SYLLABUS

BACHELOR OF SCIENCE

INFORMATION TECHNOLOGY

JODHPUR NATIONAL UNIVERSITY

JODHPUR

Bachelor of Science INFORMATION TECHNOLOGY

YEAR I

Paper I	**General Hindi**
Paper II	**General English**
Paper III	**Introduction to Information Technology**
Paper IV	**Basic Mathematics**
Paper V	**Problem Solving through C Programming**
Paper VI	**Computer Organization & Architecture**
Paper VII	**Introductions to Data Base System**
Paper VIII	**Computers Oriented Statistical Methods**

YEAR II

Paper I	**Client Server Technologies**
Paper II	**Fundamentals of Operating Systems**
Paper III	**Web Technology I**
Paper IV	**Business Organization and Management**
Paper V	**Programming in Java**
Paper VI	**Visual Programming and Programming in Visual Basic**

YEAR III

Paper I	**System Analysis & Design**
Paper II	**Web Technology II**
Paper III	**Multimedia Tools and Applications**
Paper IV	**Visual Basic Programming**
Paper V	**Mathematical Foundation of Information Technology**
Paper VI	**Advanced Internet Applications Development and Current Issues in IT**
Paper VII	**Industry Based Environmental Studies**

Year I

पेपर I सामा य ह द

(अ भाग)

ग एवं प संकलन क व वधवधाएं मशः

1. एक या याओं स बंधित मशः
2. डॉ॰ प रचया मक पा यपु तकसे

(ब भाग)

1. श दशु
2. वा यशु
3. पा रभा षक शब्दावली(अं `जीश दके ह समानाथ कश द)
4. सं `पण
5. प लवन
6. वा यांशके लिये साथ कश द
7. ा प
8. श दशु म अथ-भेद
9. निबंध

ग -संकलन

1. ामो थाननानाजी देशमुख ,द नदयाल शोध सं थानचि कूट

2. पया वरणऔर सनातन छगन मेहता ,सं ांतिऔर सनातनता ,संकलन से वागदेवी काशनबीकानेर

3. ठठुरताहुआ गणतं) यं य(ह रशंकरपरसा ,तिरछ रेखाएं ,वाणी काशन द ली

4. लछमा रेखाचि (महादेवी वमा ,अतीत के चलचि ,वाणी काशन द ली

5. अ का उड़ान प र छेद

6. ए .पी .जे .अ दुल कलाम भात काशन,नई द ली

7. भेड़ाघाट :माब लरॅा सौरधुँआधार - अमृत लाल बेगड़ ,अमृत यनम दा ,थ म य देशअकादमी ,भोपाल ,म य देश

8. आवाज का नीलाम) एकांक (धम वीभारती ग - भा- डॉ .नवल कशोर,पंचशील काशन,जयपुर

9. ावचेती वजयदान देथा ,आउटलुक प का.10.05

10. ह दभाषा और उसक वरासत: डॉ . व ानिवासमि , ह दसा ह यका पुनरावलोकन , व निवास मि , भा काशन, द ली

11.सुसंग-कुसंग -सीताराम मह ष,कृ णकुट रतनगढ़ ,चु) राज.

12. ये ह ोफ़ेसरशशांक - डॉ . व णुकांत शा ी - मरणको पाथेय बनने दो 'सं ह, लोक भारती ,इलाहाबाद)) उ .)

13.तुलसी के का यमें कुराज और सुराज -' ासूय साद द ,सा ह यकु ,54 निराला नगर ,लखनऊ) उ .

प संकलन

1. गंगावतरण ,भारत दुह र ' भारत दुसम 'संपादक ,हेमंत शमा ह द काशन सं थान,वाराणसी)

2. गोवध नधारण ,ह रऔध य वास'महाका य ह दसा ह कुट र,वाराणसी उ .)

3. भारत वंदना ,मैथिली शरण गु ’ मंगल घट ‘का य थमा ह)यनीला बर प रधान्सदन ,चिरगाँव ,झाँसी
4. समर शेष है ,रामधार सिंह दनकर ,परशुराम क ती ‘ा से ,राजपाल एंड स स, द ली
5. वीर का कैसा हो बसंत ,सुभ कुमार चौहान’ ,सुभ कुमार चौहान ‘संपादक सुधा चौहान सा ह अकादमी ,नई द ली
6. चल पड़े जधरदो डग ,सोहन लाल वेदरा ीयगीत सं ह‘सा ह अकादमी , नई द ली
7. मदयाकृ ण वजय मधरा ‘अच ना काशन,अजमेर
8. भारती क साधना ,इ दुशेखर त पु ’ष हमारा कोण मा रक76/70 ‘ मानसरोवर ,जयपुर ,राज.

Paper II GENERAL ENGLISH

1. Comprehension and vocabulary
2. Composition
A. Letter/application writing
B. Paragraph writing/ precis writing
C. Report writing
3. Translation
A. Elements of a sentence
B. Transformation of sentence
C. Modals
D. Tense usage
E. Determiners
F. Common errors in English
G. Phrasal verbs

Books recommended

1. A.J. Thomson and : A Practical English Grammar
A.V. Martinet (Oxford Paper Back)

2. S.Pit Corder : Intermediate English Practice Book (OrientLongman)
3. Bhaskaran and : Strengthen Your EnglishHordburgh (OUP 1973)
4. T.l.h. Smith – Pearce : The English Errors Of Indian Students (OUP)
5. I.K. Sharma and : A Practical Course of English (Ramesh Book V.D. Singh Depot, Jaipur)

Paper III Introduction to Information Technology

Unit I

Computer Basics: Algorithms, A Simple Model of a Computer, Characteristics of Computers, Problem-solving Using Computers.
Data Representation: Representation of Characters in computers, Representation of Integers, Representation of Fractions, Hexadecimal Representation of Numbers, Decimal to Binary Conversion, Error-detecting codes. Input & Output Devices: Description of Computer Input Units, Other Input Methods, Computer Output Units.

Unit II

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. Processor: Structure of Instructions, Description of a Processor, A Machine Language Program, An Algorithm to Simulate the Hypothetical computer.

Unit III

Binary Arithmetic: Binary Addition, Binary Subtraction, Signed Numbers, Two's Complement Representation of Numbers, Addition/Subtraction of Numbers in 2's Complement Notation, Binary Multiplication, Binary Division, Floating Point Representation of Numbers, Arithmetic Operations with Normalized Floating Point Numbers.
Computer Architecture: Interconnection of Units, Processor to Memory communication, I/O to Processor Communication, Interrupt Structures, Multiprogramming, Processor Features, Reduced Instruction , Set Computers (RISC), Virtual Memory.

Unit IV

Software Concepts: Types of Software, Programming Languages, Software(Its Nature & Qualities), Programming Languages. Operating Systems: History & Evolution, A Brief History of Linux, A Brief History of MS-DOS, A Brief History of Windows System.

Unit V

Computer Generation & Classifications:First Generation of Computers, The Second Generation, The Third Generation, The Fourth Generation, The Fifth Generation, Moore's Law, Classification of computers, Distributed Computer System, parallel computers.

Internet: Network, Client and Servers, Host & Terminals, TCP/IP, World Wide Web, Hypertext, Uniform Resource Locator, Web Browsers, IP Address, Domain Name, Internet Services Providers, Internet Security, Internet Requirements, Web Search Engine, Net Surfing, Internet

Suggested Books

1. P.K.Sinha "Introduction to Information Technology",
2. V. Rajaraman, Fundamentals of Computers, 3rd Edition, PHI Publications
3. Nasib S. Gill, Essentials of Computer & Network Technology, Khanna Publications.
5.Deepak Bharihoke, Fundamentals of Information Technology, Excel Books.

Paper IV Basic Mathematics

Unit I

SETS: Sets, subsets, equal sets, null set, universal set, finite & infinite sets, open & closed sets etc., operations on sets, partition of sets, Cartesian product.

RELATIONS AND FUNCTIONS: relation, properties of relations, equivalence relation, equivalence relation with partition, partial order relation, maximal and minimal points, glb, lub, chains and anti-chains, pigeonhole principle. Function, domain & range, onto, into and one-to-one functions, composite functions, inverse functions, introduction of algebraic, trigonometrically, logarithmic, exponential, hyperbolic functions, zeroes of functions.

Unit II

DIFFERENTIATION: Derivative, derivatives of sum, differences, product & quotients, chain rule, derivatives of composite functions, logarithmic differentiation, Role's theorem, mean value theorem, expansion of functions (Maclaurin's & Taylor's.), indeterminate forms, L'Hospitals rule, maxima & minima, concavity, asymptote, singular points, curve tracing, successive differentiation & Leibnitz theorem.

Unit III

INTEGRATION: [TF – (4.1-)], [SNI – ()] Integral as limit of a sum, Riemann sum, fundamental theorem of calculus, indefinite & definite integrals, methods of

integration substitution, by parts, partial fractions, integration of algebraic and transcendental functions, reduction formulae for trigonometric functions, Gamma and Beta functions.

Unit IV

PLANE CURVES & POLAR COORDINATES: Polar coordinates, curve tracing in polar coordinates, area in polar coordinates, Arc length,area & volume of surface of revolution in Cartesian and polar coordinates.

Unit V

FUNCTIONS OF SEVERAL VARIABLES: Limits & continuity, partial differentiation, chain rule, Euler's theorem, Maxima & Minima, Lagrange's method of undetermined multipliers, Taylor's formula for functions of two variables.

Suggested Books

1. C. L. Liu.: Elements of Discrete Mathematics, Tata Mac-Graw Hill.
2. Thomas, G.B. and R. L. Finney: Calculus & Analytical Geometry, Addison-Wesley , 9^{th} edition.
3. Chandrika Prasad : Mathematics for Engineers, Prasad Mudranalaya, Allahabad, 19^{th} edition
4. Shanti Narayan: Differential Calculus, S.Chand & Co.
5. Shanti Narayan: Integral Calculus, S.Chand & Co.

Paper V Problem Solving through C Programming

Unit I

Algorithm and algorithm development: Definition and properties of algorithm, flow chart symbols, conversion of flow chart to language, example of simple algorithms. Program design, errors: syntax error, runtime error, logic error, debugging, program verification, testing, documentation and maintenance. Introduction to C: Variables and arithmetic expressions, the statement, symbolic constants, character input and output, arrays, functions, arguments- call by value, character arrays, external variables and scope. Types, Operators and Expressions: Variable names, data type and sizes, constants, declarations, arithmetic operators, relational and logical operators, type conversions, increment and decrement operators, bitwise operators, assignment operators and expressions, conditional expressions, precedence and order of evaluation.

UNIT- II

Control Flow: Statements and blocks, if-else, else-if, switch, loops- while and for, loops- do-while, break and continue, go-to and labels.

Functions and Program Structure: Basics of function, functions returning non-integers, external variables, scope rules, header files, static variables, register variables, block structure, initialization, recursion, the C preprocessor.

UNIT - III

Pointer and Arrays: Pointers and addresses, pointers and function arguments, pointers and arrays, address arithmetic. Character pointers and functions, pointer arrays: pointers to pointers, multi- dimensional arrays, pointers vs. multi-dimensional arrays. Pointers to functions. Complicated declarations.

UNIT - IV

Structures: Basics of structures, structures and functions, arrays of structures, pointers to
structures, self-referential structures, table look up, type-def, unions, bit-fields.

UNIT - V

Input and Output: Standard input and output. Formatted output- print f, variable length argument lists. Formatted input- scan, file access, error handling - stderr and exit, line input and output, miscellaneous functions.

Suggested Books

1.Deendayalu R., Computer science Volume I and II, Second Edition,Tata McGraw-Hill Publishing Company Limited, New Delhi.
2.Rajaraman V., Fundamentals of computers, Second Edition, Prentice Hall of India Private Limited, New Delhi.
3.Kernighan B.W. and Ritchie D.M., The C Programming Language, Prentice Hall of India Private Limited New Delhi.
4.Drogmey R., How to solve it by computers. Prentice Hall of India Private Limited, New Delhi.

Paper VI Computer Organization & Architecture

UNIT- I

Basic Computer Organization: Instruction codes, direct and indirect address, timing and control signal generation, instruction cycle, memory reference instructions, input output instructions. Register Transfer and Micro Operations:

Bus and memory transfers, three state bus buffers, binary adder, binary incrementer, arithmetic circuit, and logic and shift micro operations, ALU.

UNIT- II
Central Processing Unit: General register organization, memory stack, one address, two address instructions, data transfer, arithmetic, logical and shift instructions, software and hardware interrupts (only brief introduction), arithmetic and instruction pipelines.

UNIT- III
Computer Arithmetic: Addition and subtraction with signed magnitude data, multiplication algorithms, hardware algorithm and booth algorithm, division algorithm.

UNIT - IV
Input Output Organization: Asynchronous data transfer- handshaking, asynchronous serial transfer, interrupt initiated I/O, DMA transfer, interfacing, peripherals with CPU (introduction), keyboard, mouse, printer, scanner, network card.

UNIT- V
Memory Organization: ROM, RAM, hard disk, CD-ROM, Cache memory- direct mapping scheme, virtual memory concept.

Suggested Book
1.Mano M., Computer System Architecture, Pearson Education.

Paper VII Introductions to Data Base System

UNIT- I
Introduction: Purpose of the data base system, data abstraction, data model, data independence, data definition language, data manipulation language, data base administrator, data base users, overall structure.

UNIT- II
ER Model: entities, mapping constrains, keys, E-R diagram, reduction E-R diagrams to tables, generation, aggregation, design of an E-R database scheme.

UNIT-III
Network model: basic concepts, data structure diagrams, DBTG CODASYL model, DBTG data retrieval facility, DBTG update facility, DBTG set processing facility, mapping networks to file, networks system.

UNIT-IV
Hierarchical model: basic concepts, tree structure diagrams, data retrieval facility, update facility, virtual records, mapping hierarchical to files, hierarchical system.

UNIT-V
File and system structure: overall system structure, file organisation, logical and physical files organization, sequential and random, indexing and hashing. Introduction to Ms-Access, Data base creation

Suggested Book
1. Date C.J., Database Systems, Addision Wesley.
2. Korth, Database Systems Concepts, McGraw Hill.

Paper VIII Computers Oriented Statistical Methods

Unit 1
Introduction to Statistics: meaning, scope of statistics, collection and classification of data.

Unit 2
Application based on and processing logic of measures of central tendency, dispersion, skewness and kurtosis.

Unit 3
Bivariate Data: Correlation - Meaning types of correlation, Karl Pearson's Correlation and rank correlation, properties of correlation coefficients.

Unit 4
Linear Regression: Processing logic and numerical based of fitting of regression lines (using least square method).

Unit 5
Various properties related to regression coefficients.

References

1. Gupta S.C. Kapoor, V.K., "Elements of Mathematical Statistics", S. Chand & Sons.
2. S.C. Gupta, "Fundamentals of Mathematical statistics", PIII, 1991
3. Bala Guruswamy, "Computers oriented Statistical Methods", S.Chand, 1990
4. S.P. Gupta, "Fundamentals of Statistics", S.Chand 1993.
5. M.R. Speigel, "Statistics", Schaum Series, McGraw-Hill, 1981.

YEAR II

Paper I Client Server Technologies

Unit 1
Client/Server Computing: Evolution of client/server concept, definition, history, need and motivation for client/server approach, client/server approach, Client / server types and its examples.

Unit 2
Client/server development tools, advantages of client/server technology connectivity, user productivity reduction in network traffic, faster delivery of system.

Unit 3
The Role of Client - Client request for service, dynamic data exchange, OLE, Common Object Request Broker Architecture (CORBA), Components of client/server application.
The Role of Server - Server function, network operating system: Novel Netware, LAN Manager, Server Operating System Application Architecture.

Unit 4
Architecture: Components of client-server architecture, application partitioning, the two layer and three-layer architectures, communication between clients and servers, use of APIs in client/server computing, middleware technology in client/server computing. Open System Interconnectivity (OSI), Inter Process Communication (IPC).

Unit 5
Client/Server System Development Network Management.Remote System Administration. LAN Network Management, Security Issue, Developing application on RDMS, GII design concepts.

References
1. Robert Orfali, Dar Harkey and J.Edwards : the Essential Client/Server Survival Guide : Galgotia, 2001.
2. Beth Gold Bernstien and david Marea Designing Enterprise Client/Server System, PHI, 1998.
3. Devire and Drawna, "Client/Server Computing", McGraw Hill 1993.
4. Thomas S. Ligon, "Client-Server Communication "McGraw Hill 1997.

5. Berson : Client/Server Architecture, Architecture, 2nd Edition, Mc-Graw Hill.

Paper II Fundamentals of Operating Systems

Unit I

Introduction: What is an operating system? Mainframe, desktop, multiprocessor, distributed,
clustered, real-time and handheld systems.

Unit II

Operating System Structures: System components, operating system services, system calls,
systems programs, system structure, virtual machines.
Process: Process concept, process scheduling, operations on processes, cooperating processes. Inter process communication.

Unit III

CPU Scheduling: Basic concepts, scheduling criteria, scheduling algorithms, algorithm evaluation.
Process Synchronization: The critical section problem, semaphores, classical problems of synchronization.

Unit IV

Memory Management: Swapping, contiguous memory allocation, paging, segmentation,
segmentation with paging.

Unit V

Virtual Memory: Demand paging, page replacement, allocation of frames, thrashing.

Suggested Book

1.Silberschatz G.G., Operating System Concepts, John Wiley & Sons Inc.

Paper III Web Technology I

Unit I
Introduction to Internet Basic: The Basic of the Internet, Concepts of Domain, IP Addressing, Resolving Domain Names, Overview of TCP/IP and its Services, WWW.

Unit II
Designing Pages with HTML: Introduction to HTML, Essential Tags, Deprecated Tags, Tags and Attributes, Text Styles and Text Arrangements, Text, Effects, Exposure to Various Tags (DIV, MARQUEE, NOBR, DFN, HR, LISTING, Comment, IMG), Color and Background of Web Pages, Lists and their Types, Attributes of Image Tag,

Unit III
Hypertext, Hyperlink and Hypermedia, Links, Anchors and URLs, Links to External Documents, Different Section of a Page and Graphics, Footnote and e-Mailing, Creating Table, Frame, Form and Style Sheet.

Unit IV
DHTML: Dynamic HTML, Document Object Model, Features of DHTML, CSSP (Cascading Style Sheet Positioning) and JSSS (JavaScript assisted Style Sheet), Layers of Netscape, The ID Attribute, DHTML Events.

Unit V
Front Page: Front Page Basics , Web Terminologies, Phases of Planning and Building Web Sites, The FTP, HTTP and WPP, Features, Front Page Views, Adding Pictures, Backgrounds, Links, Relating Front Page to DHTML.

Books Suggested
1.HTML Black Book – Steven Holzner – Dreamtech Press
2.HTML, Java Script, DHTML, PERL, CGI – Evan Bayross- BPB

Paper IV Business Organization and Management

Unit I

Business– Meaning and Contents, Business as a system, Business and Legal and Economic Environment, Forms of Business Organization (meaning, merits & demerits)

Management- Management Principles, Henry fayol's principles of management, Taylor's Scientific Management, Management Process, Basic Functions (in short),Meaning, Nature and Process, Role of Manager

Unit II

Organizational Behavior- Need of Understanding human behavior in organizations, Challenges and opportunities for OB, Contributing disciplines to the field of OB Conceptual Models of OB

Unit III

Managing Personnel- HRM- Meaning and Functions, Man Power Planning, Job Analysis and Design, Training, Career Planning & Development, Motivation, Compensation Management

Unit IV

Managing Finance- Concept of fixed and Working Capital, Main Sources of Finance, Accounting, Meaning, Users, Budgeting- Meaning, Type of Budgets

Unit V

Managing Production- Basic Concepts, Objectives, Elements of Productions, Planning, and

Control. Managing Sales and Marketing- Basic Concepts of marketing, Sales Promotions (including Salesmanship)

Suggested Books

1. B.P. Singh & T.N. Chabbra, Business Organisation and Management Functions, Dhanpat Rai & Co. 2000.
2. Philip Kotler, Marketing Management –(9^{th} Ed.) Prentice Hall of India.
3. Dr. S.N. Maheshwari, Financial Management – Principles and Practice (6^{th} revised Ed.) S. Chand & Sons.
4. Stephen P. Robbins, Organisational Behaviour (8^{th} Ed.) Prentice Hall of India.

Paper V Programming in Java

Unit - I
Introduction to Java - Features of Java - Object Oriented Concepts - Lexical Issues - Data Types - Variables - Arrays - Operators - Control Statements.

Unit - II
Classes - Objects - Constructors - Overloading method - Access Control - Static and fixed methods- Inner Classes - String Class - Inheritance – Over riding methods - Using super- Abstract class.

Unit - III
Packages - Access Protection - Importing Packages -Interfaces - Exception Handling - Throw and Throws - Thread - Synchronization - Messaging - Runnable Interface - Inter thread Communication - Deadlock - Suspending, Resuming and stopping threads - Multithreading.

Unit - IV
I/O Streams - File Streams - Applets - String Objects - String Buffer - Char Array - Java Utilities - Code Documentation.

Unit - V
Networks basics - Socket Programming - Proxy Servers- TCP/IP Sockets - Net Address - URL - Datagrams - Working with windows using AWT Classes - AWT Controls – Layout Managers and Menus.

Books for Study
1. Cay S.Horstmann, Gary Cornell - Core Java 2 Volume I - Fundamentals,5th Edn. PHI,2000.
2. P. Naughton and H. Schildt - Java2 (The Complete Reference) - Third Edition,TMH 1999.
3. K. Arnold and J. Gosling - The Java Programming Language - Second Edition, Addison Wesley, 1996

Paper VI Visual Programming and Programming in Visual Basic

UNIT I
Client Server Basics: Discover Client-Server And Other Computing Architectures, Understand File Server Versus Client-Server Database Deployment, Learn About the Two Tier Versus Three Tire Client-Server Model, Visual Basic Building

Blocks And Default Controls: Forms, Using Controls, Exploring Properties, Methods And Events, Introduction To Intrinsic Controls, Working With Text, Working With Choices, Special Purpose Controls, VB Advance Controls: Events, Menu bar, Popup Menus, Tool bar, Message Box, Input Box, Built-in Dialog Boxes, Creating MDI, Working with Menus

UNIT II

VB Programming Fundamentals And Variables: Introduction to Variables, Variable Declaration, Arrays, Introduction to Constants And Option Explicit Statement, Assignment Statements, Working With Math Operations, Strings, Formatting Functions, Controlling And Managing
Program: All Control Statements, Loops, Error Trapping, Working With Procedures, Functions, Controlling How Your Program Starts, Common controls and control arrays: Introduction to common controls- Tree view, list view, tab strip, Creating and working with control arrays.

UNIT III

Visual Basic and databases: Understanding the Data Controls and Bound Controls, Introduction to Data Form Wizard, Introduce DAO, Working With Record sets, Record Pointer, Filters, Indexes, Sorts And Manipulation of Records. Remote and ActiveX Data Objects: Working With ODBC, Remote Data Objects and Remote data Control, Introducing ADO, ADO Data Control

UNIT IV

Using Data Grid Control and Active X Data Objects. ActiveX Controls, Extending ActiveX
Controls and Classes: Creating, Testing, Compiling, Enhancing and User Drawn ActiveX
Controls, Using ActiveX Control Interface Wizard and Property Pages Wizard, Introducing
Ambient, Extender Objects, Creating Property Pages, Building Class Modules, ActiveX DLL.

UNIT V

Client-Server Development Tools: COM, Services Models, Development Tools Included with VB , Working With Source Safe Projects. Reports and Packaging: Data Reports And Crystal Reports, Packaging A Standard EXE Project, VB And Internet: Introduction to VBScript, Tools used with VBScript and VBScript Languages, Introduction to Active Server Pages, ASP Objects.

References

1. Gary Cornell - Visual Basic 6 from the Ground up- Tata McGraw Hill - 1999.
2. Noel Jerke - Visual Basic 6 (The Complete Reference) - Tata McGraw Hill - 1999.

YEAR III

Paper I System Analysis & Design

UNIT-I

System Concept: Definition, Characteristics, Elements of system, Physical and abstract system, open and closed system, man-made information systems. System Development Life Cycle: Various phases of system development, Considerations for system planning and control for system success. System Planning: Base for planning a system, Dimensions of Planning.

UNIT-II

Initial Investigation: Determining users requirements and analysis, fact finding process and
techniques. Feasibility study: Determination of feasibility study, Technical, Operational & Economic Feasibilities, System performance constraints, and identification of system objectives, feasibility report. Cost/Benefit Analysis: Data analysis, cost and benefit analysis of a new system. Categories determination and system proposal.

UNIT-III

Tools of structured Analysis: Logical and Physical models, context, diagram, data dictionary, data diagram, form driven methodology, IPO and HIPO charts, Gantt charts, system model, pseudo codes, Flow charts- system flow chart, run flow charts etc., decision tree, decision tables, data validation, Input/ Output and Form Design: Input and output form design methodologies, menu, screen design, layout consideration.

UNIT-IV

Management standards– Systems analysis standards, Programming standards, Operating standards. Documentation standards –User Manual, system development manual, programming manual, programming specifications, operator manual. System testing & quality: System testing and quality assurance, steps in system

implementation and software maintenance. System security: Data Security, Disaster/ recovery and ethics in system development, threat and risk analysis. System audit.

UNIT-V

Organisation of EDP: Introduction. Job Responsibilities & duties of EDP Personnels- EDP manager, System Analyst, Programmers, Operators etc. Essential features in EDP Organization. Selection of Data Processing Resources: purchase, lease, rent-advantages and disadvantages. Hardware and software procurement – In-house purchase v/s hiring and lease.

Text & Reference Books

1. System Analysis & Design by V K Jain, Dreamtech Press
2. Modern System Analysis &Design by A Hoffer, F George, S Valaciah Low Priced Edn. Pearson Education.
3. Information Technology & Computer Applications, by V.K.Kapoor, Sultan Chand & Sons, New Delhi

Paper II Web Technology II

Unit - I

Internet Basic - Introduction to HTML - List - Creating Table - Linking document - Frames - Graphics to HTML Doc - Style sheet - Style sheet basic - Add style to document - Creating Style sheet rules - Style sheet properties - Font - Text - List - Color and background color - Box - Display properties.

Unit - II

Introduction to Javascript - Advantage of Javascript - Javascript Syntax - Datatype - Van able- Array - Operator and Expression - Looping Constructor - Function - Dialog box.

Unit - III

Javascript document object model - Introduction - Object in HTMl - Event Handling -Window Object - Document object - Browser Object - Form Object - Navigator object - Screen object - Build in Object - User defined object - Cookies.

Unit - IV

ASP. NET Language Structure - Page Structure - Page event, Properties &Compiler Directives. HTML server controls - Anchor, Tables, Forms, Files. Basic Web server Controls- Lable, Textbox, Button, Image, Links, Check & Radio

button, Hyperlink. Data List Web Server Controls - Check box list, Radio button list, Drop down list, List box, Data grid, Repeater.

Unit - V

Request and Response Objects, Cookies, Working with Data - OLEDB connection class, command class, transaction class, data adaptor class, data set class. Advanced Issues - Email, Application Issues, Working with ITS and page Directives, Errorhandling. Security- Authentication, IP Address, Secure by SSL & Client Certificates.

BOOKS For Reference

1. I. Bayross, Web Enable Commercial Application Development Using HTML, DHTML, Javascript, Perl CGI, BPB Publications, 2000
2. J. Jaworski, Mastering Javascript, BPB Publications, 1999
3. T. A. Powell, Complete Reference HTML (Third Edition),TMH, 2002
4. G.Buczek, ASP.NET Developers Guide, TMH, 2002

Paper III Multimedia Tools and Applications

UNIT–I

Multimedia: Needs and areas of use, Development platforms for multimedia – DOS, Windows, Linux. Identifying Multimedia elements – Text, Images, Sound, Animation and Video, Making simple multimedia with PowerPoint.
Text – Concepts of plain & formatted text, RTF & HTML texts, using common text preparation tools, Conversion to and from of various text formats, using standard software, Object Linking and Embedding concept, Basics of font design, overview of some fonts editing and designing tools, Understanding & using various text effects.
Images – importance of graphics in multimedia, Vector and Raster graphics, image capturing methods – scanner, digital camera etc. various attributes of Images – size, color, depth etc, Various Image file format – BMP, DIB, EPS, CIF, PEX, PIC, JPG, TGA, PNG and TIF format – their features and limitations, graphic file formats conversions, processing images with common software tools such as Photoshop, Paint Shop pro, Corel draw etc..

UNIT-II

Sound: Sound and it Attributes, Mono V/s Stereo sound, Sound channels, Sound and its effect in multimedia, Analog V/s Digital sound, Basics of digital sounds-Sampling, Frequency, Sound Depth, Channels, Sound on PC, Sound standards on PC, Capturing and Editing sound on PC, Overview and using some sound

recording, editing software. Overview of various sound file formats on PC – WAV, MP3, MP4, Ogg Vorbose etc.
Animation: Basics of animation, Principle and use of animation in multimedia, Effect of resolutions, pixel depth, Images size on quality and storage. Overview of 2-D and 3-D animation techniques and software- animation pro, 3D studio & Paint Shop pro animator. animations for the Web using GIF Animator and Flash.

UNIT–III
Video: Basics of Video – Analog and Digital Video, How to use video on PC. Introduction to
graphics accelerator cards, DirectX Introduction to AV/DV and IEEE1394 cards, Digitization of analog video to digital video, Interlacing and non- interlacing, Brief note on various video standards – NTSC, PAL, SECAM, HDTV, Introduction to video capturing Media & instrument – Videodisk, DVCAM, Camcorder, Introduction to digital video compression techniques and various file formats – AVI, MPEG, MOVE Real Video.
Brief Introduction to video editing and movie making tools – Quick time, video for windows & Adobe premier.

UNIT–IV
Authoring tools for CD Based Multimedia: Type of multimedia authoring tools, key factors of selecting CD based multimedia authoring tools, Planning and distribution of a multimedia project. Multimedia development team & skills requirement, Stages in designing & producing multimedia products for CD, Testing of product, distribution of multimedia product, various formats of CD's and DVD's.

UNIT – V
Multimedia on the Web: Bandwidth relationship, broadband technologies, Text in the web – Dynamic and embedded font technology, Audio on the Web – Real Audio and MP3/MP4, Audio support in HTML, Graphics – HTML safe color palate, Interlaced V/s Non interlaced model, Graphics support in HTML, Image Map, Video on the Web – Streaming video, Real Video, MPEG and SMIL, Virtual Reality on the Web.

TEXT AND REFERENCE BOOKS

1. Multimedia: Making It Work (4^{th} Edition) – by Tay Vaughan, Tata Mcgraw Hills.
2. Multimedia In Action – James E Shuman – Vikas Publishing House.

3. Multimedia Basics – Volume – 1 Technology, Andreas Holzinger, Firewall Media(Laxmi Publications Pvt. Ltd) New Delhi.

Paper IV Visual Basic Programming

Unit I

Introduction:Need Of Visual Languages, Integrated Development Environment (IDE), Advantage Of Visual BASIC, Characteristics And Features Of Visual BASIC, Characteristics And Features Of Visual BASIC-IDE, Project, User Interface, Objects Oriented, Visual Development and Even-Driven Programming, Forms/Graphic Controls, Data Processing, Sharing With Windows And Internet Applications.

Unit II

Visual BASIC Programming And Tools: An Introduction Of Visual BASIC Programming, Simple Program Construction, Statements, Input/Outputs, Comments, Editor, Subroutines, Control Flow Statements, Objects, and Variants. Visual BASIC Debugging Tools. Runtime Errors Handling.

Unit III

Designing User Interface: Elements of User Interface, Understanding Forms, Menus And Toolbars, Designing Menus and Tool-Bars, Building Dynamic Forms, Drag-And- Drop Operations, Working With Menus, Customizing The Toolbars. Active X Controls- Textbox, Combo Box, Scrollbar and Slider Controls Operations. Generating Timed Events. Drawing With Visual Basic
Using Graphic, Controls, Coordinate Systems and Graphic Method. Manipulation Colors And Pixels With Visual Basic. Operations with Common Dialogs Printer Object And Reports. Integrating With Microsoft Windows And Office 2000, Concepts Automation, ActiveX And Object Models, Automations With Word 2000, Excel 2000.
Database Programming With Visual Basic-Data Access Methods, Creating, Reaching And Writing Text File. Data Control, Creating Queries.

Reference Books

1.Petroutsos Evangelos : Mastering Visual Basic; BPB Publications; 1998.
2.Norton's Peter; Guide to Visual Basic; Techmedia; 1998.
3.Kurata Deborah: Doing Objects in Visual Basic; Techmedia; 1998.
4.Mastering Database Programming With Visual Basic 6 by Petroutsos.

Paper V Mathematical Foundation of Information Technology

Unit I

Number systems: natural numbers, integers, rational numbers, real numbers, complex numbers, arithmetic modulo a positive integer (binary, octal, decimal and hexadecimal number systems), radix r representation of integers, representing negative and rational numbers, floating point notation. Binary Arithmetic, 2's complement arithmetic, conversion of numbers from one of binary/octal/decimal/hexadecimal number system to other number systems, Codes (Natural BCD, Excess-3, Gray, Octal, Hexadecimal, Alphanumeric-EBCDIC and ASCII), Error codes.

Unit II

Logic and Proofs: Proposition, Conjunction, Disjunction, Negation, Compound proposition, Condition, Propositions (Hypothesis, Conclusion, necessary and sufficient condition and Logical equivalence, De Morgan's laws, quantifiers, Universally quantified statement, generalized De Morgan's Laws for Logic, component of mathematical system (axiom, definitions, undefined terms, theorm, leema and corollary), proofs (direct proofs, Indirect Proofs, proof by contra-positive), valid argument, deductive reasoning, modus ponens (rules of inference), universal instantiation, universal generalization, existential instantiation, universal generalization resolution, principle of mathematical induction, structural induction.

Unit III

Graph theory undirected graph, digraph, weighted graph, similarity graphs, paths and cycles, Hamiltonian cycles, shortest pathalgorithm, isomorphism of graphs, planar graphs. Trees, characterization of trees, spanning trees, breadth first search and depth first search method, tninimal spanning trees,binary trees, tree traversals, decision tree and the minimum time for sorting, isomorphism of trees.

Reference Books

1.C.L. Liu: Elements of Discrete Mathematics, Tata McGraw hill Publishing Company Ltd. 2000
2.Richard Johnsonbaugh-Discrete Mathematics, Pearson Education, Asia, 2001.
3.John Truss: Discrete Mathematics for computer Scientists, Pearson Education, Asia. 2001.
4.Robert, J. Mc. Eliece: Introduction to Discrete Mathematics, Tata McGraw Hill, India.

Paper VI Advanced Internet Applications Development and Current Issues in IT

Unit I

Introduction to VB script, Microsoft. Visual Inte Dev IDE The request Object , the Response Object Interacting with sever object, session and Cookies, the sever Context Object, Web Site Development Tools.
Enterprise Java: Servlets, Java Server Pages," Remove Method Invocation, Java Beans, Enterprise Java beans, Java Security, Native Methods, Java Virtual machine, Future of Java application of Java Beans – COBRA, Architecture of COBRA.

Unit II

EJB-Introduction Transaction Process, Models of Transco-Two Tier Architecture/ Three-Tier Architecture, Distributed Transaction Processing. EJB Server and client features, RMI/COBRA Building and development of EJBs, Design and Implementation of beans.
COM/DCOM-Introduction to com Programming, COM Architecture,COM interfaces, class Factories, Types of COM Server, Active X Controls, Property Pages, Distributed Components.
Active Pages Server-Components, Interfaces, ASP with Database, Connections, Data Sources, Record Sets, Command Objects, Full text search. ASP Custom Components, Creating Multi-tier Distributed Applications, Window DNA, Using ASP with MS Transaction Sever and Message Server.

Unit III

CORBA-An Architecture of Interoperability, Internet Inter ORB Protocol. CORBA Filters and dynamic loaders, CORBA and Java servlets. CORBA Beans.
XML-The Purpose and Nature of XML, XML's syntax & structure rules, XML Document Type Declaration, XML's linking mechanisms, XML's style language, Converting.
HTML documents into XML documents. Overview of JSP, Swing (JFC) Securities, JINI. Current Issue- Network Securities- IP and Web Security and Secure Transmission, Electronic, Biotechnological Issues. Authentication issues.

Paper VII Industry Based Environmental Studies

UNIT – 1

Environment – Definition – Scope – Structure and function of eco system's procedures, consumers and decomposers – energy flow in the ecosystem –

ecological succession – food chain, food web and ecological pyramids - concepts of sustainable development.

UNIT – 2

Natural resources: Renewable – air, water, soil, land and wildlife resources. Non-renewable – mineral, coal, oil and gas. Environmental problems related to the extraction and use of natural resources.

UNIT – 3

Biodiversity – Definition – values – consumption use, productive social, ethical, aesthetic and option values threats to biodiversity – Hotspots of bio diversity – conservation of bio-diversity: In-situ Ex-situ. Bio-wealth – national and global level.

UNIT – 4

Environmental pollution : Definition – causes, effects and mitigation measures – Air pollution, Water pollution, Soil pollution, Noise pollution, Thermal pollution – Nuclear hazards – solid wastes acid rain – climate change and global warming environmental laws and regulations in India – Earth summit.

UNIT – 5

Population and environment – Population explosion – Environment and human health – HIV / AIDS – Women and child welfare – Resettlement and Rehabilitation of people, role of information technology in environmental health – Environmental awareness.