Jiwaji University , Gwalior – BCA – Session 2011-14 (Affiliated Colleges)

Scheme

Semester – I

Code	Theory Paper	External	Internal	Practical	Total
BCA 101	Computer Fundamentals	80	20	-	100
BCA 102	Programming in 'C'	80	20	50	150
BCA 103	Digital Principals	80	20	-	100
BCA 104	Communication Skills-I	80	20	-	100
BCA 105	Mathematics – I (Discrete Mathematics)	80	20	-	100
BCA 106	Software Laboratory in DOS & Windows	-	20	80	100
	Total	**400**	**120**	**130**	**650**

Semester – II

Code	Theory Paper	External	Internal	Practical	Total
BCA 201	Mathematics – I I (Calculas)	80	20	-	100
BCA 202	Data Base Management Systems	80	20	-	100
BCA 203	Data Structure	80	20	-	100
BCA 204	Application Software Packages	80	20	50	150
BCA 205	Environmental Awareness	80	20	-	100
BCA 206	Software Laboratory in Foxpro	-	20	80	100
	Total	**400**	**120**	**130**	**650**

Semester – III

Code	Theory Paper	External	Internal	Practical	Total
BCA 301	Mathematics – I II (Advanced Calculas)	80	20	-	100
BCA 302	Operating System	80	20	50	150
BCA 303	Visual Basic	80	20	-	100
BCA 304	Communication Skills-II	80	20	-	100
BCA 305	Accounting & Financial Management	80	20	-	100
BCA 306	Software Laboratory in Visual Basic	-	20	80	100
	Total	**400**	**120**	**130**	**650**

Semester – IV

Code	Theory Paper	External	Internal	Practical	Total
BCA 401	Computer Architecture	80	20	-	100
BCA 402	Object Oriented Programming	80	20	-	100
BCA 403	System Analysis & Design	80	20	-	100
BCA 404	Introduction to Internet Technologies.	80	20	50	150
BCA 405	Mathematics – IV (Differential Equations)	80	20	-	100
BCA 406	Software Laboratory in C++	-	20	80	100
	Total	**400**	**120**	**130**	**650**

Semester – V

Code	Theory Paper	External	Internal	Practical	Total
BCA 501	Computer Graphics	80	20	-	100
BCA 502	Introduction to Linux	80	20	50	150
BCA 503	Software Engineering	80	20	-	100
BCA 504	Mathematics – V (Statistical Methods)	80	20	-	100
BCA 505	Active Server Pages	80	20	-	100
BCA 506	Software Laboratory in ASP	-	20	80	100
	Total	**400**	**120**	**130**	**650**

Semester – VI

Code	Theory Paper	External	Internal	Practical	Total
BCA 601	Mathematics – VI (Numerical Methods)	80	20	-	100
BCA 602	ORACLE 8	80	20	50	150
BCA 603	Computer Networking	80	20	-	100
BCA 604	eCommerce	80	20	-	100
BCA 605	JAVA Programming	80	20	-	100
BCA 606	Software Laboratory in JAVA	-	20	80	100
	Total	**400**	**120**	**130**	**650**

PAPER CODE BCA - 101
Computer Fundamentals

UNIT 1 - Computer system concepts, Computer system characteristics, Capabilities and limitations, Types of computers-Analog, Digital, Hybrid, General, Special Purpose, Micro, Mini, Mainframe, Super,
Basic components of a computer system - Control unit, ALU, Input/Output functions and characteristics, memory - RAM, ROM, EPROM, PROM and other types of memory.
Data representation and codes, Decimal, Binary ,Octal and Hexadecimal System and inter conversion ,BCD numbers and ASCII codes.

UNIT 2-Computer hardware, Input devices- Keyboard, Mouse, Trackball, Joystick, Digitizing tablet, Scanners, Digital Camera, MICR, OCR, OMR, Bar-code Reader, Voice Recognition, Light pen, Touch Screen, Output devices- Monitors - characteristics and types of monitor -Digital, Analog, Size, Resolution, Refresh Rate, Interlaced / Non Interlaced, Dot Pitch, Video Standard - VGA, SVGA,
XGA etc, Printers - Daisy wheel, Dot Matrix, Inkjet, Laser, Line Printer, Plotter, Sound Card and Speakers , , Memory devices, RAM, ROM, Winchester drive, Mass storage devices, CD-ROM, Flash memory and their characteristics and uses.

UNIT 3-System software - Assemblers, Translators, Interpreters, Compilers, Operating Systems - Functions, Types- Batch, Single, Multiprogramming , Languages : High level languages, Procedural and Object Oriented languages. Application Software – Word Processing, Spreadsheet, Presentation Graphics, Data Base Management Software.

UNIT 4-Computer applications , Office automation, Industrial applications, CAD/CAM, Library information system , Digital image processing, Multimedia applications, Space research,

UNIT 5-Computer networking: Goals and applications, LAN, MAN ,WAN
 Computer communication.: Communication modes : simplex, half duplex, full duplex.
Types of Network - LAN, WAN, MAN etc., Topologies of LAN - Ring, Bus, Star, Mesh and Tree topologies, Components of LAN -Media, Bridges, HUB, Routers, Repeater and Gateways, communication Channels - Twisted, Coaxial, Fiber Optic, Serial and Parallel Communication, Modem - Working and
characteristics, Types of Connections - Dialup, Leased Lines, ISDN, Use of Communication in daily life.

Reference:

1.Introduction to Computers   C. Xavier 2nd Edition,
     New Age International

2.Fundamentals of Computers   V. Rajaraman 2nd Edition
     Prentice Hall of India

3.IT Today   S Jaiswal Galgotia Publication
4. *Computers Today*   *S.K.Basandra, Galgotia Publications.*
5. *Fundamentals of Information technology*   *Alexis Leon & Mathews Leon,*
     Vikas Publishing House, New Delhi.

PAPER CODE BCA - 102
Programming in 'C'

UNIT 1-Programming Fundamentals : Program Concept, Algorithms, Flow Charts - Symbols, Rules for making Flow chart, Types of flowchart, Advantage & Disadvantage, , techniques of problem solving : Programming Techniques – Top down, Bottom up, Modular, Structured - Features, Merits & Demerits, Programming Logic- Simple, Branching, Looping, Recursion, Cohesion & Coupling, Programming. Testing & Debugging & their Tools .

UNIT 2-Programming in C including features of 'C', Ctokens, Variables, Expressions, Identifiers, Keywords, Data Types, Constants, Operator and expression Operator: Arithmetic, Logical, Relational, Conditional and Bit wise Operators, Precedence and Associativity of Operators, Type conversion in expression, Basic input/output and library functions Single character input/output i.e. getch(), getchar(). getche(), putchar(),Formatted input output i.e. printf() and scanf().

Branching Constructs: if-else,switch, conditional operator & goto statements

If statement, If.....Else statement, Nesting of If....Else Statement, else if ladder, The ?: operator, goto statement, Switch statement, Compound statement, Loop controls, for, while, do-while loops, break, continue, goto statement.

UNIT 3- Functions: categories of functions User defined and library function , recursion, Function arguments, Return values and nesting of function, Recursion, Calling of functions, Scope and life of variables - local and global variable, Storage class specified - auto, extern, static, register.

 Arrays : what is array, declaring initializing , 2D and 3D array. String: declaration, string functions – strcat,strcpy,strcmp,strlen,strstr.

 UNIT 4-Pointers: operations on pointers, pointers Basic of pointers and operators, Pointers and function, Array of pointers, Pointer and strings, Pointer to structure, Pointers within structure ;The preprocessor, #define, defining functions like macros, #error,#include, conditional compilation directives i.e. #if, #else, #elif and#ifdef & undef Structures : the concept of structure of structure , intilizing a structure, the structure tag, period operator , array of structure, structure and pointer, te arrow operator and nesting of structure. Unions : initialization and use of it in a program.

UNIT 5-File Management: Introduction – File handling, File structure, File handling function,
File types, Streams, Text, Binary, File system basics, The file pointer,Opening a file, Closing a file, Writing a character, Reading a character, Using fopen(), getc(), putc(), and fclose(), Using feof(), Working with string fputs() and fgets(), Standard streams in C,Flushing astream, Using fread() and fwrite(), Direct access file, fseek() and random access I/O, fprintf() and fscanf(), Command line arguments

Reference:

1.Let us C   Yashwant Kanitkar, BPB Publicatiuon
2.Programming in ANSI C   Balgurusuamy Tata McGraw Hill
3.C Programming   Schaum's series
4. The sprit of C   Mulish Cooper, Jaico Publishing
5. Programming with ANSI & Turbo C   Kamthane, Pearson Education.
5.   An introduction to C programming – Amit Saxena, Anamaya Publishers, New Delhi

PAPER CODE BCA - 103
Digital Principles

UNIT 1-Boolean algebra, Boolean equation of logic gates , Logic Gates, AND, OR, NOT GATES and their Truth tables, NOR, NAND & XOR gates, Boolean Algebra, Basic Boolean Law's, Demorgan's theorem, Boolean laws and theorems, Duality theorem.

UNIT 2-Karnaugh map MAP Simplification, Minimization techniques, Sum of Product & Product of Sum., Pairs, Quads and Octats , DONOT CARE condition,,Grey code,Multiplexer and Demultiplexer, BCD to Decimal decoder, Seven segment dcoder,Encoder.

UNIT 3-Aritmatic circuits, Binary addition, Unsigned binary numbers, Sign magnitude numbers, 2's complement arithmetic Addition, Subtraction, Overflow, Half adder, Full adder, Subtractor circuits.

UNIT 4-Flip flops, RS, D, JK, Master Slave, Shift registers, Types of shift registers, Asynchronous and Synchronous counters.

UNIT 5-Semiconductor memories, Memory addressing, ROM, PROMS, EPROMS, RAMS, DRAMS, SRAMS, Memory cells A to D and D to A converters.

Reference:

1.Digital Principles and applications   Malvino A.P. & Leech
                                                          Tata Mc Graw Hill

PAPER CODE BCA - 104
Communication Skills - I

UNIT 1-Noun, Pronoun, Adverb, Adjective and Verb in detail articles Sentence-kinds, function & classification.

UNIT 2-tenses-present indefinite, present continuous, present perfect, past indefinite and combination of tenses Agreement synthesis.

UNIT 3-Transformation - Simple, compound, complex, Reporte speech, active & passive voice, degree, change the forms of sentence using too or enough, use of idioms & phrase synthesis.

UNIT 4-Vocabulary - Word building, suffixes/prefixes. Forming noun from verb/adjective and vice versa common error relating to nouns, pronouns, verbs, adjectives, punctuation. Translation - Hindi to English & vice versa.

UNIT 5-National events, monuments, personalities (thinkers, Sages, Politicians and social workers) some current international events & personalities.

Reference:

1. Wren & Martin - Grammar
    2. Robert Ellen – English Living Structure.

PAPER CODE BCA - 105

Mathematics-I
(Discrete Mathematics)

UNIT-I Introduction and Preliminaries: Logical connectives, Truth tables, Tautologies and Contradiction, Logical equivalence, Algebra of propositions.
Set Theory: Set, Singleton set, Finite and Infinite sets, Subsets, Proper subsets, Equality of sets, Union, Intersection and Difference of sets, Universal set, De Morgan laws, Symmetric difference of sets, Generalized De Morgan laws, Cartesian product of sets.

UNIT-II Relations: Relation between two sets, Binary relation on a set, Types of binary relations, Equivalence relation, Equivalence class, Partition of a set, Fundamental theorem of equivalence relation, Composition of relations.
 Functions: Function or mapping, One-one, Many-one, into and onto mappings, Identity mapping, Constant mapping, Equality of mappings, Inverse of a mapping, Composition of mappings.

UNIT-III Boolean algebra: Definition and properties of Boolean algebra, a brief introduction to the application of Boolean algebra to switching theory, conversion of complicated switching circuits to simple one, Disjunctive and Conjunctive normal forms.
Graph Theory: Introduction to graph theory, Paths and Circuits, Trees, Spanning trees, Cut-sets, Fundamental circuits and cut-sets.

UNIT-IV Matrices: Introduction, Expression of complex numbers in the form of a matrix, De Moivre's theorem, Elementary transformations, Elementary matrices, Equivalent matrices, Properties of equivalent matrices, Sub-matrix of a matrix, Rank and Nullity of a matrix, Row equivalence and canonical form, Normal form of a matrix.

UNIT-V Solution of Homogeneous and Non-homogeneous system of linear equations, Characteristic roots and Characteristic vectors of a matrix, Caley-Hamilton theorem, to find the inverse of a non-singular matrix using Caley-Hamilton theorem.

Recommended Books:
1. Discrete Mathematical Structures with Applications to Computer Science by Tremblay & Manohar.
2. Discrete Mathematics by Iyengar, Chandrasekharan, Venkatesh & Arunachalam.
3. Discrete Mathematical Structures by Kolman, Busby & Ross.
4. Graph Theory with Applications to Engineering and Computer Science by Narsingh Deo.

PAPER CODE BCA - 201

Mathematics II (Calculus)

UNIT–I
Review of concepts of function of one variable:
Definition of a function, Types of Functions.
Limits: Definition, Working rule for finding out the limit, fundamental properties of limits, problems based on limits.
Continuity: Definition, Points of Discontinuity, Classification of Discontinuity, Problems based on Continuity & Discontinuity.
Differentiability: Condition for Differentiability and problems.

UNIT-II
Rolles theorem, First and Second Mean value theorems, Taylor's theorem, Successive differentiation, Leibnitz Theorem, Taylor's & Maclaurin's series, Intermediate forms.

UNIT-III
Tangents, Normals, Curvature, Tests for Concavity and Convexity, Points of Inflexion, Multiple Points, Tracing of Curves in cartesian and polar co-ordinates.

UNIT-IV
Integration of rational and irrational algebraic functions and transcendental functions, reduction formulae.

UNIT-V
Definite Integrals, Quadrature, Rectification, Volumes and surfaces of solids of revolution.

Recommended Books:
1. Differential Calculus by Gorakh Prasad
2. Integral Calculus by Gorakh Prasad
3. Schaum's Outline Series on Calculus

PAPER CODE BCA - 202
Data Base Management System

UNIT 1-Introduction: Database system concepts, Data base system, Advantages of database systems; Data Architecture of data system: View/Schema, logical, conceptual and physical and their interrelationship DDL, DML and data dictionary, Data base administrator. Entity Relationship Model as a tool of conceptual design : Entities & Entity set, Relationship & Relationship set, Attributes, Mapping Constraints, Keys, Entity-Relationship diagram (E-R diagram) : Strong & weak entities, Generalization, Specialization, Aggregation,Reducing ER diagram to tables.

UNIT 2- Relational, Hierarchical and Network Model their advantages and disadvantages, storage organization for Relations. Rational Model: Structure tupple Attributes, Normalization : First, Second, Third & BCNF Normal Forms, key, primary key, Candidate key, Integrity rules : Entity integrity, Referential integrity rule.

UNIT 3-Relational Algebra: Select, Project, Cross product, Different types of joins i.e. theta join, equi join, natural join, outer join, set operations Definition of union, set difference, Cartesian product, selection, intersection, Relational Query language.

UNIT 4- Functional Protection and crash Recovery: Protection against crashes: different types of crashes; Backup, Journal, Rollback, committed and uncommitted transactions, Security on database.

UNIT 5-Transaction concept, Transaction state, serializability security or Database: user identification. Physical Protection and maintenance, Transmitted of Rights. Integrity: Integrity violation, Implementation of check's in enforcing integrity; Concept of Distributed database.

Reference:
1. Introduction of database system - C.J. DATE - Addition - esley
2. Principles of database system - Jeffery D. Ullman Galgotia Publication
3. Database system concepts - Henry F. Korth
   Abraham silberschatz   Megraw - Hill International Edition

PAPER CODE BCA – 203
Data Structure

UNIT 1-Introduction to data structure, Array, records, stacks Introduction to stack & primitive operation on stack, Stack as an abstract data type, Multiple Stack, Stacks application: Infix, post fix, Prefix and Recursion . Queues: Introduction to queues, Primitive Operations on the Queues, Queue as an abstract data type, Circular queue, Dequeue, Priority queue, Applications of queue

UNIT 2- Pointer & linked allocation, linear, circular & Doubly linked list, Operations on linked list, application of Linked list: Polynomial manipulation.

UNIT 3-Tree: General & Binary tree. Conversion of General to binary tree. B^+ tree, traversal methods- In order, Preorder & post order ,Application of tree: Manipulation of arithmetic expression.

UNIT 4-Graph: Graph & their representations. Breadth first & Depth first search. Spanning trees. Application of Graphs: PERT & related techniques.

UNIT 5-Introduction to file organization; Sequential, Indexed sequential, Relative & Direct file organization. Searching: Linear & Binary Search Sorting :Concept, selection sort, Bubble sort merge Sort, Tree sort & Partition - Exchange sort.

Reference :

Data Structure and Program design in C by Kruse/Leung - PHI
FUNDAMENTALS OF DATA STRUCTURE, By S. Sawhney & E. Horowitz
DATA STRUCTURE : By Trembley & Sorrenson
DATA STRUCTURE : By lipschuists (Schaum's Outline Series Mcgraw Hill Publication)

PAPER CODE BCA - 204
Application Software Packages

UNIT – 1

MS Windows: Introduction to M.S. Windows; Features of Windows; Various versions of Windows & its use; Working with Windows; My Computer & Recycle bin ; Desktop, Icons and Windows Explorer;
Screen description & working styles of Windows; Dialog Boxes & Toolbars; Working with Files & Folders; Shortcuts & Autostarts; Accessories and Windows Settings using Control Panel; Start button
& Program lists; Installing new Hardware & Software.

UNIT – II

Basics Of word:
Creating word documents; The word window , Entering Text . Editing Document text;
Selecting Text, Copying and Moving Text. Applying Text Enhancements; Applying Fonts and Font Styles in Word, Highlighting Text For Distinctive Look . Aligning and Formating ; Aligning Text, Using Identation Options, Setting Line Spacing Options, Using Tabs. Creating Lists, Numbers and Symbols ; Numbering and Bullets, Creating Special Characters. Replacing and checking Text ; Creating and   Applying Frequently Used Text, Finding and   Replacing Text , More about   Spelling and Grammar, Using the Thesaurus Command. Getting Into Print ; Using Print Preview, Changing Page Orientation and Paper Size, Aligning Text Vertically, Settting Margins, Printing Options.
Advanced Formatting Techniques in Word :
Formatting Pages; Formatting Sections, Creating   and Modifying Page Numbers, Creating Headers and Footers , Taking Care   of Loose   Ends .Working With Columns ; Working With Newspaper Columns, Revising Column Structure. Constructing High-Quality Tables ; Creating and Revising   Tables , Modifying   Table Structure , Formatting   Tables , Using Tables Calculatingly. Working Smarter with Word ; Using Templates. Creating Outlines in Word ; Creating an Outline , Modifying an Outline

UNIT- III

Access Concepts & terms : database tables ,relational databases , records , fields , controls & objects , queries & dynasets, forms, reports ,properties , wizards , macros , Access requirements , starting & quitting access , the access workspace & tool, views .
Creating database & tables with & without wizard , field name , data types & properties , adding & deleting fields in fields , renaming fields & their caption , resizing fields , freezing columns , primary key field & indexing fields.
 Form: Form wizard , saving & modifying forms : Entering & Editing data , Finding , sorting & displaying data , queries & dynasets , creating & using select queries , using wild cards in queries , reformatting dynasets.
Reports : Creating reports, previewing reports, printing reports, modifying, saving. Relational databases – definition, purpose, creation, viewing, deleting. Expressions , Macros.

UNIT - IV

Creating Excel Worksheets :

Entering and Editing Cell Entries ; The excel Application Window , Workbooks and Worksheets, Moving the Cell Pointer, Entering Text and Numbers , Revising Text and Numbers. Working with Numbers ; Creating Formulas, Formatting numbers. Changing Worksheet Layout ; Adjusting Column Width and Row Height, Inserting and Deleting Rows and Columns, Inserting and Deleting Cells , Moving and Copying Cell Contents , Naming a Worksheets , Selecting Worksheets , Copying and Moving Worksheets, Inserting and Deleting Worksheets, Other Formatting Options ; Aligning Text , Border and Color. Printing in Excel ; Print Preview, Changing Page Setup , Checking Worksheet Spelling.

Advanced Techniques in Excel :

Using Functions and References ; Using Functions , Entering Functions, Relative and Absolute Cell References. Naming Ranges ; Naming Ranges , Using Names . Creating Easy-to-Understand Charts ; Pie Charts , Series Charts , Creating Charts , Moving , Sizing , and Printing Chart Objects . Editing and Formatting Charts ; Adding a Data Series , Deleting a Data Series , Modifying and Formatting Charts.

UNIT – V

Creating PowerPoint Presentations:

Creating a Basic Presentation , Building Presentations, Modifying Visual Elements , Formatting and Checking Text , Adding Objects, Applying Transitions , Animation Effects and Linking , Preparing handouts , Taking the Show on the Road.

Reference :
1. Microsoft Office 97 : Will Train , Gini Courter, Annette Marquis
bpb Publication.

PAPER CODE BCA – 205
Environmental AWARENESS

OBJECTIVE: To Introduce the concept of Environmental Awareness.
UNIT I
Environment meaning, structure and type of environment components of environment and society environment and resources. Man Environmental relationship ; Approach to study; man Interaction; with environment (historical to present day).

UNIT II
Environmental Degradation: Meaning of degradation, types of degradation, process of degradation, cause of degradation, Religious and Philosophical factors deforestation agricultural development and degradation population growth and Degradation, urbanization and degradation, Modern technology And degradation.

UNIT III
Ecology: Definition of ecology and ecosystem. Types of Ecosystem, components of ecosystem functions of ecosystem Productivity and stability of ecosystems. Environmental Disasters: Meaning and concepts, types of hazards and disaster, man induced and natural hegards, global warning, ozone deption, green house effect and other major Environmental problems.

UNIT IV
Environmental Pollution: Air, water, solid, noise pollution Meaning, definition, sources, types, adheres effects and methods Of control.

UNIT V
Environmental Planning and Management: Concepts, aspects and Approaches, resources management, ecological Mgt. Biosphere Reserves, Management of wild life. Environmental Regulation and Rules: Vision of environment by Govt. of India, Environmental Policy, waste disposal rules and laws and legislation enacted by Parliament for environmental protection.

BOOKS:
1.   Environmental Geography By Savinder Singh
2.   Environmental Concept/Issues By Rupa And Co.
3.   Environment Rules and Regulation
4.   Environment Mgt. Vikas Publication by G.N.Pandey.

PAPER CODE BCA - 301
Mathematics III (Advanced Calculus)

UNIT–I
Partial differentiation:
Function of several variables, Limits, continuity and differentiability, Partial derivatives, Euler's Theorem, Mean value theorem & Taylor's theorem for functions of Two variables.

UNIT-II
Envelopes, Evolutes, Maxima, Minima and saddle points of functions of two variables, Lagrange's multiplier method.

UNIT-III
Gamma and Beta functions and their properties, some important deductions (duplication formula)

UNIT-IV

Multiple integrals:
Integration of functions of two & three variables, Double & triple integrals, Dirichlet integral, Use of double and triple integrals in finding areas and volumes.

UNIT-V
Improper Integrals:
Convergence of improper integrals, Evaluation of convergent improper integrals.

Recommended Books:
1. Differential Calculus by Gorakh Prasad
2. Integral Calculus by Gorakh Prasad
3. Schaum's Outline Series on Calculus

PAPER CODE BCA - 302

Operating System

UNIT 1-Computer system overview, Basic elements , functions and types of operating system Serial Processing , Batch System, multi- programmed , Batch System, Time sharing systems., System components, Operating system Services, System Calls, Processor registers, Instruction execution, Interrupts, Interrupt processing.

UNIT 2- Memory hierarchy, Cache memory, I/O Communication techniques , Concept of Process, Memory management, Information Protection, Scheduling and Resource Management Structure , Process description, Process state, Two state process model, Creation and termination of processes, Five state model, Suspended process, Process description, Process attributes

UNIT 3-. Semaphores, Classical Problem Of Synchronization, Monitors, Atomic Transactions, System Model, Deadlock Characterizations, Method for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock, Combined approach to Deadlock.

UNIT 4-. Process Concepts, process state & process control block, Process Scheduling, Scheduling, Criteria, Scheduling Algorithms, Multiple- Processor Scheduling Real-Time Scheduling, Critical Section
Problem.

UNIT 5-Loading programs, Fixed portioning, dynamic portioning, Relocation, simple paging, Simple segmentation, Loading and Linking. Paging, Segmentation, Segmentation With Paging, Virtual Memory, Demand Paging, Performance of Demand Paging, Page Replacement, Page Replacement Algorithms

Reference :
OPERATING SYSTEM CONCEPTS - Silberschatz & Galvin,Addison Wesley Publication
Operating System - W. Stallings, Second Edition, Prentice Hall of India

PAPER CODE BCA - 303
Visual Basic

UNIT 1-A profile of VB - Menus, Tool bar Buttons , Tool box, Form , Project, controls, Properties, Program window.

Programming Essentials- General Procedures, Sub Procedures and function-designning,. Calling & passing controls as arguments , Constant & variable : Decleration, Scope and types.

UNIT 2-Designing a project :- start up form , Properties and Program design , Managing multiple forms.

Flow of control - decesions - if statement , Else if clause ,Select case structure, Nested decisions.

Loops :- Do loops , For loops ,

UNIT 3-Arrays ,Declarings arrays ,Multidimentional & dynamic arrays , User defined types :- Recorded structures, With statement arrary of records .

Date file :- Random Access Files - Opening & closing of file , Put # , Get# ,Seek# statements.

Text files - opening & closing file, Write# , Print# , Input # , Line input # statements.

UNIT 4-Input & Out put Procedures - Defining a Menu , Control Arrays , Input Techniches - Validating & Formatting the Input , Moving the focus , Menu choices out put techniques - Calculation & Display , Drawing chart .

UNIT 5-Visual basic controls:- Intrinmic Controls, Custom control, Common dialog control , Printer object. Object, Classes and Collections :- Developing classes & collection MDI form , OLE controls . Data base connections.Data manager programme , Data control ,Bound controls.

Reference:

1. Foundation of Visual Basic - Douglus Hergert.
2. Visual Basic Programming Explorer- Peter G. Aitken.
3. visual Basic complete reference – Tata Mcgraw Hill
4.Visual Basic Programming by Content development group , Tata McGraw Hill Publication

PAPER CODE BCA - 304
Foundation and Communication Skills - II

English Language:

UNIT 1-Review of English Grammar; Written and Spoken Language; Common Errors in language; Punctuation (purpose, role, importance and use); OED; Language Skills(Listening, Speaking, Reading, Writing).

UNIT 2- Meaning what you mean; Listening: Effective and efficient listening in various situations (discussions, lectures, news, seminars, speech, telephone calls etc.); Reading: Purpose; Comprehension; Tactics and strategies for good reading; Writing: Guidelines for good writing; various writing styles (General and Technical writing styles).

Communication Skills:

UNIT 3-Communication (purpose, role, importance, elements); Effective and efficient communication; Role of content, context and language; Spoken and written communication; Presentation and delivery; Role of speaker and audience; Style and body language.

UNIT 4-Planning, organization, presentation, participation, conduction and feedback of discussions, meetings, seminars etc; Effective and efficient presentation and discussion skills; Discussion and Presentation skills of conferences, meetings, seminars etc.

UNIT 5-General and Technical documents(correspondence (applications, letters, resumes, CV), drafts, proposals, précis, reports, summary, synopsis,),Use of Audio-Visual Aids: OHP, Slides, Charts, Computers.

Reference :

1.Wren & Martin - Grammar
2.Books prescribed by M.P. Uchaha Shiksha Anudan Ayog are the text books for this
syllabus.

PAPER CODE BCA - 305
Accounting and Financial Management

UNIT-I Meaning of Financial Accounts, Important concepts of Accounts, types of accounts, Rules of Journal, Simple journal entries, , Cash Book – Types, Format of Cash book, Balancing of Cash Book, Ledger, posting of entries.

UNIT – II Trial Balance, adjustment entries relating to closing stock, outstanding expenses, prepaid expenses, accrued income, unearned income, depreciation and interests on capital., simple final accounts with the above adjustments.

UNIT – III Meaning and need of material control, purchasing of materials, inspection of materials, FIFO and LIFO methods of outgoing material, their advantages and limitations.

UNIT – IV Pay master's department, Pay roll accounting , Methods of payments of wages, overview of computerized method for payroll preparation.

UNIT – V Meaning and scope of financial management , functions of finance , Objectives of financial management , Mathematics of finance : present value techniques, fund from operations, importance & usefulness of statement **.**

TEXT & REFERENCE BOOKS
1. Book Keeping by Grewal T.S.
2. Cost Accounting by S.K. Maheshwari
3. Financial Management by Khan & Lain

PAPER CODE BCA - 401
Computer Architecture

UNIT 1-Structure and Function, Computer Interconnection Structure, The computer system, system buses, computer function, fetch and execution cycle, interrupts, multiple interrupts by interconnection and bus design , PCI bus .

UNIT 2-Computer memory system, and their characteristics, semi conductor / main memory , chip packaging error correction , cache memory and it's mapping .

UNIT 3-External memory - magnetic disk organization, RAID, Optical memory, CD- ROM, VROM magnetic tape .

UNIT 4-Input/Output external devices, I/O module programmed I/O and interrupt driver, I/O interrupt controller.

UNIT 5- programmable peripheral interface, DMA I/O channels and external interface.

Reference:

1.Computer Organisation and Architecture - Stalling Williams - PHI
2.Mano, M.M. - Computer Sustem Architecture, Prentice Hall of India
3.Computer Fundamentals (Architecture and organization) B. Ram
4.Structural computer organization: (Tannaunbaum) (Prentice Hall of India

PAPER CODE BCA - 402
Object Oriented Programming

UNIT-I

Overview of C++ : Object oriented programming, Introducing C++ classes, Concepts of object oriented programming. Classes & Objects : Classes, Structure & classes, Union & Classes, Friend function, Friend classes, Inline function, Scope resolution operator, Static class members: Static data member, Static member function, Passing objects to function, Returning objects, Object assignment.

UNIT-II

Array, Pointers references & The Dynamic Allocation operators : Array of objects, Pointers to object, Type checking C++ pointers, The This pointer, Pointer to derived types, Pointer to class members, References: Reference parameter, Passing references to objects, Returning reference, Independent reference, C++ 's dynamic allocation operators, Initializing allocated memory, Allocating Array, Allocating objects.

Constructor & Destructor : Introduction, Constructor, Parameterized constructor, Multiple constructor in a class, Constructor with default argument, Copy constructor, Default Argument, Constructing two dimensional Array, Destructor.

UNIT-III

Function & operator overloading : Function overloading, Overloading constructor function finding the address of an overloaded function, Operator Overloading: Creating a member operator function, Creating

Prefix & Postfix forms of the increment & decrement operation, Overloading the shorthand operation (i.e. +=,-= etc), Operator overloading restrictions, Operator overloading using friend function, Overloading New & Delete, Overloading some special operators, Overloading [ ], ( ), -, comma operator, Overloading << .

UNIT-IV

Inheritance : Base class Access control, Inheritance & protected members, Protected base class inheritance, Inheriting multiple base classes, Constructors, destructors & Inheritance, When constructor & destructor function are executed, Passing parameters to base class constructors, Granting access, Virtual base classes .

Virtual functions & Polymorphism : Virtual function, Pure Virtual functions, Early Vs. late binding

UNIT-V

The C++ I/O system basics : C++ streams, The basic stream classes: C++ predefined streams, Formatted I/O: Formatting using the ios members, Setting the format flags, Clearing format flags, An overloaded form of setf ( ), Examining the formatted flags, Setting all flags, Using width() precision() and fill(), Using manipulators to format I/O, Creating your own manipulators.

TEXT & REFERENCE BOOKS:

C++ The complete reference - Herbert Schildt,- TMH Publication
Object Oriented Programming C++ - R. Lafore
Object Oriented Programming with C++ - R. Subburaj, Vikas Publishing House, New Delhi.
C++- E. Balguruswamy, , TMH Publication

PAPER CODE BCA - 403
System Analysis and Design

UNIT 1-System: definition and concept; Real time and distributed systems; Data information and related attributes; System analysis and analyst.

UNIT 2-System development life cycle: study, analysis, design, development and implementation; System planning; data fact finding techniques.

UNIT 3-System design and modeling: logical and physical design representation, data flow diagram, ERD, structure charts.

UNIT 4- forms design :classification, user interface; standards; control and validation checks; user interface guidelines modular and structured design.

UNIT 5-System implementation & maintenance; Project management techniques; use of an available tool to implement a case study.

Reference:

1.James, A.S.: Analysis and Design of Information systems, McGraw Hill, 1986.
2.Ludeberg, M., Golkuhl, G. & Hilson, A.: Information Systems Development, A sysematic Approach, Prentice Hall International, 1981.
3.Leason, M.: Systems Analysis and Design, Science Research Associates,

Semprive, P.C.: Systems Analysis - Definition, Process and Design, 1982.

PAPER CODE BCA - 404
Introduction to Internet Technologies

UNIT- 1 Introduction of Internet : What is Internet , Services Of Internet , H/W & S/W Requirements to Connect to the Internet .E-mail, Introduction of WWW, Web Server and Web Client , Difference between the web and the Internet , Internet Service Provider (ISP).

Web publishing Concepts, Domain name Registration, Space on Host Server for Web site,

UNIT- 2 Choosing an Internet Service Provider : Location , Stability , Customer Service, Performance , Pricing , Establishing an Internet Account.

E-mail Basics : Running an E-mail Program , Sending mail, Reading mail, Replying to mail, Deleting mail. Newsgroups, mailing Lists , Chatting.

UNIT –3

Data Transmission Protocols, Client/Server Architecture & its Characteristics, FTP & its usages. Telnet Concept, Remote Logging, Protocols, Terminal Emulation. Massage oard, Internet chatting - Voice chat, text chat.

UNIT –4 An Introduction to Internet Explorer : Starting Internet Explorer , A Quick Tour with Internet Explorer , At the Helm in internet Explorer, Viewing Various file Types .

Internet Search Engines: What is Search Engines , How do Search Engines work ?, Types of Search Engines.

UNIT -5 Creating a Web Page : What is HTML , What can You Do with HTML , Creating , Saving and Viewing HTML documents , Applying Structure Tags , Applying Common Tags and attributes Images, Hyperlinks, Backgrounds and Colour controls, Different HTML tags, Table layout and presentation, Use of font size & Attributes, List types and its tags. Use of Frames and Forms in web pages. Creating a New Web, Opening an Existing Web, Creating , Opening and Saving Web Pages , Entering and Editing Text. Printing Page , Spell Checking, Finding or Replacing Text.

Reference:
Alexis leon and Mathews Leon - Internet for every one (Tech World)
Douglas Comer - The Internet Book (prentice Hall)
SYBEX- bpb publication – Internet Complete (Second Edition).
 V.K.Jain - *O level Module - M 1.2 - Internet & web page designing* , BPB Publications

PAPER CODE BCA – 405

Mathematics – IV (Differential Equations)

UNIT–I
Differential Equations of First Order and First Degree:
Homogeneous Differential Equations, Reducible to Homogeneous Differential Equations, Linear Differential Equations, Reducible to Linear Differential Equations, Bernoulli's Equation, Exact Differential Equations, Change of Variables.

Differential Equations of First Order and Higher Degree:
Differential Equations solvable for p, solvable for y, solvable for x, Clairaut's Equation.

UNIT–II
Family Of Curves:
Trajectories, Orthogonal Trajectories, Self-Orthogonal Families, Linear Differential Equations of Higher order with constant coefficients, Differential Equations reducible to Linear Differential Equations with Constant Coefficients.

UNIT–III
Linear Differential Equations of second order, Method of Variation of Parameters. Simultaneous differential equation of first order.

UNIT–IV
Series Solution of Differential Equations:
Power series method, Bessel and Legendre functions and their properties, convergence and recurrence relations, Orthogonality of functions, Sturm – Liouville problems, Orthogonality of Eigen functions.

UNIT–V
Partial Differential Equations:
Definition and Formation. Partial Differential equation of first order, Lagrange's method, standard forms, Charpit's Method, Linear Partial Differential Equation of Higher order with Constant Coefficients.

Recommended Books:
1. Ordinary and Partial Differential Equations by M.D.Raisinghania.
2. Differential Equations by J.N.Sharma.
3. Mathematical Methods by J.N.Sharma
4. Differential Equations by P.N.Chatterjee Part-1 & 2
5. Schaum's Outline Series on Differential Equations.

PAPER CODE BCA - 501
Computer Graphics

UNIT 1-Basics of Graphics Systems Applications, Display Devices : Video Displays, Raster-Scan Displays, Random Scan Displays, DVST, Flat-panel Displays.

UNIT 2-Input devices : Keyboards, Mouse, Trackball and Space ball, Joysticks, igitizers, Image Scanner, Touch panel, light pens, Voice Systems etc.

UNIT 3-Line drawing algorithms: DDA Algorithm, Bresenham's line Algorithm. Bresenham's Circle drawing algorithm, Mid-Point Circle Algorithm, Scan-line Polygon Fill Algorithm, Inside-Outside test, Boundary Fill algorithm, Flood-Fill algorithm. Pixel, Pixel addressing, Antialiasing.

UNIT 4-Clipping : Cohen-Sutherland line clipping algorithm, Line clipping using non rectangular clip windows, Polygon clipping,Text clipping.

UNIT 5- Two-dimensional geometric transformation : Translation, Rotation, Scaling, Reflection, Shear, Matrix representation and Homogeneous coordinates. Composite transformation: Translations, Rotations,Scalings.General Pivot-Point Rotation and Scaling.

Reference:

1.Computer Graphics by Donald,Heam M. Pardine Baker (PHI) Eastern Economy Edition.

2.Mathematical Elements for Computer Graphics by Roggers.

PAPER CODE BCA - 502
Introduction to Linux

UNIT – I

Linux introduction and file system - Basic Features, Advantages, Installing requirement, Basic Architecture of Unix/Linux system, Kernel, Shell. Linux File system-Boot block, super block, Inode table, data blocks,
How Linux access files, storage files, Linux standard directories. Commands for files and directories cd, ls, cp, md, rm, mkdir, rmdir, pwd, file, more, less, creating and viewing files using cat, file comparisons – cmp & comm, View files, disk related commands, checking disk free spaces. Partitioning the Hard drive for Linux, Installing the Linux system, System startup and shut-down process, init and run levels.

UNIT–II

Essential linux commands Understanding shells, Processes in linuxprocess fundamentals, connecting processes with pipes, tee, Redirecting input output, manual help, Background processing, managing multiple processes, changing process priority with nice, scheduling of processes at command, cron, batch commands, kill, ps, who, sleep, Printing commands, find, sort, touch, file, file related commands-ws, sat, cut, dd, etc. Mathematical commands- bc, expr, factor, units. Creating and editing files with vi, joe & vim editor

UNIT–III

System administration Common administrative tasks, identifying administrative files – configuratinn and log files, Role of system administrator, Managing user accounts-adding & deleting users, changing permissions and ownerships, Creating and managing groups, modifying group attributes, Temporary disable user's accounts, creating and mounting file system, checking and monitoring system performance file security & Permissions, becoming super user using su. Getting system information with uname, host name, disk partitions & sizes, users, kernel. Backup and restore files, reconfiguration hardware with kudzu,
installaing and removing packages with rpm command. Configure X-windows desktop-redhat-config-Xfree86, understanding XF86config file, starting & using X desktop. KDE & Gnome graphical
interfaces, changing X settings.

UNIT–IV

Shell programming- Basic of shell programming, Various types of shell available in Linux, comparisons between various shells, shell programming in bash, read command, conditional and looping statements, case statements, parameter passing and arguments, Shell variables, system shell variables, shell keywords, Creating Shell programs for automate system tasks.

UNIT-V

Simple filter commands – pr, head, tail, cut, paste, sort, uniq, tr. Flter using regular expressions – grep, egrep, and sed. awk programming – report printing with awk.

TEXTS & REFERENCES BOOKS:
 UNIX – Concepts & Applications (Third Ed.) – Sumitabha Das, Tata McGraw Hill Publications.
 Unix for programmers and users (Third Ed.) – Graham Glass & King Ables, Pearson Education India. (Low Prices Edition).
 Red Hat Linux 9 Bible – Cristopher Negus, IDG Books India Ltd.
LINUX Complete – BPB Publication

PAPER CODE BCA - 503
Software Engineering

UNIT 1-Introduction to S/W engineering; software product and process: Generic Phases, software development models; Project Scheduling and Tracking.

UNIT 2-Software architecture and design: Prominent design methodologies; Verification, validation and performance evaluation; SW Configuration Management and maintenance; SW measurement-Size, Process and Project Metrics; LOC , FP metrics.

UNIT 3-Testing and the related concepts : Testability and features of Test Cases; Software Testing techniques: WBT,BBT, Software Testing Strategies: Approach, Issues; integration, System, alpha , Beta testing etc.

UNIT 4-Quality Factors, framework, Quality assurance: concepts, Activities etc. . SW Reliability, SQA Plan, Quality models: ISO 9000 and SEI-CMM and their relevance.

UNIT 5-Functions of CASE tools and their use with practical examples of special CASE tools, such as Turbo Analyst.

Reference:

Software Engineering a Practitioner's Approach - Pressman R.S. (McGraw Hill)

PAPER CODE BCA - 504
Mathematics-V- (Statistical Methods)

UNIT-I Introduction: Frequency distribution and Frequency charts, Histogram, Frequency polygons, Frequency curves and Cumulative frequency distribution, Ogives.
Measures of Central Tendency: Arithmetic mean, weighted arithmetic mean, geometric mean, harmonic mean, median, mode, quartiles, deciles and percentiles.
Measures of Dispersion: Range, mean deviation, semi-inter quartile range for quartile deviation, absolute and related dispersion, coefficient of variation.

UNIT-II Moments, Skew ness and Kurtosis: Moments of various types, relation between moments, Sheppard's correction, Skew ness and kurtosis, moment generating functions.
Elementary Probability Theory: Sample space, events, classical definition of probability, theorems on total and compound probability, independent and dependent events, mutually exclusive events, mathematical expectation.

UNIT-III Probability Distributions: Discrete and continuous probability distributions, basic concepts and applications of Binomial, Poisson, Rectangular, Exponential and Normal distributions.

 UNIT-IV Regression and Correlation: Regression analysis, Least square fit, polynomial and curve fitting, Linear and non-linear regression algorithms, Linear correlation, measures of correlation, coefficient of correlation, rank correlation, multiple and partial correlation for three variables.

UNIT-V Testing of Hypotheses: Simple and composite hypothesis, errors of kind-I and kind-II, critical region, level of significance.
Tests of Significance: Tests for simple hypotheses, Chi-square, t, F and z tests, ANOVA-one way and two-way classification.

Recommended Books:
1. Mathematical Statistics by J. N. Kapur and H. C. Saxena.
2. Mathematical Statistics by M.Ray and H. S. Sharma.
3. Statistical Methods by S.P. Gupta
4. Statistics- Theory, Methods and Applications by Sancheti and Kapoor.

PAPER CODE BCA - 505
Active Server Page

UNIT – I
VBScript Basics, Embedding VBScript in HTML, VBScript to Display Information, Hiding VBScript from Older Browsers, Code Documentation and Formatting, Defining and using Variables, Subtypes, and Constants, single and multi Dimensional Arrays, VBScript Procedures, Program Control statements and Structure, Strings, Numbers, Dates and Times functions.

UNIT – II
Active Server Pages - Introduction & Benefits of ASP, Introduction to Web Server, PWS & IIS, Working with objects, Using the Response Object – Buffering, Cache, Write, Flush, End, Redirect etc. Using the Request object – Querystring & Form collection, Retrieving form Data, Working with Cookies in ASP

UNIT – III
Application and Session Objects, Global.asa file, Client-Side Form Validation, The FileSystemObject and the TextStream Object. Working with the file system, Reading and Writing to a File, Working with Drives and Folders.

UNIT – IV
Using Databases – Introduction to the ActiveX Data Objects Model (ADO), Connecting to a Database, Displaying Records, Creating Dynamic Drop-down Menus and Option Groups, Filtering Records with SQL WHERE Clauses and Wildcards, Adding, Updating, and Deleting Records, Working with Recordsets – Retrieving a Recordset, Recordset Cursor and Locking Types, Advanced Methods and Properties of the Recordset Object.

UNIT – V
Generating Dynamic Content From the Server - Detecting Browser Properties, Using the Content Rotator Component, The Content Linking Component, The Command Object and the Parameters Collection, Creating a Data Browser, Paging Through Rows in a Recordset, Case Study on creating a Job Site.

TEXTS & REFERENCE BOOKS :
Active Server Pages 2.0 (Unleashed) by Stephen Walther : Techmedia
Tech yourself ASP 3.0 in 21 days by Scott Mitchell, James Atkinson: Techmedia Mastering Active Server Pages 3.0 by Russell Jones: BPB
ASP 3 Programming Bible by Eric A.Smith: IDG Books

PAPER CODE BCA – 601

Mathematics-VI (Numerical Methods)

Unit – I Computer Arithmetic, Floating point number operations, Normalization and their consequences, Emphasis on computational Algorithms, Iterative methods, Zeros of a single transcendental equation and zeros of polynomials using Bisection, False position, Newton-Raphson and Secant methods, convergence of solutions.

Unit – II Simultaneous linear equations, Solution of simultaneous linear equations, Gauss elimination method with pivoting, Gauss – Jordan method, Jacobi's iteration method and Gauss – Seidel iteration method, Ill-conditioned equations and refinement of solutions.

Unit – III Difference Operators and Interpolation: Definition of Forward, Backward, Shifting, Divided difference, Central and Averaging Operators and their relationships, Newton's forward difference, backward difference and divided difference interpolation formulae, Lagrange's Interpolation formula.

Unit – IV Numerical Differentiation and Integration:
Numerical Differentiation using Newton's forward difference, backward difference and divided difference interpolation formulae, General Quadrature formula, Newton Cote's integration, Trapezoidal rule, Simpson's one – third and three – eight rules.

Unit – V Numerical Solution of Ordinary Differential equations by Euler's Method, Modified Euler's method, Taylor's series method, Picard's method, Runge Kutta, second order and fourth order methods, Predictor-corrector methods.

Recommended Books:
1. Computer Oriented Numerical Methods by V.Rajaraman. .
2. Numerical Analysis by S.S.Sastry.
3. Numerical Algorithms by E.V.Krishnamurthy
4. Numerical Methods by B.S.Grewal

PAPER CODE BCA - 602
ORACLE

UNIT - I Different Data base model ,RDBMS components – Kernel, Data dictionary,Client/Server Computing and Oracle, Overview of oracle architecture – Oracle files, System and User process, Oracle Memory, role of DBA, System data base object, Protecting data

UNIT - II SQL Plus, Oracle data types, Creation, Insertion, Updation, Deletion of tables, Modification of structure of tables, Removing, Deleting, Dropping of Tables, Data Constraints, Column level & table Level Constraints.Null, Unique Key, Default key, Foreign key ,Check Integrity constraints. Defining different constraints on the table Defining Integrity Constraints in the ALTER TABLE Command, Select Command, Logical Operator, Range Searching, Pattern Matching,Oracle Function, Grouping data from Tables in SQL, Manipulation Data in SQL

UNIT-III Joining Multiple Tables (Equi Joins),Joining a Table to itself (self Joins),Subqueries Union, interesect & Minus Clause,Creating view,Renaming the Column of a view,Granting Permissions, - Updation, Selection, Destroying view,Permission on the objects created by the user,GRANT statement,Object Privileges,Referencing a table belonging to another user,Revoking the permission given,Indexes

UNIT-IV PL/SQL, SQL & PL/SQL differences, block structure, variables, constants, datatype, Assigning database values to variables, Select … INTO, cursors, Using flow control and loop statement, GOTO statement, Error handling, Built-in exceptions, User defined exceptions, The Raise-Application-error procedure, Oracle transaction, Locks, Implicit and Explicit locking. *21*

UNIT-V Procedures & Functions - Concept, creation, execution, advantages, syntax, deletion,Triggers - Concept, use, how to apply database triggers, type of triggers, syntax, deleting,Import, Export,Oracle backup and recovery

Recommended Books:

1. *Ivan Bayross,* **"SQL, PL/SQL", BPB Publications"**
2. *Liebschuty,* **"The Oracle Cook Book",** *BPB Publication*
3. *Michael Abbey, Michael J.Corey**, "Oracle a Beginners guide".** TMH Publication*
4. **Oracle Unleashed** *(Chapter 1,2,3,4,5 and 9)*

PAPER CODE BCA - 603
Computer Networking

UNIT 1-DataCommunication System: Purpose, Components : Source, transmitter, transmission System, receiver, and destination. Data transmission: Frequency, Spectrum and Bandwidth. Time-domain and frequency domain Concepts. Relationship between data-rate and Bandwidth.

UNIT 2-Analog and digital data transmission. Data and signal. Analog and digital Signaling of analog and digital data. Modem, Modulation techniques, CODEC, Digital Transmitter etc. Transmission impairments :Attenuation and attenuation distortion, delay distortion, noise.

UNIT 3-Introduction to Network, OSI reference model, TCP/IP reference model. Transmission Media: Magnetic Media, Twisted-Pair cables, Baseband & Broadband Coaxial cables, Fiber Optics. Wireless Transmission: Radio Transmission, Microwave Transmission.

UNIT 4-ISDN; ATM; Data Link Layer: Services, Framing, Error Control, Error-detecting & Correcting Codes. Data Link Protocols: Stop-and-Wait Protocol, Sliding Window Protocol. HDLC; Static & Dynamic Channel allocation in LANs & MANs.

UNIT 5-Multiple Access Protocols: ALOHA, CSMA/CD; IEEE standards 1002.3 and Ethernet, 1002.4: Token Bus; 1002.5: Token Ring. Bridges, Routers, Gateways, Routing Algorithm, Congestion control Algorithm, Internetworking, The TCP/IP Protocol ,IP Addressing, Subnets.

Reference:

1. Computer Networks By Tanenbaum

2. Data&Computer Communications By Stallins.

PAPER CODE BCA - 604
E –Commerce

UNIT 1 : *Introduction*
Brief history of e-com , Elements of e-com, Types, Intermediaries and E-Commerce, Advantages & Disadvantages of e-com , E-Commerce practices Vs traditional business practices.

UNIT 2 : E-Business; E-Business Vs E-Commerce, EDI- Who Use EDI, Origin, benefits , Migration to open EDI-Approach , E-com with WWW/Internet.

UNIT 3: *Electronic communication* & WWW
 PC and networking , Network topologies and communication media , E-mail , OSI and TCP/IP Models , LAN, WAN, MAN, Internetworking – Bridges and gateways , What is Web(World Wide Web), Web Architecture, The Web and E-Com.

UNIT 4: *Electronic Payment System*:
Electronic payment system – Overview , Electronic or digital cash , Electronic Checks-Benefits , Online credit card based system , Debit card, Smart Cards.

UNIT 5: *Security and Application*
Need of computer security, Security strategies, Firewalls And Network security, Types of Firewalls, Transaction Security, Cryptography, Public key encryption, Private key encryption, Digital signatures,. Digital Certificates, Secure Electronic Transaction(SET).

REFERENCE BOOKS:

1.”Electronic Commerce(A Manager's Guide)” By Ravi Kalakota and Andrew B. Whinston.
2.”Web Commerce Technologies Handbok”By Daniel Minoli & Emma Minoli
3.”E-Commerce” By Dr.Varinder Bhatia

PAPER CODE BCA - 605
Java Programming

UNIT–I
C++ Vs JAVA, JAVA and Internet and WWW, JAVA support systems, JAVA environment. JAVA program structure, Tokens, Statements, JAVA virtual machine, Constant & Variables, Data Types, Declaration of Variables, Scope of Variables, Symbolic Constants, Type Casting. Operators : Arithmetic, Relational, Logical Assignments, Increment and Decrement, Conditional, Bitwise, Special, Expressions & its evaluation. If statement, if…else… statement, Nesting of if…else… statements, else…if Ladder, Switch, ? operators, Loops – While, Do, For, Jumps in Loops, Labelled Loops.

UNIT–II
Defining a Class, Adding Variables and Methods, Creating Objects, Accessing Class Members, Constructors, Methods Overloading, Static Members, Nesting of Methods. Inheritance: Extending a Class, Overriding Methods, Final Variables and Methods, Final Classes, Finalize Methods, Abstract methods and
Classes, Visibility Control.

UNIT–III
Arrays: One Dimensional & two Dimensional, strings, Vectors, wrapper Classes, Defining Interface Extending Interface, Implementing Interface, Accessing Interface Variable, System Packages, Using System Package, Adding a Class to a Packages, Hiding Classes.

UNIT–IV
Creating Threads, Extending the Threads Class, Stopping and Blocking a Thread, Life Cycle of a Thread, Using Thread Methods, Thread Exceptions, Thread Priority, Synchronization, Implementing the Runnable Interface.

UNIT–V
Local and Remote Applets Vs Applications, Writing Applets, Applets Life Cycle, Creating an Executable Applet, Designing a Web Page, Applet Tag, Adding Applet to HTML File, Running the Applet, Passing
Parameters to Applets, Aligning the Display, HTML Tags & Applets, Getting Input from the User.

TEXT & REFERENCE BOOKS:
Java Complete Reference – TMH Publications
Java Volume I & II – Pearson Education
Programming in Java, 2nd Edition, E. Balaguruswamy, ,TMH Publications
Peter Norton Guide to Java Programming , Peter Norton, Techmedia Publications