Details of OGSI Specification-Introduction to service Data Concepts-Grid Service Naming and Change Management Recommendations. **OGSA BASIC SERVICES :** Common Management Model-Service Domains-Policy Architecture-Security Architecture-Metering and Accounting-Common Distributed Logging-Distributed Logging- Distributed Data Access and Replication.

TEXT BOOK:

1. Joshy Joseph & Craig Fellenstein, “Grid Computing”, Pearson,2007.

REFERENCE BOOK:

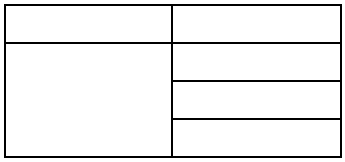
1. Ahmar Abbas, ”Grid Computing:A Practical Guide to technology and Applications”, Charles River media,2003.

14ITU30 **SEMESTER – V**

LAB -IX (WEB TECHNOLOGY LAB)

1. Design a web page using any 20 HTML tags.

2. Design table such as



3. Design a registration form using DHTML for participating in a symposium.
4. Design a form for employee details and calculate the following (use JavaScript)
    a. Accept basic pay from the user.
    b. Calculate NET pay.
5. Design a web page for an automobile showroom.
6. Using JavaScript create a multiplication table.
7. Create a multimedia presentation to perform a web page designing with the help of various tools in Photoshop.
8. Edit a Photograph and do all necessary editing works. (Foreground color change, background color change, brightness, contrast, etc.).
9. Develop the animation of a basket ball team using flash.
10. Develop the animation of a riverside natural scene using flash.

14ITU31 **SEMESTER – V**

LAB-X (OPERATING SYSTEM LAB)

1. Write a shell script to get the age from the user and conclude the age as follows.
    a. Age<13 childhood
    b. 13-19 teenage
    c. 20-40 adult
    d. 40-60 Middle Age
    e. 60&Above Oldage
2. Write a menu driven shell script to perform the selected options as follows :
   i) Current date ii) user name iii) Long list files iv) Present working Directory v) exit
3. Write a shell script to create 2 directories *cdir & edir* and copy the files beginning with 'c' to the directory *cdir* and files beginning with 'e' to *edir*.
4. Generate the Fibonacci series.
5. Find the biggest of ten numbers.
6. Find the sum of the digits of the given number.
7. Implement any one CPU Scheduling Algorithm.
8. Implement any one Page Replacement Algorithm
9. Implement any one Disk Scheduling Algorithm

14ITU33 **SEMESTER – VI**

PHP AND MySQL

OBJECTIVES: **Total Hours :45**

The students are introduced to

- To Learn basic concepts of PHP
- To learn the usage of Ajax and XML with PHP.
- To learn Database Connectivity using MySQL.

UNIT- I (8 Hours)

INTRODUCTION TO PHP: Essential PHP - Operators and Flow Control – String And Arrays - Creating Functions .

UNIT- II (8 Hours)

PHP WITH BROWSER: Reading Data in Web Pages – PHP Browser-Handling Power – Using PHP's Server Variables – Using HTTP Headers –Redirecting Browsers with HTTP Headers –Performing Data Validation- Checking if the User Entered Required Data – Client-Side Data Validation – Handling HTML Tags in User Input.

UNIT- III (9 Hours)

OBJECT ORIENTED PHP: Object Oriented Programming – Advanced Object Oriented Programming.

UNIT- IV (10 Hours)

FILE AND DATABASE IN PHP: File Handling – Opening Files Using fopen – Looping over a File's contents with feof – Reading Text from a File Using fgets – Closing a File – Reading from a File Character by Character with fgetc – Reading a Whole File at Once with file_get_contents – Checking if a File with file_exists- Working with Databases

UNIT- V (10 Hours)

SESSIONS, COOKIES, FTP AND AJAX : Sessions, Cookies and FTP – Setting a Cookie – Reading a Cookie – Setting Cookies Expiration – Deleting Cookies – Working with FTP – Downloading Files with FTP – Uploading Files with FTP – Deleting a Files with FTP – Creating and Removing Directories with FTP – Sending E-mail - Ajax .

TEXT BOOK:

1.Steven Holzner, "PHP: The Complete Reference", McGraw-Hill International Edition 2008.

REFERENCE BOOKS:

1. Steve Suehring, Tim Converse and Joyce Park, "PHP6 and MySQL Bible", Wiley Publishing, Inc., 2009.
2. Ivan Bayross and Sharanam Shah, "PHP 5.1 for Beginners", Shroff Publishers and Distributors Pvt. Ltd. 1st edition.

14ITU34 **SEMESTER - VI**

INFORMATION SYSTEM SECURITY

OBJECTIVES: **Total Hours: 45**

- Learn to design, develop and administer secured software.
- Be able to identify security vulnerabilities in existing information systems and develop means to mitigate these vulnerabilities.
- To learn about Database securities, Network security and ethical issues.

UNIT-I **(9 Hours)**

INTRODUCTION : Security – Security Attacks – Components of Computer Security – Computer Criminals – Methods of Defense

CRYPTOGRAPHY : Basic Cryptography – Classical Cryptosystems – Public Key Cryptography – Cryptographic Checksums – Hash Algorithms – Key Management – Digital Signatures – Cipher Techniques – Stream and Block Ciphers

UNIT-II **(9 Hours)**

PROGRAM SECURITY : Source Programs – Nonmalicious Program Errors – Viruses and other Malicious Code – Targeted Malicious Code – Controls against Program Threats.

OPERATING SYSTEM SECURITY: Protected Objects and methods of Protection – Memory and Address Protection – Control of Access to General Objects – File Protection Mechanism – Authentication – Biometrics.

UNIT-III **(9 Hours)**

DATABASE SECURITY : Security Requirements – Reliability and Integrity – Sensitive Data – Inference – Multilevel Databases – Proposals for Multilevel Security

UNIT-IV **(9 Hours)**

SECURITY IN NETWORKS: Computer Network Concepts – Threats in Network – Network Security Control – Firewalls – Intrusion Detection Systems – Secure E-Mail – Network and Cryptography

ADMINISTERING SECURITY : Security Planning – Risk Analysis – Organizational Security Policies – Physical Security

UNIT-V **(9 Hours)**

LEGAL, PRIVACY AND ETHICAL ISSUES IN COMPUTER SECURITY : Protecting Programs and Data – Information and the Law – Right of Employees and Employers – Software Failures – Computer Crime – Privacy – Ethical Issues in Computer Society.

TEXT BOOK:

1. Ankur Garg , “System Security” , Tech-Max Publications , First Edition.

REFERENCE BOOKS:

1. William Stallings, “Cryptography and Network Security- Principles and Practice”, Prentice Hall of India Private Limited, 2000.
2. Atul Kahate, “Cryptography and Network Security”, Tata McGraw Hill 2003..

14ITU35A **SEMESTER -VI**

CORE ELECTIVE-II :EXTREME PROGRAMMING

Total hours: 45

OBJECTIVES:

This subject has been designed with the following objectives:

- To know a mechanism for social change
- To identify the areas of application.

UNIT -I **(9 Hours)**

THE PROBLEM: Risk – the Basic problem – A Development Episode – Economics of software development – four variables- cost of change.

UNIT-II **(9 Hours)**

Learning to drive - Four values – Basic principles – Back to Basics.

UNIT-III **(9 Hours)**

THE SOLUTION: Quick review – how could this work – Management strategy- Facilities Strategy- Splitting Business and technical responsibility.

UNIT -IV **(9 Hours)**

Planning Strategy – Development Strategy – Design Strategy – Testing Strategy – Implementing Strategy – Adopting strategy – Retrofitting XP.

UNIT-V **(9 Hours)**

Life Cycle of an Ideal XP Project- Roles for people – 20-80 Rule – What makes XP hard- When you Should not try XP- XP at work.

TEXT BOOK:

1. Beck k, “Extreme Programming”, Pearson Education, New Delhi, 2000.

REFERENCE BOOK:

1. Kent Beck, Cynthia Andres, “Extreme programming explained - embrace change”, Pearson education, 2nd edition, 2004.

14ITU35B **SEMESTER – VI**

CORE ELECTIVE-II :CLOUD COMPUTING

OBJECTIVES: **Total Hours: 45**

This subject has been designed with the following objectives:

- Understand the fundamental concepts in the study of cloud computing and its creation, acquisition and representation.
- Know the core concepts, methods and usage of cloud computing services.
- Understand various evaluation techniques and exploring cloud computing in various applications.

UNIT – I **(9 Hours)**

INTRODUCTION : Cloud Computing: Introduction – From Collaboration to cloud - Working of cloud Computing – Pros and cons – benefits - developing cloud computing services – Cloud service development - discovering cloud services.

UNIT – II **(9 Hours)**

CLOUD COMPUTING FOR EVERYONE : Centralizing email communications – Cloud computing for community – collaborating on schedules – Collaborating on group projects and events – Cloud computing for corporation – managing schedules – managing projects – presenting on road.

UNIT – III **(9 Hours)**

USING CLOUD SERVICES : Collaborating on calendars - Schedules and task management - exploring on line scheduling and planning - collaborating on event management - collaborating on contact management - collaborating on project management - collaborating on word processing – spreadsheets and databases.

UNIT – IV **(9 Hours)**

STORING AND SHARING : Understanding cloud storage – evaluating on line file storage - exploring on line book marking services - exploring on line photo editing applications – exploring photo sharing communities - controlling it with web based desktops.

UNIT – V **(9 Hours)**

OUTSIDE THE CLOUD : Evaluating web mail services, Evaluating instant messaging - Evaluating web conference tools - creating groups on social networks - Evaluating online groupware - collaborating via blogs and wikis

TEXT BOOK

1. Michael Miller, "Cloud Computing", Pearson Education, New Delhi, 2009.

REFERENCE BOOK:

1. Toby Velte, Anthony Velte, Toby J. Velte , “Cloud Computing - A Practical Approach”, McGraw-Hill, 2009.

14ITU36 **SEMESTER – VI**

Lab – XI (PHP AND MypSQL LAB)

1. Find the factorial Value using PHP
2. Convert the Currency using PHP.
3. Create a PHP program using HTTP Variables.
4. Design a Login form and validate it in Client side before submitting.
5. Calculate Employee Pay slip using OOP Concept.
6. College Registration Form with Table with MySQL Connectivity.
7. Create a hospital management with MySQL Connectivity.
8. Create a form to upload an Image File.
9. Get the name from the user and set the Cookie in the Client Browser.
10. Create a any catalog page using Ajax and XML.