SCHEME OF EXAMINATION

&

DETAILED SYLLABUS

For

Diploma in Information Technology (I.T.)

Faculty of Information Technology

1st Semester (First Year)

Code	Paper	Internal	External	Total
DIT101	MATHEMATICS - I	**30**	**70**	**100**
DIT102	COMMUNICATIVE ENGLISH-I	**30**	**70**	**100**
DIT103	PROGRAMMING WITH C	**30**	**70**	**100**
DIT104	FUNDAMENTALS OF INFORMATION TECHNOLOGY	**30**	**70**	**100**
DIT104-P	FUNDAMENTALS OF INFORMATION TECHNOLOGY LAB	**20**	**30**	**50**
DIT103-P	PROGRAMMING IN C –LAB	**20**	**30**	**50**

2nd Semester (First Year)

Code	Paper	Internal	External	Total
DIT201	OBJECT ORIENTED PROGRAMMING IN C++	**30**	**70**	**100**
DIT202	DATA STRUCTURES USING C	**30**	**70**	**100**
DIT203	MICROPROCESSOR & ITS INTERFACING	**30**	**70**	**100**
DIT204	OBJECT ORIENTED PROGRAMMING METHODOLOGY	**30**	**70**	**100**
DIT205	DIGITAL ELECTRONICS	**30**	**70**	**100**
DIT206	COMMUNICATIVE ENGLISH – II	**30**	**70**	**100**
DIT202-P	DATA STRUCTURE LAB IN C	**20**	**30**	**50**
DIT201-P	PROGRAMMING IN C++ -LAB	**20**	**30**	**50**

3rd Semester (Second Year)

Code	Paper	Internal	External	Total
DIT301	SYSTEM SOFTWARE	**30**	**70**	**100**
DIT302	OPERATIONS RESEARCH	**30**	**70**	**100**
DIT303	VISUAL PROGRAMMING USING VB	**30**	**70**	**100**
DIT304	OPERATING SYSTEM	**30**	**70**	**100**
DIT305	COMPUTER ORGANISATION AND ARCHITECTURE	**30**	**70**	**100**
DIT306	PRINCIPLE OF COMMUNICATION	**30**	**70**	**100**
DIT303-P	VB LAB	**20**	**30**	**50**

4th Semester (Second Year)

Code	Paper	Internal	External	Total
DIT401	DATABASE MANAGEMENT SYSTEMS	**30**	**70**	**100**
DIT402	DATA COMMUNICATION	**30**	**70**	**100**
DIT403	COMPUTER NETWORK & INTERNET	**30**	**70**	**100**
DIT404	COMPUTER ARCHITECTURE AND MAINTENANCE	**30**	**70**	**100**
DIT405	INDUSTRIAL MANAGEMENT	**30**	**70**	**100**
DIT404-P	COMPUTER MAINTENANCE LAB	**20**	**30**	**50**
DIT406-P	RDBMS LAB WITH SQL COMMAND USING ORACLE	**30**	**70**	**100**

5th Semester (Third Year)

Code	Paper	Internal	External	Total
DIT501	COMPUTER AIDED OPTIMIZATION TECHNIQUES	**30**	**70**	**100**
DIT502	SYSTEM ANALYSIS &DESIGN	**30**	**70**	**100**
DIT503	JAVA PROGRAMMING	**30**	**70**	**100**
DIT504	LINUX AND PHP	**30**	**70**	**100**
DIT505	INTERNET, WEB DESIGNING AND CYBER LAWS	**30**	**70**	**100**
DIT504-P	LINUX PROGRAMMING (LAB)	**20**	**30**	**50**
DIT506-P	PROJECT IN JAVA LAB	**30**	**70**	**100**

6th Semester (Third Year)

Code	Paper	Internal	External	Total
DIT601	PARALLEL PROCESSING	**30**	**70**	**100**
DIT602	COMPUTER GRAPHICS AND MULTIMEDIA	**30**	**70**	**100**
DIT603	ENVIRONMENTAL SCIENCE	**30**	**70**	**100**
DIT604	ELECTIVE :	**30**	**70**	**100**
DIT604A	DATA MINING	**30**	**70**	**100**
DIT604B	CLIENT SERVER COMPUTING	**30**	**70**	**100**
DIT605-P	PROJECT WORK/VIVA	**30**	**70**	**100**

FIRST SEMESTER (FIRST YEAR)

MATHEMATICS – I

DIT101

Unit I

Basics of Counting: Permutations and Combination, Concept of Factorial, Principle of Counting, Permutation with Restriction, Circular Permutation and Combination with Restriction; Mathematics Induction: Principle, Sequences & Series -A.P. & G.P.

Unit II

Linear Algebra: Determinants; Minors and Co-factors, Laplace Expansions; Matrices-Special types; operations, Rank and Elementary Transformations; Inverse and Normal form; Consistency of linear system of equations (Up to three variables); Application to Business Problems.

Unit III

Differential Calculus: Concepts of function, limit and continuity, graphs of functions, definition of derivative; Derivative as a Rate Measure and Measure of slope; Functions of more than one variable; Partial Derivatives(up to second order); Homogenous Functions and Euler's Theorem; Differentiation of Implicit functions; Maxima-minima of Functions of one and two variables; Applications in Business Problems.

Unit IV

Integral Calculus: Concept of Integration- as anti-derivative process; Standard forms; Methods of integration-by substitution, by parts, and partial fractions; Definite integration; Finding areas in simple cases; Consumers' and producers' surplus.

COMMUNICATIVE ENGLISH-I

DIT102

Unit-I

Fundamental of Grammar and their Usage: How to Improve Command over Spoken and Written English with Stress on Noun, Verb, Tense and Adjective. Sentence Errors, Punctuation, Vocabulary Building to Encourage the Individual to Communicate Effectively, Common Errors in Business Writing.

Unit-II

Introduction to Business Communication: Basic Forms of Communication, Process of Communication, Principles of Effective Business Communication, 7Cs; Media of Communication: Types of Communication: Barriers of Communication (Practical exercise in communication)

Unit-III

Business letter writing: Need, Functions and Kinds, Layout of Letter Writing, Types of Letter Writing: Persuasive Letters, Request Letters, Sales Letters, Complaints and Adjustments;

Unit-IV

Departmental Communication: Meaning, Need and Types: Interview Letters, Promotion. Letters, Resignation Letters, News Letters, Circulars, Agenda, Notice, Office Memorandums, Office Orders, Press Release.

Unit-V

Business Etiquettes and Public Speaking: Business Manners. Body Language Gestures, Email and Net Etiquettes, Etiquette of the Written Word, Etiquettes on the Telephone, Handling Business Meetings; Introducing Characteristic, Model Speeches, Role Play on Selected Topics with Case Analysis and Real Life Experiences.

PROGRAMMING WITH C

DIT103

UNIT I

C basics: C character set, Identifiers and keywords, Data types, constants, variables and arrays, declarations, expressions statements, symbolic constants, compound statements, arithmetic operators, unary operators, relational and logical operators, assignment operators, conditional operators, bit operators.

UNIT – II

C constructs: If statement, if….else statement, if…..else if….else statement, while statement, do….while statement, for statement, switch statement, nested control statement, break operator, continue operator, comma operator, goto statement.

UNIT – III

C Functions: Function: declaration, definition & scope, recursion, call by value, call by reference. Storage Classes: automatic, external (global), static & registers.

UNIT – IV

Arrays: Arrays, pointers, array & pointer relationship, pointer arithmetic, dynamic memory allocation, pointer to arrays, array of pointers, pointers to functions, array of pointers to functions, Preprocessor directives: #include, #define, macro's with arguments, the operators # and ##, conditional compilations, multiple file programming.

UNIT – V

Structures: Structures, unions, structure passing to functions, bit fields, file handling [text (ascii), binary], Standard library functions from stdio.h, stdlib.h, conio.h, ctype.h, math.h, string.h, process.h.

FUNDAMENTALS OF INFORMATION TECHNOLOGY

DIT104

UNIT – I

Introduction to Computers:

The evolution of computers - Computer Generation from First Generation to Fifth Generation, Classifications of Computers - Micro, Mini, Mainframe and Super Computers, Distributed Computer System, Parallel Computers.

Computer Hardware – Major Components of a Digital Computer, Block Diagram of Computer, Input-Output devices, Description of Computer Input Units, Output Units, CPU

Computer Memory - Memory Cell, Memory Organization, Read Only Memory, Serial Access Memory, Physical Devices Used to construct Memories, Magnetic Hard disk, floppy Disk Drives, Compact Disk Read Only Memory, Magnetic Tape Drives.

UNIT – II

Number System:

Decimal, Binary, Octal, Hexa-decimal. Conversion - Decimal to all other number systems, Binary to octal and Hexa Decimal, Addition of binary numbers, Binary subtraction, Use of complements to represent negative numbers, Conversion of a binary fraction to a decimal fraction and decimal to binary fraction, Binary Coded Decimal(BCD), ASCII Codes, EBCDIC codes, Gray codes, Unicodes.

Algorithm and Flowcharts:

Algorithm: Definition, Characteristics, Advantages and disadvantages, Examples
Flowchart: Definition, Define symbols of flowchart, Advantages and disadvantages, Examples

UNIT – III

Computer Software:

System software, assemblers, compilers, interpreters, linkers Elementary , Operating System concepts, different types of operating systems, Application Software.
Introduction to MS Office (MS-Word, MS PowerPoint, MS-Excel)
Computer Programming and Languages: Algorithms, flow chart, decision tables, pseudo code, Low level languages and introduction to high level languages.

UNIT – IV

Data Communication and Computer Networks:

Data Transmission mode, Data transmission media, Digital and Analog Transmission

What is computer Network? Network types, Network Topologies, Communication Protocol, OSI Model

UNIT - V

The Internet:

Definition, Brief History, Network Types (LAN, WAN and MAN), Client and Servers, Intranet, Extranet. Basic Services, Email, File Transfer Protocol, Telnet, Usenet News, Terminologies related to Internet: Protocol, Domain name, IP address, URL, World Wide Web.

Overview of various services on Internet: E-mail, FTP, Telnet, Chat, Instant Messaging

Internet Search Tools: Gopher, Archie, World Wide Web.

WWW Browsers: Line Browsers, Graphical Browsers, Java Enabled Browsers.

Uses of the Internet: Internet Service Providers and Types of Internet Connection: Direct/Leased line Connection, Remote Dial up Connection, SLIP/PPP Connection

FUNDAMENTALS OF IT LAB

DIT104-P

MS-WORD

1. Text Manipulations
2. Usage of Numbering, Bullets, Tools and Headers
3. Usage of Spell Check and Find and Replace
4. Text Formatting
5. Picture Insertion and Alignment
6. Creation of Documents Using Templates`
7. Creation of Templates
8. Mail Merge Concept
9. Copying Text and Picture From Excel
10. Creation of Tables, Formatting Tables
11. Splitting the Screen
12. Opening Multiple Document, Inserting Symbols in Documents

MS-EXCEL

1. Creation of Worksheet and Entering Information
2. Aligning, Editing Data in Cell
3. Excel Function (Date, Time, Statistical, Mathematical, Financial Functions)
4. Changing of Column Width and Row Height (Column and Range of Column)
5. Moving, copying, Inserting and Deleting Rows and Columns
6. Formatting Numbers and Other Numeric Formats
7. Drawing Borders Around Cells
8. Creation of Charts Raising Moving
9. Changing Chart Type
10. Controlling the Appearance of a Chart

MS -POWER POINT

Working With Slides

1. Creating, saving, closing presentation
2. Adding Headers and footers
3. Changing slide layout
4. Working fonts and bullets
5. Inserting Clip art: working with clipart,
6. Applying Transition and animation effects
7. Run and Slide Show

PROGRAMMING IN C –LAB

DIT103-P

Programs using Basic Constructs: Fundamental data types, qualifiers- long, short, unsigned, input/output functions – scanf(), printf(), Arithmetic expressions, Evaluation of integer, real and mixed mode arithmetic expressions, truncation effect, type casting, relational and logical expressions, Conditional operators, trigonometric functions- sin(), cos(), tan(), mathematical functions – abs(), sqrt(), round() defined in math.h, printing formatted outputs using width specifier.

Programs using control structures: if, switch, for, while, do…while, nested structures, break and continue. Sample programs should include printing of Fibonacci numbers, prime numbers, check for armstrong numbers, summation series – exp(x), sin series etc and verification of result using built in functions, printing pyramid like pattern & other similar patterns using nested loops.

Programs using Arrays: Array based programs – Creation of array containing prime numbers, matrix addition, matrix multiplication, transpose of a matrix, array sorting, preparing rank lists based on marks, searching of arrays(linear) for finding price of an item. static initialization of arrays.

String manipulation programs : reading strings using %s, gets(), getchar(), copying one string into another, counting number of characters, vowels, words etc, searching for substring, string manipulation using functions in string.h and ctype.h.

User Defined Functions: Programs using return type functions, void type functions, example program using recursive functions, array sorting program using function with call by reference, function to copy one string into another, menu driven program using modular approach in programming.

Program using structures: array of structures, dictionary search program using structure containing arrays and array of structures.

Program using pointer : initialization, pointer arithmetic - swap function to interchange two locations, array manipulation using pointers- sorting list of names using pointer array, string handling using pointers, Simple program using dynamic memory allocation.

Program to create a data file, reading a data file , search for record(serial search) and displaying report, simple program using command line arguments- to copy one file into another by giving file names as arguments, sorting list of names provided at command line.

SECOND SEMESTER (FIRST YEAR)

OBJECT ORIENTED PROGRAMMING IN C++

DIT201

UNIT-I

Introduction : Objects, object oriented development, object oriented methodology, object oriented models, object oriented themes, modeling

UNIT-II

Object Modeling, objects and classes, links and association, advanced links and association concepts, generalization and inheritance, grouping constructs, dynamic modeling, functional modeling

UNIT-III

Object Oriented language C++: structure of C++ program, basic and user defined data types, functions in C++, the main function, function prototyping, call by reference, return by reference, function overloading, friend and virtual functions, classes and objects, specifying a class, defining member functions, nesting of member functions, private member functions, arrays within a class, static data members, static member functions, Arrays of objects, objects as function arguments.

UNIT-IV

Constructors and Destructors: Copy constructor, dynamic constructor, destructors, operator overloading, inheritance, defining derived classes-, single, multiple, multilevel, hierarchical and hybrid inheritance, virtual base classes, abstract classes

UNIT-V

Pointers : Virtual functions and polymorphism, pointers to objects, this pointer, pointers to derived classes, virtual functions, C++ streams, stream classes, unformatted and formatted console I/O operations, managing output with manipulators.

Reference books:

1. *Object Oriented Modeling and Design, James Rumbaing, Michael Blaha, William Premerlani, Frederick Eddy*
2. *Object oriented Programming By Balaguruswamy*

DATA STRUCTURES USING C

DIT202

UNIT-I

Arrays: Representation of single and multidimensional arrays; sparse arrays - lower and upper triangular matrices and Tri-diagonal matrices.

UNIT-II

Stacks and Queues: Introduction and primitive operations on stack; Stack application: Infix, postfix, prefix expressions; Evaluation of postfix expression; Conversion from infix to postfix. Introduction and primitive operation on queues, D-queues and priority queues.

UNIT-III

Lists: Introduction to linked lists; Sequential and linked lists, operations such as traversal, insertion, deletion, searching, Two way lists and Use of headers .

Trees: Introduction and terminology; Traversal of binary trees; Recursive algorithms for tree operations such as traversal, insertion, deletion;

UNIT-IV

Multilevel indexing and B-Trees: Introduction: The invention of the B-tree; Statement of the problem; Indexing with binary search trees; Multilevel indexing, a better approach to tree indexes; B-trees: working up from the bottom; Example for creating a B-tree.

UNIT-V

Sorting Techniques: Insertion sort, selection sort, merge sort, heap sort.
Searching Techniques: linear search, binary search and hashing

References Books:

1. P. S. Deshpande and O.G. Kakde, "C & Data Structure", Wiley Dreamtech, 1st Edition, 2003.

2. Y. Langsam et. al., "Data Structures using C and C++", PHI, 1999.

3. Schaum's outline series, "Data Structure", TMH, 2002.

MICROPROCESSOR & ITS INTERFACING

DIT203

UNIT I- INTRODUCTION TO MICROPROCESSORS

Evolution of microprocessors; Specific features of microprocessors; Application of microprocessors.

UNIT II- ARCHITECTURE OF MICROPROCESSORS

Explanation of each Functional Block Diagram and Internal Architecture of 8086/8088 – ALU, Registers, Cont rol unit, Clocks, Bus Structure; Address, Data and Control Bus of 8085, 8086/8088; pin Details of 8085, 8086/8088, Introduction to PC range of Microprocessors.

UNIT III- PROGRAMMING OF MICROPROCESSORS

Different Addressing modes of 8085,8086/8088; Instruction Cycle of 8085,8086/8088 (including subroutine calls, jumping, comparing, string instructions of 8086); Timing Diagram of different parts of Instruction Cycles; Solving basic problems of Assembly Language Programming using 8085 Trainer Kit and Using any 8086 Assembler or DOS Debug Program.

UNIT IV- INTERFACING OF MEMORY AND I/O PORTS

Address Space; Memory mapped I/O, I/O mapped I/O; address Decoding and Interfacing of Memory; DMA Description with sequence of steps and cont rol flow, Structure of a generic DMA controller; programmer's model of 8251, Programmer's model of 8255 with its Interfacing; Outputting data to Parallel Port using 8086 Commands in DOS/WIN9x; Interrupts – Hardware and Software interrupts, A brief overview of BIOS Interrupts, An introduction to (i) Disk Access Interrupts (ii) CRT/Graphics Interrupts.

UNIT V- CASE STUDIES ON THE APPLICATION OF MICROPROCESSORS

Data Acquisition system using ADC 0808/0809 and Sensor (temperature) Interfacing using AD 590.

REFERENCE BOOKS

1. Microprocessor Architecture, Programming and Applications – Ramesh S Goonkar.
2. Microprocessors and Interfacing – Douglas V Hall
3. Fundamentals of Microprocessors and Microcomputers – B Ram.
4. Advances Microprocessors and interfacing – B Ram

OBJECT ORIENTED PROGRAMMING METHODOLOGY

DIT204

UNIT-I

Introduction : Objects, object oriented development, object oriented methodology, object oriented models, object oriented themes, modeling

UNIT-II

Object Modeling, objects and classes, links and association, advanced links and association concepts, generalization and inheritance, grouping constructs, dynamic modeling, functional modeling

UNIT-III

Object Oriented language C++: structure of C++ program, basic and user defined data types, functions in C++, the main function, function prototyping, call by reference, return by reference, function overloading, friend and virtual functions, classes and objects, specifying a class, defining member functions, nesting of member functions, private member functions, arrays within a class, static data members, static member functions, Arrays of objects, objects as function arguments.

UNIT-IV

Constructors and Destructors: Copy constructor, dynamic constructor, destructors, operator overloading, inheritance, defining derived classes-, single, multiple, multilevel, hierarchical and hybrid inheritance, virtual base classes, abstract classes

UNIT-V

Pointers : Virtual functions and polymorphism, pointers to objects, this pointer, pointers to derived classes, virtual functions, C++ streams, stream classes, unformatted and formatted console I/O operations, managing output with manipulators.

Reference books:

1. *Object Oriented Modeling and Design, James Rumbaing, Michael Blaha, William Premerlani, Frederick Eddy*
2. *Object oriented Programming By Balaguruswamy*

DIGITAL ELECTRONICS

DIT205

UNIT-I

Boolean Algebra : Basics Laws of Boolean Algebra, Logic Gates, Simplifications of Boolean equations using K-maps, Code Conversion, (Binary, Octal, Hexadecimal), Overview of Gray codes and Excess – 3 codes.

UNIT-II

Arithmetic Circuits Adder, Subtractor, Parallel binary adder/Subtractor, binary multiplier and dibvider. Combinational Circuits Multiplexers, De-Multiplexers, decoders, encoders, Design of code converters.

UNIT-III

Flip-flops -S-R, D, J-K, T, Clocked Flip -flop, Race around condition, Master slave Flip-Flop, Realisation of one flip-flop using other flip-flop.

UNIT-IV

Shift Registers, Serial-in-serial-out, serial-in-parallel-out, parallel-in-serial-out and parallel-in-parallel-out,Bi-directional shift register.

UNIT-V

Counters- Ripple counter, Synchronous Counter, Modulo Counters, Ring Counter, Twisted Ring Counter. Memory Devices - RAM, ROM, PAL & PLA

Text Books:

1. Moris Mano, "Digital Logic and Computer Design", PHI Publications, 2002

2. R. P. Jain, "Modern Digital Electronics", TMH, 3rd Edition, 2003.

COMMUNICATIVE ENGLISH -II

DIT206

Unit I

Project and Report writing and Proposals: – How to write an Effective Report, Basics of Project writing, Paragraph writing, Paper reading and Voice modulation, Basics of Project presentation.

Unit II

How to Make a Presentation, the Various Presentation Tools, along with Guidelines of Effective Presentation, Boredom Factors in Presentation and How to Overcome them, Interactive Presentation & Presentation as Part of a Job Interview, Art of Effective Listening.

Unit III

Resume Writing Skills, Guidelines for a Good Resume, How to Face an Interview Board, Proper Body Posture, Importance of Gestures and Steps to Succeed in Interviews. Practice Mock Interview in Classrooms with Presentations on Self; Self Introduction – Highlighting Positive and Negative Traits and Dealing with People with Face to Face.

Unit IV

Leadership – Qualities of a Leader, Leadership Quiz with Case Study, Knowing Your Skills and Abilities; Introduction to Group Discussion Techniques with Debate and Extempore, Increase Your Professionalism.

Audio Video Recording and Dialogue Sessions on Current Topics, Economy, Education System, Environment, Politics.

Reference Books

1. *Bovee, Thill and Chaturvedi, (2010), Business Communication, 2nd edition, Pearson Education.*
2. *Lillian, Chaney, (2008), Intercultural Business Communication, 4th edition, Pearson Education.*
3. *Chaturvedi, Mukesh, (2009), Business Communication: Concepts, Cases & Applications, 1st edition, Pearson Education.*
4. *McGraw, S. J., (2008), Basic Managerial Skills for All, 8th edition, Prentice Hall of India.*

DATA STRUCTURE LAB IN C

DIT202-P

Practical Topics –

One and two dimension ARRAY related problems.
Different STRING operations using di fferent C library functions
Creation of STACK and its related problems such as expression conversion and evaluation.
QUEUE, its creation and related problems.
POINTER related problems.
To write a RECURSIVE function and change it to non-recursive way.
To write the following di fferent SORTING programs in C**:** —

(a) Bubble sort, (b) Insertion sort, (c) Merge sort, (d) Quick sort, (e) Radix sort, and, (f) Heap sort.

To construct a binary TREE and traverse its different nodes.
Binary SEARCH related problems.
FILE related problems.

PROGRAMMING IN C++ -LAB

DIT201-P

- Programs based on class, objects and manipulation of objects using member functions
- Programs based on friend functions, passing objects as arguments to function.
- Programs based on array of objects.
- Programs based on function overloading, Default arguments.
- Programs based on operator overloading (binary, unary) using member functions and friend functions.
- Programs based on constructors, different types of constructors- copy constructor, default constructor.
- Programs based on Inheritance, different types of inheritance.
- Programs using virtual functions and polymorphism

THIRD SEMESTER (SECOND YEAR)

SYSTEM SOFTWARE

DIT301

UNIT-I

System Software: General Concepts, assemblers, design of assemblers, macros and macro processors, macro definitions, features of macro facility, nested macro c alls

UNIT- II

Loading, Linking and Relocating: Loading and linking schemes, relocatability of programmes, concepts of binders, linking loaders, overlays, dynamic binders, design of an absolute loader

UNIT- III

Phases of compiler: aspects of compilation, datatypes, data structures, scope ruler, control structure, compilation process, analysis phase, synthesis phase, programming language grammar, derivations, reduction and system trees

UNIT-IV

Classification of grammars: Ambiguity in program specification, lexical scanner, parsing topdown, bottomup, table driven parsing

UNIT- V

Compilation of expressions: intermediate code forms for expression, compilation of control structures, code optimization, local and global

Text book:

1. *Systems Programming and Operating Systems by D.M. Dhamdhere, - Tata McGrow Hill.*
2. *Principles of Compiler Design by Aho and Ullman.*

OPERATIONS RESEARCH

DIT302

UNIT-I

Beginning of O.R: Problems in O.R., Mathematical Modeling.

UNIT-II

Linear Programming: Formulation of LP models, Solution of a L.P.P., Graphical method for solving a L.P.P.

UNIT-III

Simplex Method: Maximization/ Minimization of objective functions, Simplex method, unbounded solution-optimality conditions- artificial variable Techniques-Big M method.

UNIT-IV

Transportation problems: Transportation model, Solution by North West corner lowest cost entry Vogel's and MODI method, Degeneracy Assignment problems.

UNIT-V

Game Theory: Two persons zero sum games, pure and mixed strategy with saddle point, solution of pure strategy games, solution of mixed strategy problems by arithmetic method, principle of dominance.

Reference Book:

1. Operations Research, Prem Kumar Gupta & D.S Hira, Kanti Swaroop

VISUAL PROGRAMMING USING VB

DIT303

UNIT-I

Introduction to windows, GUI concept, concept of event driven programming, the Visual Basic IDE, types of Visual Basic projects, Visual Basic Editions, the Visual Basic project life cycle, project files

UNIT-II

Programming elements, data types, constants, variables, operators, user defined data types, library functions, program comments, arrays, dynamic arrays, strings, enumerations, logic statements, conditional constructors (If…then, select case), Iteration (Do loop, for loop), do events, exit, stop and end, Functions and Subroutines – arguments, By ref Vs. By Val parameters, optional arguments, Module basics, event procedures, class modules, types of errors, error handling, creating error handlers, debugging, debugging tools

UNIT-III

Forms, controls, control arrays, menus, menu editor, graphics programming, simple animation, SDI and MDI application, Database concepts – visual data manger, the ADO data control, data grid control, DB List and DB combo controls, Data view window, data form wizard, data environment designer

UNIT-IV

Visual Basic files access, File I/O commands, file common dialogs, object oriented programming with Visual Basic, defining classes, classes Vs. Modules, object life time, constructors and destructors, class properties, fields and methods, creating and using objects, collections in Visual Basic, event and event handlers

UNIT-V

Reports using Crystal reports, data environment, reports using data reports, error handling, creating ActiveX controls, ActiveX EXE, ActiveX DLL

Text Book:

1. *Visual Basic 6 : How to Program, H. M. Deitel, P. J. Deitel and T. R. Neilo, Pearson Education*
2. *Mastering VB 6, Evangelous Petroutosos – BPB Publications*
3. *Visual Basic, Shaum's outlines,Byron S Gottfried*

OPERATING SYSTEM

DIT304

UNIT 1- INTRODUCTION
An Introduction to Operating System & its Services
Various Types of Operating Systems
Operating System Structure
Concepts of: Process – Files – System Calls – Interrupt – Shell

UNIT 2-PROCESS MANAGEMENT
An Introduction to process; Process State & Transition
Process Cont rol Block, Process Context, Context Switch
Process Scheduling (Pre-emptive & Non-Pre-emptive Algorithms)
- (a) FCFS (First Come First Served) Algo;
- (b) Shortest Job First;
- (c) Priority Scheduling;
- (d) Round Robin Scheduling.

Performance Criteria of Scheduling Algorithm
- (a) CPU Utilization;
- (b) Throughput;
- (c) Turnaround Time;
- (d) Waiting Time;
- (e) Response Time.

Overview of: Inter-process Communication – Race Condition – Critical Section – Semaphore

UNIT 3- MEMORY MANAGEMENT
Partitioned Memory Management (Static & Dynamic)
Concept of Fragmentation & Compaction
Paging & Demand Paging
Page Replacement Algorithms (FIFO, Optimal, LRU Algorithms)

UNIT 4-DEADLOCK
Introduction to Deadlock
Necessary Condition for Deadlock
Method for Handling Deadlock
- (a) Brief Overview of Deadlock Prevention;
- (b) Deadlock A voi dance (Bank er's Algorithm);
- (c) Deadlock Detection & Recovery.

UNIT 5-FILE MANAGEMENT
File Concepts – Types of Files – File Attributes – File Operations
Access Methods: Sequential access – Random access
Hierarchical Directory System

REFERENC EBOOKS

1. Operating System Design & Implementation / Andres's Tanenbaum / Prentice Hall of India, N. Del hi
2. Operating Systems / Stuart E Mandnick & John J Donovan / McGraw-Hill

COMPUTER ORGANISATION AND ARCHITECTURE

DIT305

UNIT-I

Functional units of a computer, basic operational concepts, bus structures.
Addressing methods: Memory location and addresses, instructions and instruction sequencing, instruction execution, addressing modes.

UNIT-II

The processing unit: General register organization, stack organization, instruction formats, instruction classifications.
Main memory: organization of RAM and ROM, auxiliary memory, cache memory, virtual memory.

UNIT-III

Introduction to parallel processing: Evolution parallelism in unprocessed systems, parallel processing Mechanisms.

UNIT-IV

Parallel computer structures: Pipeline computers array processors, multiprocessing systems, architectural classification Scheme SISD, SIMD, MISD, MIMD

UNIT-V

Pipelining and vector processing: Principles, classification of Pipeline processors- instruction and arithmetic pipelines: designs.

Text Book:

1. Computer System Architecture, M. Moris Mano
2. Computer architecture and parallel processing by Kai Hwang Feue A Briggs.
3. Computer Organization, Hamacher

PRINCIPLE OF COMMUNICATION

DIT306

UNIT I- INTRODUCTION TO COMMUNICATION

Importance of communication — Elements of communication system — Signal, Spectrum and Bandwidth — Basic idea of Fourier series and Fourier Transform — Discrete and continues spectra of periodic and aperiodic signal and corresponding discussion of Fourier series and Fourier trans form — Transfer Function — Filter.

UNIT-II AMPLITUDE MODULATION SYSTEM

Need of Modulation — Amplitude Modulation — Expression for Amplitude Modulation and Signal Power relation in AM wave — Modulator and Balanced Modulator — SSB Signal: Methods of generation of SSB Signal (Filter method), Vestigial side band signal, Concept of multiplexing, AM demodulators (Linear diode detector, Square law detector, Envelop detector) — Principle of radio t ransmission using block diagram (Super Heterodyne Receiver).

UNIT-III FREQUENCY & PHASE MODULATION SYSTEM

Frequency Modulation — Phase Modulation — Expression for frequency and phase modulated signal — Frequency spectrum and effecti ve bandwidt h of FM signal (Carson's Rule) — Comparison between AM, FM, PM — Methods of FM generation (Direct, Indirect, Armstrong Method) — Di fferent methods of FM demodulation (schematic discussion on Foster Seeley discriminator, Ratio detector) — Voltage Cont rolled Oscillator and Phase Lock Loop.

UNIT-IV PULSE MODULATION SYSTEM

Pulse modulation system — Noisy communication channel — Sampling theorem and classify sampling — PAM, PWM, PPM.

UNIT-V DIGITAL COMMUNICATION

Digital communication — Advantages of digital communication — Channel capacity formula — Basic concept of Matched Filter — Binary ASK, PSK, FSK — QASK and QPSK — TDM and FDM — PCM generation and demodulation — SNR formula for PCM — Bandwidth of PCM signal — Concept of SNRBandwidth trade-off in PCM — Concept of DM & ADM — DPCM

REFERENCE BOOKS

1. Electronic Communication by G. Kennedy
2. Principle of Communication by Taub & Schilling
3. Modern Electronic Communication by A. Sharma & R.K. Sinha.

VB LAB

DIT303-P

Visual Basic Practical Topic

1. Designing User Interface using- List Box, Combo Box, Image and Picture Box, Directory-File-Drive list boxes, Rich text box, etc
2. Creating Menus- Creating Menus and writing Codes, Linking Menus with SDI
3. forms, Creating toolbox and access it for loading and working forms.
4. Database Connectivity using Controls - Designing user interface with forms
5. and controls and create database connectivity by DAO and ADO Control.
6. Database connectivity using Object models - Creating Database connectivity by DAO Object model and Connectivity Using ADO Object model by OLE DB as well as ADODC connectivity.
7. Creating Reports - Create reports using Data Report in VB and also using Crystal report.
8. Package and deployment Wizard - Package, Deploy and Scripting

FORTH SEMESTER (SECOND YEAR)

DATABASE MANAGEMENT SYSTEMS

DIT401

UNIT – I

Introduction: Characteristics of database approach, data models, DBMS architecture and data independence.

UNIT – II

E-R Modeling: Entity types, entity set, attribute and key, relationships, relation types, roles and structural constraints, weak entities, enhanced E-R and object modeling, Sub Classes: Super classes, inheritance, specialization and generalization.

UNIT – III

File Organization: Indexed sequential access files, implementation using B++ trees, hashing, hashing functions, collision resolution, extendible hashing, dynamic hashing approach-implementation and performance.

UNIT – IV

Relational Data Model: Relational model concepts, relational constraints, relational algebra. SQL: SQL queries, programming using SQL EER and ER to relational Mapping: Data base design using EER to relational language.

UNIT – V

Data Normalization: Functional dependencies, Normal form up to 3rd normal form. Concurrency Control: Transaction processing, locking techniques and associated, database recovery, security and authorization.

Recovery Techniques, Database Security

Reference Books:

1. *R. Elmarsi and SB Navathe, "Fundamentals of Database Systems", Addison Wesley, 4th Ed., 2004*
2. *Abraham Silberschatz, Henry Korth, S. Sudarshan, "Database Systems Concepts", 4th Edition, McGraw Hill, 1997.*
3. *Jim Melton, Alan Simon, "Understanding the new SQL: A complete Guide", Morgan Kaufmann Publishers, 1993. A. K. Majumdar, P. Battacharya, "Data Base Management Systems', TMH, 1996.*
4. *Bipin Desai, "An Introduction to database Systems", Galgotia Publications, 1991.*

DATA COMMUNICATION

DIT402

UNIT- I

Communication Devices :- Digital Data Transmission-DTE-DCE-Interface-Other Interface Standards-Modem- Different Types Hub Repeaters Switches Routers Comparison NIC - Multilayer Devices.

UNIT- II

Error Detection and Correction: - Errors Types Detection - Redundancy Check Vertical Horizontal Cyclic Checksum Correction - Humming Code - Burst. Wireless Devices and Wired Devices: - Cables for Communication - CAT 5 UTP - BNC, Optic Transmission and Reception. Different Transmission Modes.

UNIT-III

Data Link Control - Line Discipline - ENQ/ACK - Poll/Select - Flow Control - Stop and Wait - Sliding Window - Error Control ARQ - Different Types. Data Link Protocols - Asynchronous and Synchronous Protocols Frames - Character Oriented - Bit Oriented HDLC - Link Access Procedures.

UNIT-IV

Switching Packet Circuit - Message. Approaches. Frame Relay: - Introduction-Layers - Congestion Control -Traffic Control - Other Features.

UNIT-V

Upper OSI Layers Session - Session and Transport Interaction Synchronization SPDU Presentation Translation - Encryption and Decryptions Authentication - Data Compression Application MHS FTAM VT DS – CMIP.

Reference Books:

1. *Data Communication and Networking By Behrouz A. Forouzan.*
2. *Data & Computer Communications , William Stallings*
3. *Electronic Communication Systems , Kennedy and Davis*
4. *Principles of Communication Systems, Taub and Schilling*

COMPUTER NETWORK &INTERNET

DIT403

UNIT- I

Use of computer networks: Hardware – LAN, MAN, WAN, Wireless network Internet works, Software – Protocol Hierarchies, Design issues for the layers, Interfaces, & Services, Connection Oriented and connectionless Services, Service primitives, Relationship of services to protocol. Reference models – OSI, TCP/IP, Comparison, Example networks- Novell Netware, Arpanet, Internet, Network topologies.

UNIT- II

Transmission media: Magnetic media, twisted pair Base band, broadband and fiber optic cables, Data link Layer, Design issues, Services Framing, Error and flow control. Error detection and correction, Elementary protocols, Unrestricted, Simplex stop and wait, Protocols, Unrestricted, Simplex stop and wait, Protocol for noisy channel.

UNIT- III

Static and dynamic channel allocations of LANS and MANS, ALOHA,CSMA and Collision free protocols, Network layer, design issued, Services, Internal organization, Virtual Circuits and datagram subnets, Routing algorithms, Optimality, Shortest path, Inter networking, Different networks, Concatenated virtual circuits, connectionless internet working Tunneling, Internet work routine, Fragmentation, Fire walls.

UNIT- IV

Transport layer: Services, Quality of Service, service primitives, Elements of protocols, Addressing, Establishing and releasing connections, flow control, buffering, multiplexing, Crash recovery, Performance issues, performance problems, measuring improving etc, Fast TPDU processing, protocols for gigabit networking.

UNIT- V

Application layer: Name space, domain name system resolution, remote logging, electronic mail, File transfer and HTTP.

Reference Books:

Computer Networks, Andrew S. Tanenbaum
Computer Network, Uyless Black, PHL.
Data Communications and Networking, Behrouz A. Ferguzan.
Data and Computer communications, William Stalling, Pearson Education

COMPUTER ARCHITECTURE AND MAINTENANCE

DIT404

UNIT-I

Functional units of a computer, basic operational concepts, bus structures.
Addressing methods: Memory location and addresses, instructions and instruction sequencing, instruction execution, addressing modes.

UNIT-II

The processing unit: General register organization, stack organization, instruction formats, instruction classifications.
Main memory: organization of RAM and ROM, auxiliary memory, cache memory, virtual memory.

UNIT-III

Introduction to parallel processing: Evolution parallelism in unprocessed systems, parallel processing Mechanisms.

UNIT-IV

Parallel computer structures: Pipeline computers array processors, multiprocessing systems, architectural classification Scheme SISD, SIMD, MISD, MIMD

UNIT-V

Pipelining and vector processing: Principles, classification of Pipeline processors- instruction and arithmetic pipelines: designs.

Reference Books:

1. Computer System Architecture, M. Moris Mano
2. Computer architecture and parallel processing by Kai Hwang Feue A Briggs.

INDUSTRIAL MANAGEMENT

DIT405

UNIT-I INTRODUCTION TO MANAGEMENT SCIENCE

Principles & functions of management — Contributions of F.W. Taylor, Henry Fayol, Max Weber and Elton Mayo & Roethlisburger in development of the theories of management science.

UNIT-II ORGANISATIONAL BEHAVIOUR

Objectives — Brief introduction to: Motivation & Morale – Perception – Leadership & Leadership Styles –

Communication – Team Building – Work Culture.

UNIT-III HUMAN RESOURCES MANAGEMENT

Scope & Functions – Human Resources Planning – Selection & Recruitment – Training & Development –

Performance Appraisal – Industrial Safety.

UNIT-IV PRODUCTION MANAGEMENT

PRODUCTION PLANNING: Routing – Loading – Scheduling — PRODUCTION CONTROL: Expediting – Dispatching — Materials Handling — Work Study — Productivity — QUALITY MANAGEMENT: Tools & Techniques – Quality Management System.

UNIT-V MATERIALS MANAGEMENT

OBJECTIVES & FUNCTIONS: Purchase function – Stores function — INVENTORY MANAGEMENT: ABC, VED analyses.

Reference Books :

1. *Essentials of Management / Kontz / McGraw-Hill of India*
2. *Organization & Behaviour / M. Banerjee / Allied Publishers*
3. *Human Behaviour at Work: Organizational Behaviour / Keith Davis & Newstrom / McGraw-Hill of India*
4. *Human Resources Management / Mirza Saiyatain / Tata McGraw-Hill*
5. *Production Management & Control / Nikhil Bharat / U.N. Dhar & Co.*
6. *Production Management / Keith Lockyer / ELBS*
7. *Marketing Management / Philip Kolter / Prentice Hall of India*
8. *Lectures on Management Accounting / Dr. B.K. Basu / Basusri Bookstall, Kolkata*

COMPUTER MAINTENANCE LAB

DIT404-P

CMOS setup of Pentium.

Hard Disk Partitioning.

Study of HDD: Identify various components of HDD and write their functions.

Study and installation of any one display cards: VGA or SVGA display cards.

Installation of Scanner, Printers and Modems.

Study of SMPS (ATX)

Study of Diagnostic Softwares. (Any one)

Fault findings:

(a) Problems related to monitor.
(b) Problems related to CPU.

Assembling of PC and Installation of Operating System.

Configuration of Client and Server PC, Laptop and Network components.

RS232C communication between two computers.

RDBMS LAB WITH SQL COMMAND USING ORACLE

DIT406-P

SQL Commands:

1. Data definition commands - CREATE, ALTER, DROP, Adding Constraints -Primary key, foreign key, unique key, check, not null.
2. Basic SQL queries - INSERT, SELECT, DELETE, UPDATE, Using multiple tables, ordering of rows using ORDER BY option, Set operations using UNION, EXCEPT, INTERSECT, Substring Comparison using LIKE operator, BETWEEN operator.
3. Complex Queries -Nested Queries, EXISTS and UNIQUE/DISTICNT functions, NULL values, Renaming of attributes and Joining of tables, Aggregate functions and grouping.
4. Managing views, Simple stored procedures.
5. Data Control commands - Access Control and Privilege commands.

FIFTH SEMESTER (THIRD YEAR)

COMPUTER AIDED OPTIMIZATION TECHNIQUES

DIT501

UNIT – I

Linear Programming: Mathematical formulation, Graphical methods of solution, general properties, Simplex method, Duality, dual simplex, post-optimality analysis.

UNIT – II

Transportation and Assignment Problems: Transportation and transshipment problems, assignment problems, sample programs.

UNIT – III

Network analysis, CPM and PERT: Shorter route problem, maximal flow problem, project scheduling, critical path calculations, PERT calculations, Sample programs.

UNIT – IV

Inventory models: Deterministic inventory models, infinite delivery rate with no backorders, infinite delivery rate with back orders, finite delivery rate with back orders.Introduction to probabilistic inventory models, sample programs.

UNIT – V

Sequencing models: Processing of n jobs through m2 machines, n jobs through 3 machines, 2 jobs through m machines, maintenance crew scheduling.

Reference Books :

Operations Research Kanti Swarup, P.K. Gupta, Man Mohan (Sultan Chand & Sons)
Operations Research: An Introduction Hamdy A. Taha (Prentice Hall of India)
Introduction to Operations Research:Computer oriented Algorithmic (Mc Graw Hill 1976)

SYSTEM ANALYSIS &DESIGN

DIT502

UNIT-I

Introduction to system, Definition and characteristics of a system, Elements of system, Types of system, System development life cycle, Role of system analyst, Analyst/user interface, System planning and initial investigation: Introduction, Bases for planning in system analysis, Sources of project requests, Initial investigation, Fact finding, Information gathering, information gathering tools, Fact analysis, Determination of feasibility.

UNIT-II

Structured analysis, Tools of structured analysis: DFD, Data dictionary, Flow charts, Gantt charts, decision tree, decision table, structured English, Pros and cons of each tool.

UNIT-III

Feasibility study: Introduction, Objective, Types, Steps in feasibility analysis, Feasibility report, Oral presentation, Cost and benefit analysis: Identification of costs and benefits, classification of costs and benefits, Methods of determining costs and benefits, Interpret results of analysis and take final action.

UNIT-IV

System Design: System design objective, Logical and physical design, Design Methodologies, structured design, Form-Driven methodology(IPO charts), structured walkthrough, Input/Output and form design: Input design, Objectives of input design, Output design, Objectives of output design, Form design, Classification of forms, requirements of form design, Types of forms, Layout considerations, Form control.

UNIT-V

System testing: Introduction, Objectives of testing, Test plan, testing techniques/Types of system tests, Quality assurance goals in system life cycle, System implementation, Process of implementation, System evaluation, System maintenance and its types, System documentation, Forms of documentation.

Reference Books:

1. Systems Analysis and design BY e.m. aWAD Galgotia Pub.(P) Ltd.
2. Data Management and Data Structures by Loomis (PHI)
3. System Analysis and Design by Elias Awad.
4. Introductory System analysis and Design by Lee Vol. I & II

JAVA PROGRAMMING

DIT503

UNIT-I

Introduction to Internet – Definitions, Advantages, Browsers, Brief overview of server, URL definition, Introduction to WWW, uses, multimedia capabilities of www, commercial uses, client server architecture in internet, domain name, extension types, Internet services, features, Introduction to HTML, list, creating table, linking document, feature, font, colour and background colour, adding pictures to HTML documents.

UNIT-II

Object Oriented Fundamental and Java Revolution – OOP, Encapsulation, Inheritance, polymorphism, Java Genesis, characteristics, how java different from c and C++, java and Internet, Java and WWW, Web browsers, overview of java, simple java programmes, structure, tokens, statements, JVM, operator precedence.

UNIT-III

Constants, variables, data types, operators and expressions, decision making and branching, if, if…else, nested if, switch, ?: operator, decision making and looping, while, do, for, jumps in loops, labeled loops, classes, objects and methods.

UNIT-IV

Arrays, strings and vectors, constructors, Interfaces, multiple inheritance, packages, putting classes together, multithreaded programming, managing errors and exceptions, applet programming, graphics programming.

UNIT-V

Managing input/output files in java, concepts of streams, stream classes, byte stream classes, character stream classes, using streams, I/O classes, file classes, I/O exceptions, creation of files, reading/writing characters, byte handling primitives, data types, random access files, JDBC (Java Database Connectivity), overview, implementation.

Text Book:

1. Programming with Java-APrimer, E. Balaguruswamy
2. Internet Complete Reference, Harley Hahm.

LINUX AND PHP

DIT504

UNIT – I

Overview of Linux, features, advantages, Booting process, kernel, simple commands-ls,cd, pwd, cp, mv, rm, rmdir, date-file permissions chmod- Editing files using vi editor, shell variables-shell types-filters pr, head, tail, cut, paste, sort, grep, pipe, tee-Communication &Scheduling commands- mail, wall, write, talk, at, cron, crontab.

UNIT – II

Shell Programming-control structures, operators, simple shell programs.

UNIT – III

System Administration-creating and deleting users-mounting file systems-mount, umount-changing passwords-passwd-network administration netstat, ping, ifconfig, traceroute-remote login-telnet, ssh, file transfer-ftp. process related commands- ps, killarchiving-tar, gzip, Installation of packages using rpm command-Understanding variousservers-DHCP,DNS, Apache, squid.

UNIT – IV

Introduction to PHP- Advantages features-PHP syntax-variables-PHP tags and styles -data types, variables, operators-type casting- array operators-control structures-arrayssorting arrays-file functions-string functions-functions in PHP.

UNIT – V

Object Oriented Concepts in PHP classes, objects, inheritance, overloading and overriding interfaces-exception handling techniques.

Reference Books:

1. *Linux (Fedora) Bible , Christopher Negus, Wiley India Edition , 2007.*
2. *Linux Administration A beginners guide 2nd Edition.*
3. *Beginning PHP5,Apache,MYSQL, web development Wrox publication .*

INTERNET, WEB DESIGNING AND CYBER LAWS

DIT505

UNIT – I

Internet – Introduction, Basic Communication, Local Area Network, Packet Switching, Internet: A Network of Networks, ISPs and Network Connections, IP Address, Transaction Control Protocol (TCP), Domain Names.

UNIT – II

Internet Services: Electronic Mail, Bulletin Board Services (Network News), Browsing the World Wide Web, Automated Web Search (Search Engines), Audio and Video Communication, Faxes and Files (FTP), Remote Login.

UNIT – III

Facilities for Secure Communication, Electronic Commerce and Business.

UNIT – I V

Web Programming – Introduction to HTML, Creating Web Pages, Formatting Tags, Font, Lists, Table, Form, Marquee, Frame Tags, Creation of simple websites.

UNIT – V

Cyber Crimes- Computer Crime, Nature of Crimes, Penalty for damage to computer, Computer system, Tampering with Computer source documents, Hacking, Computer related offences, Theft, The Language of Cyber space.

Text Books:

1. *"The Internet", Douglas. E. Comer, Prentice hall of India – Third Edition*
2. *HTML Black Book.*
3. *" Cyber Law Crimes ", Barkhs and U. Rama Mohan, Asia Law House, New Edition References.*
4. *"Internet Complete References , Harley Hahn.*

LINUX PROGRAMMING (LAB)

DIT504-P

1. Introduction to Linux Booting ,login-simple commands.

2. Bash- wild card characters grep-pipe-tee- command substitutions Shell variables subshells export filters pr, head, tail ,cut, paste, sort,uniq, nl.grep,tr,join,-editors vi and emacs- Communication and scheduling commands mail ,talk, write, wall, at, cron process related commands- ps, kill, nohup, nice, time archieving tar gzip rpm.

3. Shell programming shell variables , read, echo, command line arguments && ,||,if, while case, for, until, test, set, shift , trape.

4. System administration booting ,init,runlevels ,creating users and groups , system databases password ,group ,shadow,init tab ,inetd.conf-startup scripts shutdown mount fsck network administration net stat, ping , traceroute, ifconfig telnet and ftp.

5. X-windows systems concepts ,window managers ,KDE and GNOME setting up servers DHCP DNS NFS-proxy- apache samba.

PROJECT IN JAVA LAB

DIT506-P

Students will work and prepare a small Project in Java

SIXTH SEMESTER (THIRD YEAR)

PARALLEL PROCESSING

DIT601

UNIT – I

Introduction to parallel processing: Parallelism in uniprocessor systems, parallel computer structures, Architectural classification schemes (Flynn s, Feng s and handler s), parallel processing applications.

UNIT – II

Pipelining and vector processing: Linear pipelining, classification of pipeline processors, Instruction and arithmetic pipelines, principles of designing pipelined processors, characteristics of vector processing.

UNIT – III

Structures and algorithms for Array processors: SIMD array processors, SIMD interconnection networks, parallel algorithms for array processors.

UNIT – IV

Multiprocessor architecture and programming: functional structures of multiprocessor systems, interconnection networks, multiprocessor operating systems, interprocessor communication mechanisms.

UNIT – V

Dataflow computers: Distinction between control flow and data flow computers, data flow graphs and languages, advantages and disadvantages of dataflow computers, dataflow computer architectures.

Reference Books

Computer Architecture and parallel processing-Kai Hwang and F A Briggs.
Introduction to Computer Architecture-Stone H S(Galgotia publishers)
The Architecture of pipelined computers-Koggi H(Mc Graw Hill)

COMPUTER GRAPHICS AND MULTIMEDIA

DIT602

UNIT-I

Overview of Graphics System: display devices, raster scan systems, random scan systems, input devices, graphics software.Output Primitives: points and lines, line drawing algorithms, DDA, Bresenhams line algorithm, circle generating algorithms, Bresenhams, Mid-point, Filled area primitives.

UNIT-II

Attributes of Output Primitives: Line, Curve, Area fill, Character text, Marker Antialiasing. 2D Transformations: Basic transformations, Matrix representations and Homogeneous co-ordinates, Composite transformations, Reflection, Shear. 2D Viewing: viewing pipeline, window to viewport co-ordinate transformations, clipping operations, point, line-Cohen Sutherlands, polygon clipping-Hodgemans, Weilor-Atherton, curve,text.

UNIT-III

Structures: concepts, basic modeling concepts, interactive graphics, logical classification of input devices, input functions, interactive picture construction techniques. 3D Concepts: Introduction to 3D graphics, display methods, 3D representations-polygon surfaces.

UNIT-IV

Definition of Multimedia ; Applications, Hardware and Software requirements for creating multimedia ; Building blocks of multimedia text, graphics(image), video, audio, animation ; Different types of animation ; Brief overview of stages in execution of multimedia project pre production, production and post production phases.

UNIT-V

What is Compression ; Lossy and Lossless compression ; Compression techniques RLE in text and image, LZW, Huffman s Coding, GIF, JPEG, MPEG, Fractal, Wavelet ; Image Filetypes; Advanced Multimedia Virtual Reality, Augmented Reality, Video Conferencing, Morphing, voIP, Video on Demand .

Reference Books:

1. Computer Graphics Hearn & Baker-Pearson Prentice Hall, 2005.
2. Multimedia.

ENVIRONMENTAL SCIENCE

DIT603

Unit I

Ecosystems and how they work: Types of Eco-Systems, Geo-sphere – Biosphere and Hydrosphere introduction. Major issues of Biodiversity, Conservation of Bio-Diversity

Concept of sustainability and international efforts for environmental protection: Concept of Sustainable Development, Emergence of Environmental Issues, Stockholm Conference on Environment, 1972 and Agenda 21. International Protocols, WTO, Kyoto Protocol, International Agreement on Environmental Management.

Unit II

Pollution and Public Policy: Water Pollution: Water Resources of India, Hydrological Cycle, Methods of Water Conservation and Management, River Action Plan, Ground and Surface Water Pollution; Waste Water Management.

Air Pollution: Air Pollution and Air Pollutants, Sources of Air Pollution and its Effect on Human Health and Vegetations.

Green House Effect, Global Warming and Climate Change.

Solid Waste: Management – and Various Method Used, Composting, Land Fill Sites etc. Hazardous Waste Management, Biomedical Waste Management.

Unit III

Environmental Impact Assessment (EIA) and Environmental Management System (EMS): Introduction to EIA, its Impact, Notification of MOEF, Introduction to ISO 9000 and 14000 Standards,

Introduction to Indian Environmental laws: Legal framework: , the Indian Penal Code, Role of Judiciary in Environmental Protection, Wild Life (Protection) Act, 1972, Water (Prevention and Control of Pollution) Act, 1974, Environment (Protection) Act, 1986, Air (Prevention & Control of Pollution) Act, 1981, Delhi Environment Law.

UNIT IV Hours 6 Field work / Case Studies: Visit to a related site – river / urban / rural or industrial and demonstration project including water bodies.

Reference Books

1. Basat, A., (2008), Environment Studies, Pearson Education.
2. Nath, Manju, (2008), Environment Studies, Pearson Education.
3. Sayre, Don., Inside ISO 14000- The Competitive Advantage of Environmental Management, St Lucie Press Delray Beach, Florida
4. Gupta N.C., (2006), Social Auditing of Environmental Law in India, edited book, New Century Publications.
5. Divan, Shyam and Rosen Ceranz, Armin, (2007), Environmental Law and Policy in India, Cases, materials and statutes, Oxford University Press.
6. Bowles, Ian A. and Glenn T. Prickett,(2001), Footprints in the Jungle: Natural Resource Industries, Infrastructure and Biodiversity Conservation, Oxford University Press.

ELECTIVE A- DATA MINING

DIT604A

UNIT- I

Introduction Data Mining, Data Ware House, Transactional Databases, Data Mining Functionalities Characterization and Discrimination, Mining frequent patterns, Association and correlation, Classification and Prediction, Cluster Analysis, Classification of Data Mining Systems, Data Mining Task Primitive, Integration of Data Mining systems, Major issues in Data Mining, Data integration and transformation, Data reduction, Data discretization.

UNIT- II

Data Warehouse and OLAP technology Data Warehouse, Multidimensional data Model, Data warehouse architecture, Data Warehouse implementation,OLAP, Data Warehouse and data mining.

UNIT- III

Association Rules and Classification Concepts Efficient and Scalable Frequent item set Mining methods, Mining various kind of association rules, from association mining to Co-relation analysis, Classification and prediction, Issues, Classification by Decision tree induction, Bayesian Classification, Rule-based classification, Support Vector Machines, Learning from your neighbors, Prediction.

UNIT- IV

Cluster Analysis Definition, Types of data in cluster analysis, A categorization major Clustering methods- Partitioning methods, K-means K- medoids, from k-medoids to CLARANS, Hierarchical methods, Density based methods.

UNIT- V

Mining Complex Data Spatial Data Mining, Multimedia Data Mining, Text Mining and Mining WWW.

Reference Books:

1. Jiawei Han and Micheline Kamber Data Mining - Concepts and Techniques (Second Edition) Elsevier, 2006

2. Witten and Frank Data Mining Practical Machine Learning Tools and Techniques (Second Edition) Elsevier, 2005

3. Soman, Divakar and AjayData Mining Theory and Practice PHI, 2006

ELECTIVE-B : CLIENT SERVER COMPUTING

DIT604B

UNIT- I

Overview of C/S Computing: Definition, Benefits & Evolution, Hardware & Software, Trends, Evolution of operating systems, networking trends. Overview of C/S applications: components, classes, categories. Overview of C/S computing: Dispelling the Myths, Obstacles- Upfront and hidden, open systems and standards, Standards setting organizations, factors of success.

UNIT- II

Client hardware and software: Client components and operating systems. GUI, Xwindow vs.windowing, database access. Application logic client software products: GUI environments, converting 3280/5250 screens, database access tools. Client requirements: GUI design standards, Open GUI standards, Interface dependents, testing interfaces, development aides.

UNIT- III

Server hardware: Benchmarks, categories of servers, features and classes of server machines. Server Environment: eight layers of software s, network management and computing environments, extensions, network operating systems, loadable modules. Server operating systems: OS/2, Windows new technology, UNIX based operating systems.

UNIT- IV

Server Requirements : Platform independence, transaction processing, connectivity, intelligent database, stored procedures, Triggers, Load Leveling, Optimizer, testing and diagnostics tools, real ability backup and recovery mechanisms. Server data management and access tools: Data manager features, data management software, database gateways. LAN hardware and software, Network Operating Systems.

Reference Books:

1. *Dawna Travis Dewire , Client Server Computing, McGraw Hill International*
2. *Tanenbaum and Van Steen, Distributed Systems Principles and Paradigams, Pearson Education, 2005*
3. *Orfali,Harkey and Edwards, The Essential Client server Survival guide, 2nd edition Galgotia, 2003*
4. *Jeffrey.D.Schan, C/S Application and Architecture, Novell Press, BPB*
5. *Joe Salami, Guide to C/S Databases, Bpb Publn., 1994*
6. *David Vaskevitch , Client Server Strategies, Galgotia, 1994.*

PROJECT WORK/VIVA

DIT605-P

The project topic shall be chosen from areas of current day interest using latest packages/ languages running on appropriate platforms, so that the student can be trained to meet the requirements of the Industry. A bonafied project report shall be submitted in hard bound complete in all aspects. For internal evaluation, the progress of the student shall be systematically assessed through two or three stages of evaluation at periodic intervals.

In Course Viva, the student is to be assessed on ,the basis of his knowledge in all the subjects taught in the curriculum as well as topics of current day interest in the pertinent areas.