

**BCA I SEMESTER
PAPER- I
SUBJECT: COMMUNICATIVE ENGLISH**

| Lectures/Unit | Theory | | Internals | | Practical | |
|---------------|--------|-----|-----------|-----|-----------|-----|
| 14 | Max | Min | Max | Min | Max | Min |
| | 100 | 40 | 20 | 10 | 100 | 50 |

UNIT-I

Comprehension: Comprehension includes understanding the language by reading & listening. Passages or poems will be read out in the class and question will be asked verbally to evaluate level of comprehension: Talks, reports, and poems.

UNIT-II

Writing skills: In this section student will be exposed to various techniques of writing a paragraph, report composition, application and letters. Paragraph Writing- Objective, Introduction, the topic sentence, developing the topic.

UNIT-III

Note Making/Talking: - Objective, introduction, How to read, specimen notes, reduction devices, heading and subroutine points. Report writing: - Reporting Events, Reporting interviews, Reporting Surveys.

UNIT-IV

Letter Writing- Personal letter, Business letters, Objectives, Introduction and format of the letter.

UNIT-V

Functional Grammar: - Grammar will be taught in functional, integrated and informal way giving more stress on the usage rather than defining. Parts of speech, agreement of the verb with the subject. Subject and predicate. Transformation of sentences – interchange of active and voice, interchange of affirmative and negative sentences.

Text Books-

English Grammar by Wren & Martin.

Reference Books-

The most common mistakes in English usage the addition by Thomas Ellat.

Windshuttle, Keith and Elizabeth Eliot.1999. Writing, Researching and Communicating : Communication Skills for the Information Age. 3rd Reprint. Tata McGraw-Hill, Australia.

Dignen, Flinders and Sweeney. English 365. Cambridge University Press.

I. Jayakaran. 2000. Everyone's Guide to Effective Writing.2 M Publishing International, Chennai.

Varinder Kumar, Bodh Raj, Manocha, Business Communication Skills, Kalyani Publishers, New Delhi, latest edition.

Ravi Aggarwal : Communication Today and Tomorrow, Sublime Publications, Jaipur, 2008.

Practicals

Unit I

Introduction

- Formal and Informal Introduction
- Academic Introduction
- Speech of Introduction
- Tenses

Unit II

Describing Products

- giving technical information
- describing a gadget
- giving operating instructions

Telephonic Conversation (I)

- greeting etiquette

Unit III

Situational Conversation (I)

- Module : English For You
- Invitations : Formal/ Informal
- Offering something to someone
- Business Introductions

Unit IV

Comparing and Contrasting

- 'old' and 'new' words- traditional/contemporary etc.
- Time expressions
- expressions to compare and contrast- on the other hand etc
- 'change' verbs- develop, evolve, etc.

Unit V

Predicting/Informing

- time expressions- twenty years from now
- predicting-talk on internet of the future

Talking About Environment

- Talking about issues- environmental issues, energy crisis, water scarcity
- action words- save, conserve, recycle, volunteer etc.

**BCA I SEMESTER
PAPER- II
SUBJECT: MATHEMATICAL FOUNDATION**

| Lectures/Unit | Theory | | Internals | |
|---------------|--------|-----|-----------|-----|
| 14 | Max | Min | Max | Min |
| | 100 | 40 | 20 | 10 |

UNIT-I

Boolean Algebra, Principle of Duality, Properties of Boolean Algebra, inclusion in Boolean Algebra, Boolean sub algebra, partial order relations, lower and upper bound total order, algebra of propositions, algebra of electric circuits: Switching circuits, design of simple automatic control system.

UNIT-II

Sets & operations on sets: Union, Intersection, disjoint set, difference, symmetric difference, complement laws of operation on sets, Venn diagram, generalized De-Morgan's law, generalized form of distributed law. Cartesian products of sets & relations: Cartesian products of two sets, relations binary relations, equivalence relations, equivalence sets, properties of equivalence classes, partitions of sets, functions or mapping, kinds of mapping.

UNIT-III

Functions, function of different kinds, limits, some important expansions. Right hand and left hand limits. Continuity, basic concepts of derivatives of a function, right hand and left hand derivatives, rolls theorem, first and second mean value theorems, Taylor's theorem, Maclaurian's theorem (Only Statement without Proof).

UNIT-IV

Elementary integration anti-derivative, indefinite Integral, Definite Integral, Fundamental Rules of Integration, Standard formula, Integration by Substitution, Extended form of fundamental formula, some important integrals, Integration by Parts.

UNIT-V

Partial Differentiation, Partial Differentiation of higher orders, Homogeneous functions, Total Differentiations, Differentiations of composite & Implicit functions, changes of variables, Taylor's theorems for several variables. Simple problem of maxima and minima.

Text Books-

Discrete mathematics: D.C.Agrawal, Thakur & Shrivastava

Calculus: B.R. Thakur, H.K. Pathak,

Reference Books-

Elementary Calculus :D.C.Agrawal, Thakur & Harikishan

Vector calculus and Geometry by D.C.Agra

**BCA I SEMESTER
PAPER- III
SUBJECT: BASICS OF IT & OFFICE AUTOMATION**

| Lectures/Unit | Theory | | Internals | | Practical | |
|---------------|--------|-----|-----------|-----|-----------|-----|
| 14 | Max | Min | Max | Min | Max | Min |
| | 100 | 40 | 20 | 10 | 50 | 17 |

UNIT I

MS-Word: Introduction to word Processing, features. **File Tab-** Creating, Saving, Printing. **Home Tab –** Clipboard, Font and Paragraph. **Insert Tab-**Pages, Tables, Links, Header & footer, **Page Layout Tab-**Page setup, Paragraph. **Mailings Tab-** Mail Merge. **View Tab-** Document View.

UNIT II

MS-Excel: Workbook & Worksheet Fundamentals:Concept of Row, Column & Cell. Creating a new workbook through blank & template. **Working with worksheet:**Entering data into worksheet (General, Number, Currency, Date, Time, Text, Accounting, etc.), Renaming, Copying, Inserting, deleting & protecting worksheet. **Working with Row & Column** (Inserting, Deleting, Pasting, Resizing & Hiding), Cell & Cell formatting, Concept of Range. **Charts:**Preparing & editing different types of Charts. **Working with formulas:**Formula bar; Types of functions; Syntax & uses of the following functions: SUM, TOTAL, COUNT, AVERAGE, MAX, MIN, ROUND & IF.

UNIT III

MS-PowerPoint: Creating presentation- using Slide master and Template in various Themes. **Working with slides:**New slide, move, copy, delete, duplicate, slide layouts, Presentation views. **Format Menu:**Font, Paragraph, Drawing & Editing. **Printing presentation:**Print slides, notes, handouts and outlines. **Saving presentation in different file formats.****Inserting objects** (Video, Audio), table & excel sheets, picture, chart. **Connecting slides** through hyperlink and action button, **Transition, Animation, Slide show-** Slide sorter, Slide transition and Animation effects, *Presenting the Slide show:* Setup Slide Show, Rehearse Timing.

UNIT IV

Internet & Web Services- Internet: World Wide Web, URL, Domain name, Web Browser (Internet Explorer, Firefox, Google Chrome, Opera, UC browser, etc.); Search Engine (Google, Bing, Ask, etc.); *Website:* Static & Dynamic; Difference between Website & Portal. *E-mail:* Account Opening, Sending & Receiving Mails, *Basics of Networking:* Types of Networks (LAN, WAN, MAN); Network Topologies (Star, Ring, Bus, Hybrid).

UNIT V

Cyber Ethics, Security & Privacy-Email, Internet & Social Networking Ethics. Types of viruses & antivirus. Computer security issues & its protection through Firewall & antivirus. Cyber Policies, Intellectual Property Rights (IPR), Violation of Copyright & Redressal. Making secured online transactions.

Text Books-

Microsoft Office 2010 Bible, John Walkenbach, Herb Tyson, Michael R. Groh, Faith Wempen, Lisa A. Bucki.

Reference Books-

Basic Computer Science & Information Technology, RP Unified, Ram Prasad and Sons, Bhopal.

BCA I SEMESTER

PAPER- IV

SUBJECT- PROGRAMMING METHODOLOGY AND C PROGRAMMING

| Lectures/Unit | Theory | | Internals | | Practical | |
|---------------|--------|-----|-----------|-----|-----------|-----|
| | Max | Min | Max | Min | Max | Min |
| 14 | 100 | 40 | 20 | 10 | 50 | 17 |

UNIT-I

Classification of Programming Language: Procedural Languages, Problem Oriented Languages, Non-Procedural Languages. **Structured Programming Concepts:** Top-Down Analysis, Modular Programming, Structured Code. **Problem Solving using Computers:** Problem definition and analysis, Problem design, Coding, Compilation, Debugging and testing, Documentation, Implementation and Maintenance.

UNIT-II

Introduction to C language: Constants, Variables, Keywords, Data types, Operators, Expressions, Operator Precedence and Associativity. **Structure of C Program:** Variable declaration, declaration of variable as constant.

UNIT-III

Managing Input/Output Operators: Formatted and Unformatted. **Control Statements:** Branching, Jumping & Looping. Scope Rules, Storage Classes.

UNIT-IV

Arrays (One and Two Dimensional). **Functions:** User defined function, Standard function, Categories in Functions, Passing Arguments to a Function, Recursion. **Pointers:** Operators, Declaration, pointer to arithmetic, array of pointers. **Structures:** Declaring, Accessing, Initializing, Array of structures.

UNIT-V

File Handling in C: Opening and Closing a Data File, Inserting data to data file. **Graphics programming-** Introduction, functions, stylish lines, drawing and filling images, palettes and colors, justifying text, bit of animation.

Text Books-

Let us C by Yashwant Kanetkar IV Edition

ANSI C by E. Balagurusamy

Programming in C by S.S. Bhatia

Reference Books-

How to design Programs-An Introduction to programming and computing- Felleisen, et.al, PHI Publication

Introduction to Algorithms by Cormen. PHI

Programming in C: Denis Richi

**BCA I SEMESTER
PAPER- V**

SUBJECT: FUNDAMENTALS OF COMPUTERS AND OPERATING SYSTEM

| Lectures/Unit | Theory | | Internals | |
|---------------|--------|-----|-----------|-----|
| | Max | Min | Max | Min |
| 14 | 100 | 40 | 20 | 10 |

UNIT-I

Introduction to Computers: Characteristics, Evolution, Generations, Types of computers. **Basic Computer Organization:** Input unit, Output unit, Storage unit, Arithmetic logic unit, Control unit, Central processing unit. **Processor and Memory:** Central processing unit, Control unit, Arithmetic logic unit, Instruction set, Processor speed **Main Memory-** Introduction, Storage Evolution Criteria, Types of Main Memory, Main Memory Capacity, Cache Memory.

UNIT-II

Secondary Storage Devices: Sequential and Direct Access Mode, Magnetic Tape, Magnetic Disk, Optical Disk, Memory Storage Device. **Input Output Devices:** Input Devices (Keyboard, Point And Draw, Data Scanning, Digitizer, Electronic Card Reader, Speech Recognition And Vision Input System. **Output Devices-** Monitor, Printer, Plotter, Screen Image Projector, Voice Response System.

UNIT-III

COMPUTER SOFTWARE: Introduction, Relationship between Software and Hardware, Types Of Software, Logical System Architecture, Firmware, Middleware. **COMPUTER LANGUAGES:** Machine Language, Assembly Language, High Level Language. **Translators:** Assembler, Compiler, Interpreter

UNIT-IV

OPERATING SYSTEM: Introduction, Functions, Process Management, Memory Management, File Management, Device Management, Security, Command Interpretation, OS Capability Enhancement Software, Some Popular Operating System(CUI, GUI), FAT, **Booting a System** (ROM BIOS, POST, IOSYS, MSBIOS, SYS, Autoexec.Bat, Config.Sys, Command.Com).

UNIT-V

Applications of OS: DOS Commands: Internal: DIR, MD, CD, RD, COPY, DEL, VOL, DATE, TIME, CLS, PATH, TYPE. **External:** CHKDSK, XCOPY, PRINT, DISKCOPY, DISKCOMP, DOSKEY, TREE, MOVE, LABEL, APPEND, FORMAT, SORT, FDISK, BACKUP, EDIT, MODE, ATTRIB, HELP, SYS. **Windows: Structure:** Desktop, Taskbar, Start Menu, My Computer ,Recycle Bin, Windows Accessories: Calculator, Notepad, Paint, Wordpad, Character Map, Windows Explorer:-creating folders and other explorer facilities

Textbooks:

1. Computer Fundamental by P. K. Sinha, BPB Publications Unit I, II, III
2. Operating System Principles, 7th Edition, by Silberschatz& Galvin, Wiley Publication Unit IV
3. DOS 6 & 6.2:-Robert Thomas. Unit V
4. Windows XP Professional edition, Complete BPB publication. Unit V

**BCA II SEMESTER
PAPER- I
SUBJECT: COMPUTER SYSTEM ARCHITECTURE**

| Lectures/Unit | Theory | | Internals | |
|---------------|--------|-----|-----------|-----|
| | Max | Min | Max | Min |
| 10 | 100 | 40 | 20 | 10 |

UNIT- I

Binary Fixed- Point representation, Arithmetic operation on Binary numbers, Overflow & Underflow, Floating Point Representation, Codes- ASCII, EBCDIC, Gray Code, Excess-3 & BCD, Error detection & Correcting codes.

UNIT- II

Logic Gates- AND, OR, NOT, NOR, NAND, XOR, XNOR and their Truth Tables, Boolean algebra, Basic Boolean Law's, De Morgan's theorem, MAP Simplification- K MAP, Sum-of- Product & Product-of- Sum.

UNIT- III

Combinational & Sequential circuits, Half Adder & Full Adder, Half Subtractor & Full Subtractor, Flip-Flops- RS, D, JK, & T flip- flop, Shift Registers, RAM, ROM, Multiplexer, De multiplexer, Encoder, Decoder, Program Control, Instruction Sequencing.

UNIT- IV

I/O Interface, Properties of simple I/O devices and their controller, Isolated verses memory- mapped I/O, Asynchronous data transfer- Strobe Control, Handshaking, Asynchronous serial transfer, Modes of Data transfer, I/O Processor.

UNIT- V

Auxiliary Memory- Magnetic Drum, Disk & Tape, Semi- conductor memories, Memory Hierarchy, Associative Memory-Hardware Organization, Match Logic, Read and write Operation, Cache Memory-Hit Ratio, Mapping Techniques, Writing into Cache, Virtual Memory- Address Space & Memory Space, Address Mapping, Page Table, Page Replacement.

Text Books:

Thomas C. Bartee – Digital Computer Fundamentals
Albert Paul Malvino & Jerald A. Brown- Digital Computer Electronics

Reference Books:

M. Morris Mano- Computer System Architecture

**BCA ISEMESTER
PAPER II
SUBJECT: PROGRAMMING IN VISUAL BASIC**

| Lectures/Unit | Theory | | Internals | | Practical | |
|---------------|--------|-----|-----------|-----|-----------|-----|
| | Max | Min | Max | Min | Max | Min |
| 10 | 100 | 40 | 20 | 10 | 100 | 50 |

UNIT-I

IDE of VB - Menu bar, tool bars, project explorer, toolbox, Properties window, Form designer, Form layout, Immediate window. VISUAL DEVELOPMENT AND EVENT- DRIVEN PROGRAMMING- Event Driven Programming Methods and events, Concept of VB project, types of VB project, Opening and saving the projects, Elements of the user interface, Designing the user interface, creating forms and code modules, Running the application, grouping controls, CUSTOMIZING THE ENVIRONMENT- Editor tab, format tab, general tab, docking tab, environment tab, Working with Forms, Loading, Showing and hiding forms, Controlling one form within another

UNIT-II

Variables -Declaring variables, Type of variables Converting variables types, User-defined data types, Special values, Forcing variables declarations, Scope and lifetime of a variable, Constants, Arrays, types of array, control array, Collections, Procedures, subroutines, functions, Control flow statements and conditional statements, Loop statements, Designing menus and popup menus, Programming menu commands, Using access and shortcut keys, Using message box and input box, Using standard modules

UNIT – III

The Text Box Control -Text selection, Search and replace operations, The List box and Combo box controls, indexing with the List box controls, searching a Sorted list, the scroll bar and slider controls, Using the common dialog controls, Color common dialog box, Font common dialog box, the file open and save common dialog boxes, print dialog box, Help common dialog box, The file controls.

UNIT-IV

Classes, instances, objects, Encapsulation and abstraction, Derived classes and base classes, class in. Object linking and embedding (OLE), OLE at runtime, OLE control, GRAPHICS WITH VISUAL BASIC, Form, picture box and image box controls Sizing images, loading and saving images, Coordinate systems, scale properties and methods, The drawing methods: drawing text, drawing, drawing boxes, filling, Drawing curves, manipulating pixels, specifying colors, Using timer controls, Multiple Document Interface(MDI), MDI-built-in capabilities, Parent-child menus, Objects and instances, Loading and unloading of child forms, New and open commands

UNIT-V

Database Programming using Visual Data Manager: specifying indices and entering data with visual data manager. The ADO control and data control- ADO object model, using ADO control, establishing a connection with database.

Text Books:

Petroutsos Evangelos: Mastering Visual Basic 6, BPB Publications
Sahoo Reeta & Sahoo G.B: Beginner's Guide to Visual Basic 6, Khanna Publishing House

Reference Books:

Azam Mohammed Programming in Visual Basic 6.0, Vikas Publishing
Peter Wright: Beginning Visual basic 6, Shroff Publishers
Jung David, Visual Basic 6 Super Bible, Techmedia Publication

**BCA II SEMESTER
PAPER III
SUBJECT: SYSTEM ANALYSIS AND DESIGN**

| Lectures/Unit | Theory | | Internals | |
|---------------|--------|-----|-----------|-----|
| | Max | Min | Max | Min |
| 10 | 100 | 40 | 20 | 10 |

UNIT-I

System Concept: Definition, Characteristics of a System, Elements of System, Type of Systems: Physical and Abstract System, Open and Closed System, Man-Made Information Systems. System Development Life Cycle: Introduction, 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: Need Identification, Determining the User's Information Requirement, Fact Finding, Fact Analysis, Determination of Feasibility. Information Gathering: kind of information, Tools: Review of Literature, Procedures, And Forms. On Site Observation. Interviews and Questionnaires.

UNIT-III

Tools of Structured Analysis: Data Flow Diagram, Data Dictionary, Decision Tree and Structured English. Decision Table, Pros and Cons of Each Tool. Feasibility Study: System performance, Feasibility considerations, steps in feasibility analysis, Feasibility Report.

UNIT-IV

Costs Benefit Analysis: Introduction, Categories, Procedure for Cost Benefit Determination. System Design: Process of Design: Logical and Physical Design, Design Methodologies: Structured Design, functional decomposition, Form Driven Methodologies: The HIPO And IPO Charts. Input/output and Form Design: input design: input data, media, online data entry. Output design: form design, classification of forms, types of forms

UNIT-V

System Testing: System Testing, test plan, types of system test. Quality assurance: specifications, levels. Software implementation and Maintenance: types of implementation, post implementation review, maintenance procedure.

Text Books:

System Analysis and Design by Elias M. Awad

Reference Books:

System Analysis & Design by V K Jain, Dreamtech Press

Modern System Analysis & Design by A Hoffer, F George, S Valacich Low Priced Edn. Pearson Education.

Information Technology & Computer Applications, by V.K.Kapoor, Sultan Chand & Sons, New Delhi.

BCA II SEMESTER
PAPER- IV
SUBJECT: OBJECT ORIENTED PROGRAMMING IN C++

| Lectures/Unit | Theory | | Internals | | Practical | |
|---------------|--------|-----|-----------|-----|-----------|-----|
| | Max | Min | Max | Min | Max | Min |
| 10 | 100 | 40 | 20 | 10 | 100 | 50 |

UNIT I

Introduction to C++: Programming paradigms, Key concepts of Object-oriented Programming, Advantages of OOP's. **Input and Output in C++:** Pre-defined streams, Unformatted console I/O operations, formatted console I/O operations.

UNIT-II

C++ Declarations: Parts of C++ Program, types of Tokens, Keywords, Identifiers, data types, constants, Operators, Precedence of operators, referencing and dereferencing operators, scope access operator. **Control structures:** Decision Making Statements, looping statement.

UNIT-III

Functions: main (), parts of function, passing arguments [value, address, reference], inline functions, function overloading [principles, precautions], library functions. **Classes and objects:** declaring [classes, objects], accessing class members, keyword [public, private, protected], defining member functions [member function inside the class, member function outside the class, static member variables and functions, friend function, friend classes, overloading member functions.

UNIT-IV

Constructors and Destructors: characteristics, applications, constructors with arguments, overloading constructors, types of constructors. **Operator overloading:** overloading unary operator, binary operator. **Inheritance:** access specifiers and simple inheritance, public inheritance, private inheritance, protected data with private inheritance, Types of inheritances [single, multiple, hierarchical, multilevel, hybrid, multipath], virtual base class.

UNIT-V

Pointers & arrays: pointer declaration, pointer to class & object, **Array:** declarations & initialization, arrays of classes. **Polymorphism:** Static(Early) binding, Dynamic (Late) Binding, virtual function, pure virtual function.

Text books:

Object-Oriented Programming with ANSI & Turbo C++ Ashok N. Kamthane.
E. Balagurusamy: object oriented programming in C++

Reference Books:

Herbert Schildt: C++ the complete Reference- TMH publication.
Robert Lafore: Object Oriented Programming in C++.

BCA II SEMESTER
PAPER- V
SUBJECT: NUMERICAL METHODS & ANALYSIS

| Lectures/Unit | Theory | | Internals | |
|---------------|--------|-----|-----------|-----|
| | Max | Min | Max | Min |
| 10 | 100 | 40 | 20 | 10 |

UNIT-I

INTRODUCTION TO NUMERICAL COMPUTING- Representation of Numbers and its Types. Importance of Significant Digits. Approximations and Errors in Computing- Absolute, Relative and Percentage Errors. Solution of Homogenous Non-Linear Equation- Types and Various Methods.

UNIT –II

MATRICES - Introduction, Some Elementary Concepts and Representation, Types of Matrices- Transpose, Symmetric, Skew Symmetric, Conjugate, Hermitian, Skew Hermitian. Elementary Operations on Matrices- Row and Column, Determinant, Minor, Cofactors, Adjoint, Rank and Nullity, Inverse. Solution of Non-Homogenous Linear Equations- Normal Form of Matrix, Consistent and Inconsistent System of Equations. Eigen Values and Eigen Vectors- Cayley Hamilton Theorem and its Solutions.

UNIT – III

SYSTEM OF SIMULTANEOUS LINEAR EQUATIONS: Direct and Indirect Methods and its Solutions- Cramer's Rule, LU-Decomposition, Gauss Elimination, Gauss Jordan, Jacobi Iterative, Gauss Seidal.

UNIT – IV

INTERPOLATION AND APPROXIMATION METHODS: Newton Interpolation Formulas'- Newton Forward and Newton Backward, Lagrange Interpolation Formula, Newton's Divided Difference Interpolation.

UNIT – V

NUMERICAL DIFFERENTIATION: Methods Based on Interpolation and Divided Difference Operators, NUMERICAL INTEGRATION: Newton-Cotes Methods and its Types.

Text Books:

Numerical Methods- E.Balagurusamy

Numerical Methods in Engineering & Sciences- Dr. B.S. Garewal.

BCA III SEMESTER

PAPER I

SUBJECT: OPERATING SYSTEM CONCEPTS

| Lectures/Unit | Theory | | Internals | |
|---------------|--------|-----|-----------|-----|
| 14 | Max | Min | Max | Min |
| | 100 | 40 | 20 | 10 |

UNIT-I

Definitions, and functions of Operating System. Types of operating system – simple batch systems, multiprogrammed batched systems, time sharing system, personal computer systems, parallel systems, distributed and real time systems. Computer system structures – computer system operations, I/O structures, storage structures, storage hierarchy and hardware protection.

UNIT-II

Process Concepts, process state & process control block, Process Scheduling, Scheduling Criteria, Scheduling Algorithms, Multiple-Processor Scheduling Real-Time Scheduling, Threads-overview, Inter Process Communication.

UNIT-III

Critical Section Problem, Semaphores, Classical Problem Of Synchronization, Critical Regions, Monitors, Deadlock Characterizations, Method for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock.

UNIT-IV

Introduction to Partitioning Scheme, Types of Fragmentation: Internal Fragmentation & External Fragmentation. Logical versus physical address space, Swapping, Contiguous Allocating, Paging, Segmentation, Virtual Memory, Demand Paging, Performance of Demand Paging, Page Replacement, Page Replacement Algorithms, thrashing.

UNIT-V

File System Structure, Access Methods, Directory Structure, Protection, Free space management, Allocation Methods, Disk Scheduling, Disk Management, Swap Space Management, Disk reliability, Stable Storage Implementation.

Text Books-

Operating System Concepts by Silberschatz & Galvin, Addison Wesley Publication 6th Edition.

Reference Books-

Operating System Concepts & Design by Milan Milenkovic, TMH Publication

BCA III SEMESTER
PAPER- II
SUBJECT: DATA STRUCTURES

| Lectures/Unit | Theory | | Internals | | Practical | |
|---------------|--------|-----|-----------|-----|-----------|-----|
| 14 | Max | Min | Max | Min | Max | Min |
| | 100 | 40 | 20 | 10 | 100 | 50 |

UNIT-I

Concept of data structure ,Abstract data structure, Analysis of algorithm, Introduction to stack and primitive operation on stack, Stack as an abstract data type, Stack application:-Infix, Prefix, Postfix and Recursion, Introduction to queues, Primitive operation on queues, Circular queue ,Dequeue , Priority queue and Applications of queue.

UNIT-II

Introduction to Linked List, Basic operations on Linked List, Stacks and Queues using Linked List, Doubly Linked List, Circular Linked List, Application of LinkedList.

UNIT-III

TREES-Basic terminology ,Binary Trees, Tree representations as array and Linked List, Basic operation Binary tree, Traversal of Binary trees:- Inorder, Preorder, Postorder. Application of Binary tree, Threaded Binary tree, AVL tree, Binary tree representation of trees.

UNIT-IV

Sequential Searching, Binary search, Insertion sort, Selection sort, Quick sort, Bubble sort, Heap sort, Comparison of sorting methods.

UNIT-V

Hash Table, Collision resolution technique, Introduction to graphs, Definition, Terminology, Directed, Undirected and Weighted Graph, Representation of Graph, Graph Traversal-Depth first, Breadth first search, Spanning tree, Minimum Spanning tree, Shortest path algorithm.

Text Books-

Data Structures through C(A Practical Approach) G.S. Baluja

Data Structure: By Lipschuists (Schaum's Outline Series)

Data Structure: By Trembley & Sorrenson

Reference Books-

Fundamental of Data Structure By S.Sawhney & E. Horowitz.

BCA III SEMESTER
PAPER- III
SUBJECT: DATABASE MANAGEMENT SYSTEM

| Lectures/Unit | Theory | | Internals | |
|---------------|--------|-----|-----------|-----|
| | Max | Min | Max | Min |
| 14 | 100 | 40 | 20 | 10 |

UNIT-I

Operation data, Purpose of database system, Views of data, Data models: Relation, Network, Hierarchical, Instances and schemas, Data Dictionary, Types of Database languages:-DDL, DML, Structure of DBMS, Advantages and disadvantages of DBMS, 3-level architecture proposal:-external, conceptual& internal levels,

UNIT-II

Entity Relationship model as tool of conceptual design:-Entities & Entities set ,Relationship and Relationship set, Attributes and Mapping constraints, Keys, ER diagram:-Strong and weak entities, Generalization ,Specialization & Aggregation, Reducing ER diagram to tables.

UNIT-III

Set theory concepts and fundamentals : Relations, Domains, Attributes, Tuples, Concept of keys: Primary key, Super key, Alternate key, Candidate key ,Foreign key, Fundamental Integrity rules:-Entity & Referential integrity ,Extension and Intention, Relational Algebra :select ,project, cross product, different types of joins:-theta, equi, natural, outer joins, set operations.

UNIT-IV

Functional Dependencies, Good & Bad Decomposition and Anomalies as a database: A consequences of bad design, Universal relation, Normalization: 1NF, 2NF, 3NF &BCNF normal forms, Multivalued dependency, Join dependency, 4NF, 5NF.

UNIT-V

Basic concepts: -Indexing and Hashing, B-tree Index files, Hashing: Static & Dynamic hash function, Index definition in SQL: Multiple key accesses.

Text Books-

Simplified approach to DBMS, Prateek Bhatia, Gurvinder Singh Kalyani Publication
 Database System Concepts by Henry Korth and A. Silberschatz.

Reference Books-

An Introduction to Database System by Bipin Desai
 An Introduction to Database System by C.J.Date.

**BCA III SEMESTER
PAPER IV
SUBJECT: SQL AND PL-SQL IN ORACLE**

| Lectures/Unit | Theory | | Internals | | Practical | |
|---------------|--------|-----|-----------|-----|-----------|-----|
| 14 | Max | Min | Max | Min | Max | Min |
| | 100 | 40 | 20 | 10 | 100 | 50 |

UNIT-I

Oracle Data Type (Number, Char, Varchar2, Date), Operators (Arithmetic, Logical, Concatenation) SQL Commands: DDL (Create Table, Alter Table, Drop Table, Truncate Table, Rename Table), DML (Insert, Update, Delete, Select), DCL: (Rollback, Commit) Data Constraints: Column level, Table Level Constraints, Constraints (Unique Key, Primary Key, Check, Not Null). Range Searching (IN, BETWEEN, NOT IN, NOT BETWEEN), Pattern Matching (Like Operator).

UNIT-II

Single Row Function: Number Function: (Abs, Ceil, Floor, Round, Trunc, Power, Sign, Sqrt, Mod) Character Function: ASCII, CHR, Concat, Initcap, Instr, Substr, Length, Lower, LPAD, RPAD, Ltrim, Rtrim, Upper . Date Function: Add_months, Last_day, months_between, next_day, sysdate, truncate. Group Function: Group by Clause, Having Clause, Avg, Count, Max, Min, Sum. Sub Queries.

UNIT-III

View: Definition, Importance of View, Creating, Dropping View.**Joins:** What is Joins, Type of Join: Natural Join, Cartesian Product, Left Outer Join, Right Outer Join, Full Outer Join, Self Join. **Set Operation:** Union Clause, intersect Clause, Minus Clause.**Creating and Managing user:** Authority Role using Grant and Revoke.**PL/SQL:** PL/SQL Block Structure, Character Set, Comments, Variables, Constant, Data Type (Boolean, Number, Char, Varchar2, Date), Serveroutput Command, Dbms_output.put_line function, **Conditional Control** (IF Statement), **Iterative Control** (For Loop, Loop, While Loop).

UNIT-IV

Stored Procedures and Functions: Advantages of Procedure and Function, Procedure v/s Function, Overloading Procedure and Function, **Error handling** (TOO_MANY_ROWS, ZERO_DIVIDE, and NO_DATA_FOUND).

UNIT-V

Cursor: Types of Cursor (Implicit & Explicit), Cursor Attribute (%Found, %IsOpen, %NotFound, %RowCount). **Triggers:** Types of Trigger (Row Level, Statement Level, Before Statement, After Statement, Combination of Trigger), Import & Export Data File.

Text Books-

Ivan Bayross, "SQL, PL/SQL", BPB Publications"

Reference Books-

Liebschuty, "The Oracle Cook Book", BPB Publication

Michael Abbey, Michael J. Corey, "Oracle A Beginners Guide". TMH Publication Oracle Unleashed (Chapter 1,2,3,4,5 and 9)

BCA III SEMESTER
SUBJECT- ENGLISH LANGUAGE & SCIENTIFIC TEMPER
PAPER – V

| Lectures/Unit | Theory | | Internals | | Practical | |
|---------------|--------|-----|-----------|-----|-----------|-----|
| | Max | Min | Max | Min | Max | Min |
| 14 | 50 | 20 | 20 | 10 | 50 | 25 |

UNIT-I

1. C.P. Snow: Ramanujan
2. Roger Rosenblatt: The Power of WE
3. George Orwell: What is Science?

UNIT-II

Comprehension

UNIT-III

Business Communication (Official Letter Writing)

UNIT-IV

Report Writing (Science Based)

UNIT-V

Language Sills (Content Based on Grammar)

Correction of common errors in sentence structure: usage of pronouns, subject/verb agreement, word order, gender.

Text Books-

English Language and Scientific Temper

Reference Books-

English Grammar by Wren & Martin

Windshuttle, Keith and Elizabeth Eliot.1999. Writing, Researching and Communicating : Communication Skills for the Information Age. 3rd Reprint. Tata McGraw-Hill, Australia.

Dignen, Flinders and Sweeney. English 365. Cambridge University Press.

I. Jayakaran. 2000. Everyone's Guide to Effective Writing.2 M Publishing International, Chennai.

Varinder Kumar, Bodh Raj, Manocha, Business Communication Skills, Kalyani Publishers, New Delhi, latest edition.

Ravi Aggarwal : Communication Today and Tomorrow, Sublime Publications, Jaipur, 2008.

Practicals

UNIT I

Speaking Skills

- Speaking about oneself, family, friends, classmates, aims in life.
- Greetings and introductions.
- Do's and Don'ts for a formal and informal introduction.
- Types of communication- verbal, non-verbal(body language, gestures, eye-contact)

Functional Grammar

- Positive, negative and interrogative forms of a sentence.

UNIT II

Telephone Skills (II)

- Basics of telephone communication.
- How to handle calls- telephone manners.
- Leaving a message.
- Making requests.

Situational Conversation (II)

- Asking open and closed questions.
- Seeking information.
- Apologising.

UNIT III

Science and Technology (I)

- „technology“ and „computer“ words.

Describing Products (II)

- Using appropriate words.

UNIT IV

Describing a Personality

- „Personality“ words and phrases.
- Adjectives-attributes and complements.

Step by Step

- Giving instructions.
- Describing a process.

UNIT V

Making a Difference

- Expressing environmental concerns
- Expressing and responding to expressions of shock, regret and hope.

**BCA IV SEMESTER
PAPER I
SUBJECT: SOFTWARE ENGINEERING**

| Lectures/Unit | Theory | | Internals | |
|---------------|--------|-----|-----------|-----|
| | Max | Min | Max | Min |
| 10 | 100 | 40 | 20 | 10 |

UNIT-I

SOFTWARE: Software Characteristics, Components & Applications, Software Engineering- A Layered Technology, Software Process Models [Linear Sequential Model, Prototype & RAD Model], Evolutionary Software Process Model [Incremental Model and Spiral Model]. Project Management Concepts- People, Problem and Process. SOFTWARE PROCESS AND PROJECT METRICS: Metrics in the process and Project Domains. Software Measurement- Size and Function Oriented Metrics, Extended Function.

UNIT-II

SOFTWARE PROJECT PLANNING: Objectives, Scope, Project Estimation, Decomposition Techniques, Empirical Estimation Models. ANALYSIS CONCEPT AND PRINCIPLES: Requirement Analysis, Analysis Principles, Software Prototyping, Specifications.

UNIT-III

DESIGN CONCEPTS AND PRINCIPLES: Introduction, Effective Modular Design, Transform Mapping and Transaction Mapping, User Interface Design models, design process.

UNIT-IV

Software Quality Assurance: Quality Concepts, SQA activities, S/W Reviews, Formal Technical Reviews, S/W Reliability, SOFTWARE TESTING TECHNIQUES: S/W Testing Fundamentals, Test Case Design, White and Black Box Testing, Basic Path Testing, Control Structure. SOFTWARE TESTING STRATEGIES: Strategic Approach to Software Testing, Unit Testing, Integration Testing, Validation Testing, System Testing, Debugging

UNIT – V

SOFTWARE REUSE: Reuse Process, Building Reuse Components, Classified and Retrieving Components, Economics of Software Reuse. COMPUTER AIDED SOFTWARE ENGINEERING: Introducing of Case, Building Block for Case, Taxonomy of Case Tools, Integrating Case Environment, Integrating Architecture, Case Repository.

Text Books:

Roger S. Pressman. Software Engineering: A Practioner's Approach Edition V & VI (Reuse)
An Integrated Approach to Software Engineering by Pankaj Jalote

Reference Books:

Jessica Keyes. Software Engineering Handbook. Auerbach Publications (CRC Press), 2003.
Ian Sommerville. Software Engineering (Seventh Edition). Addison-Wesley, 2004.
Hans van Vliet. Software Engineering: Principles and Practice (Second Edition). Wiley, 1999.

BCA IV SEMESTER

PAPER II

SUBJECT: ACCOUNTS AND BUSINESS APPLICATIONS

| Lectures/Unit | Theory | | Internals | | Practical | |
|---------------|--------|-----|-----------|-----|-----------|-----|
| 10 | Max | Min | Max | Min | Max | Min |
| | 100 | 40 | 20 | 10 | 50 | 25 |

UNIT-I

The basics of Accounts: Objective, Advantages, Limitations, Accounting Cycle, accounting Vs accountancy, branches of account, Types of account, vouchers and transactions, Accounting Terminologies, Double-Entry system, Basic Rules of entries of transactions, Journal.

UNIT –II

Ledgers, Posting of Entries, Subsidiary Books-purchase, sales, purchase return and sales return, cash book, credit and debit note, Trial Balance.

UNIT-III

Final Accounts: Manufacturing Account, Trading Account, P/L account, Balance Sheet, Rectification of errors, Depreciation, Adjustment Entries.

UNIT-IV

Cost Accounting: Principle of cost Accounting, Methods of Material Issues: Cost Price Methods, Average Cost Price Methods, Market Price Methods, National Price Methods, Allocation of Overheads, Material control techniques: ABC analysis method, EOQ method, Preparation of wages, payroll Accounting.

UNIT-V

Accounting on Computers: Overview of Computerized Accounting, Introduction of Tally Accounting Software, Basic and Advanced Features of Tally, Components of Tally, Creation/Setting up of company, Configure, Ledgers, Groups, Vouchers, Inventory Control, Reporting.

Text Books:

A to Z Computer Accounts by Goyal

Financial Accounting by S.M. Shukla, Sahitya Bhawan Publication

I.M. Pandey, Financial Management, 8th Edition, 1999, Vikas publication

Computerized Financial Accounting by Singh & Singh

Cost Accounting by Prof. M.L. Agrawal, Dr. K. L. Gupta, Sahitya Bhawan Publication.

Tally Accounting Software by Nadani

Reference Books:

Management Accounting, H.N.Mishra Jawahar Publication

Management Accounting by Dr. S.P.Gupta

Management Accounting, Singh Kalyani

Publication Management Accounting by Leslie

Chadwick

BCA IV SEMESTER
PAPER III
SUBJECT: COMPUTER GRAPHICS (WITH MULTIMEDIA)

| Lectures/Unit | Theory | | Internals | | Practical | |
|---------------|--------|-----|-----------|-----|-----------|-----|
| | Max | Min | Max | Min | Max | Min |
| 10 | 100 | 40 | 20 | 10 | 50 | 25 |

UNIT-I

A brief background about applications of Computer Graphics. Overview of graphic systems, video display devices, refresh cathode ray tubes, raster and random screen display, color CRT monitors, flat panel displays, LCD's. Design and architecture of raster scan and random scan display systems. A brief introduction to input devices and hardcopy devices. Output primitives, DDA and Bresenham's 2D line drawing algorithms, parallel line algorithms.

UNIT – II

Midpoint circle generating algorithm, Ellipse generating algorithm, Character generation, attributes of output primitive, line and curve attributes, character attributes, Basic Transformation, Composite Transformation

UNIT – III

Clipping operations, Cohen Sutherland line clipping, Liang Barsky line clipping, Nicholl-Lee-Nicholl line clipping, polygon clipping, Sutherland Hodgeman and Weiler-Atherton polygon clipping, text and curve clipping.

Unit – IV

Photoshop-Introduction: Working with image file- creating a new file, opening an existing file, importing an image, grabbing scanner image, grabbing a digital camera image, adding file information, saving a file, saving to another format, switch between file, closing a file. **Adding contents with tools:** selecting a tool, setting a tools option in option bar, resetting defaults, choosing colors, working with painting and drawing tools. **Working with image view:** using the zoom tool, changing the view zone.

Unit-V

Selecting image content: Using the marquee tool, using the lasso tool, selecting pictures with magic wand, selecting by color range, adjusting and removing selection. **Changing a selection:** Deleting, Moving, Copying, Transforming, Modifying, Saving, and loading a selection, undoing a change. **Using positioning tools:** showing and hiding a grid, showing and hiding rulers, using snap and snap to locking guides. **Using layers, masks and paths:** Working with layer, deleting a layer, setting layer properties, choosing a layer style, arranging layer order, grouping and ungrouping layers, flatter the image.

Text Books:

Computer Graphics by Donald Hearn and M. Pauline Baker, Second Edition, PHI 1997.
 Photoshop 6 for Windows by Lisa A. Buckley, Pub. BPB.

Reference Books:

Learn yourself Photoshop by Vishnu Priya Singh and M. Singh Asia Pub.

BCA-IV SEMESTER
PAPER -IV
SUBJECT: PROGRAMMING WITH JAVA

| Lectures/Unit | Theory | | Internals | | Practical | |
|---------------|--------|-----|-----------|-----|-----------|-----|
| | Max | Min | Max | Min | Max | Min |
| 10 | 100 | 40 | 20 | 10 | 100 | 50 |

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, Method 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 Package, 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 priorities, 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. JDBC Concepts, connecting to a Database, Retrieving Data.

Text Books:

E. Balaguruswamy, “Programming in Java”, 2nd Edition, TMH Publications ISBN 0-07-463542-5

Reference Books:

Peter Norton, “Peter Norton Guide to Java Programming”, Techmedia Publications ISBN 81-87105-61-5

BCA-IV SEMESTER
PAPER -V
SUBJECT: VALUES & ETHICS OF IT PROFESSION

| Lectures/Unit | Theory | | Internals | |
|---------------|--------|-----|-----------|-----|
| | Max | Min | Max | Min |
| 10 | 50 | 20 | 20 | 10 |

UNIT-I

FOCUS AND PURPOSE- Definition, need and importance of organizational behavior, Nature and Scope, Framework, Organizational behavior models.

UNIT-II

INDIVIDUAL BEHAVIOUR- Personality, types, factors influencing personality, theories, learning, types of learners, the learning process, learning theories, organizational behavior modification. Misbehavior- types, management intervention. Emotions, emotional labor, emotional intelligence, theories. Attitudes, Characteristics, Components, Formation, Measurement, Values. Perceptions- Importance, factors influencing perceptions, interpersonal perceptions, impression management. Motivation- Importance, types, effects on work behavior.

UNIT-III

GROUP BEHAVIOUR- Organization structure, formation, groups in organizations, influence, group dynamics, emergence of informal leaders and working norms, group decision making techniques. Team Building- Interpersonal relations, communication, control.

UNIT-IV

LEADERSHIP AND POWER- Meaning, Importance, Leadership styles, Theories, Leaders v/s managers, sources of power, power centers, power and politics.

UNIT-V

DYNAMICS OF ORGANIZATIONAL BEHAVIOUR- Organizational culture and climate, factors affecting organizational climate, importance, job satisfaction, determinants, measurements, influence on behavior. Organizational change- Importance, stability v/s change, proactive v/s reaction change, the change process, resistance to change, managing change. Stress- Work Stressors, prevention and management of stress, balancing work and life. Organizational development- characteristics, objectives, organizational effectiveness.

Text Books:

Stephen.P.Robins, Organisational Behaviour, PHI Learning/ Pearson Education, 11th Edition, 2008.
 Fred Luthans, Organisational Behaviour, McGraw Hill, 11th Edition, 2001.

Reference Books:

Schermerhorn, Hunt and Osborn, Organisational behavior, John Wiley, 9th Edition, 2008.

BCA V SEMESTER

PAPER I

SUBJECT: WEB PAGE PROGRAMMING USING PHP

| Lectures/Unit | Theory | | Internals | | Practical | |
|---------------|--------|-----|-----------|-----|-----------|-----|
| | Max | Min | Max | Min | Max | Min |
| 14 | 100 | 40 | 20 | 10 | 100 | 50 |

UNIT-I

Internet and Web Technologies: Introduction to Web Technologies- HTML, JavaScript, CSS, XML, XHTML, AJAX, ASP.NET, PHP. Introduction to HTML-HTML Tags, Elements and Attributes, Structure of HTML code. **HTML fundamentals:** Horizontal Rules, Line Breaks, Paragraph. **Working with Text:** Bold, Italic, Subscripted, Superscripted. **Organizing Text in HTML:** DIV, SPAN Elements. Working with Links, URLs, Images and Tables. **Working with Forms:** password, hidden, checkbox, radio, submit, reset, multiple choice elements-SELECT, OPTION, TEXTAREA, LABEL Elements.

UNIT-II

Overview of JavaScript: Features, Uses: HTML Document, HEAD and BODY Elements, External File. **Programming Fundamentals:** Variables, Operators, Control Flow Statements, Popup Boxes. **Functions:** Defining and Invoking, Arguments and Return Statements, Scope and Closures. **Events:** onclick, onload, Mouse, onreset, onsubmit. **Objects:** Array, Date. Document Object Model (DOM).

UNIT-III

Cascading Style Sheet (CSS): Introduction, Syntax, Selector. **Inserting CSS:** External, Internal and Inline. **CSS:** Text, Fonts, Links, Lists, Tables, Border, Margin, Padding, Align, Outline, Positioning and Floating.

UNIT-IV

PHP Essentials: Internet, Local Machine, Development Environment, HTML and PHP. Variables, Constants, Operators. **Control Structures:** if, switch, for, while, do...while, foreach. Strings. **Array related built-in functions:** array_keys(), array_search(), array_values(), array_push(), array_pop(), array_slice(), array_merge(), sort(), asort(), ksort(). **Functions:** function call, passing arguments, pass by value, pass by reference, returning values to functions. Forms, GET and POST data, Date and Time, File Upload, Cookies, Session, Error Handling, AJAX.

UNIT-V

Introduction to My-SQL , creating Database in My-SQL, My-SQL and PHP: Database connectivity, Adding, modifying and deleting records, Access Records From Database. Creating and managing sessions in PHP.

Text Books-

HTML5 Black Book Kogent Learning Solutions Inc. Dreamtech PRESS (UNIT I & II)
The Complete Reference PHP by Steven Holzner McGraw Hill Education India Private Limited New Delhi (UNIT IV)

Reference Books-

<http://www.nettech.in/e-books/Teach-Yourself-PHP4-in-24-Hours.pdf> (Ebook)

BCA V SEMESTER
PAPER II
SUBJECT: DATA WAREHOUSING

| Lectures/Unit | Theory | | Internals | |
|---------------|--------|-----|-----------|-----|
| 14 | Max | Min | Max | Min |
| | 100 | 40 | 20 | 10 |

UNIT-I

Data Warehouse: Introduction and Building Blocks- Objectives, Features-Types of Data, Data Granularity. Data Warehouses and Data Marts, Top-Down v/s Bottom-Up Approach. Overview- Architecture of Data Warehouse and its Components. Metadata and its Types.

UNIT-II

Dimensional Modeling- Requirements and Design Decisions. Dimensional Modeling Basics- Dimensions and Fact Table, E-R Modeling v/s Dimensional Modeling, Star Schema, Data Granularity, Star Schema keys and Its Advantages, Snowflake Schema- Its Advantages and Disadvantages, Aggregate Fact Tables- Need and Types.

UNIT-III

Data Extraction, Transformation and Loading (ETL)- Overview, Requirements and Steps of ETL, Data Extraction- Techniques & Types, Data Transformation- Types and Implementation, Data Loading- Techniques & Processes.

UNIT-IV

Online Analytical Processing (OLAP)- Definitions, Rules, Characteristics, Functions, Features, Hypercubes, Drill- Down and Roll-Up Analysis, Models- Overview, ROLAP v/s MOLAP.

UNIT-V

Latest Trends In Databases- Object Oriented Database, Web Database, Multimedia Database, Relational Database.

Text Books-

Data Warehousing Fundamental by Pualraj Ponniah (Wiley India Edition)
 Data Warehousing, Data Mining & OLAP by Alex Berson Stephen J. Smith (Tata McGraw-Hill Edition)
 Data Mining Concepts and Techniques, Han Kamber, Morgan Kaufmann Unit 1

Reference Books-

Introduction to Business Intelligence and Data Warehousing, PHI The Data Warehouse Lifecycle toolkit, Ralph Kimball, John Wiley.

**BCA V SEMESTER
PAPER III
SUBJECT: COMPUTER NETWORKS**

| Lectures/Unit | Theory | | Internals | |
|---------------|--------|-----|-----------|-----|
| 14 | Max | Min | Max | Min |
| | 100 | 40 | 20 | 10 |

UNIT-I

Needs and Advantages- Network, Types- Server based, Peer, Hybrid, Server types, Network Topology- Bus, Star, Ring, Star bus, Star ring, Mesh, Network Protocols-Hardware Protocols, Software Protocols.

UNIT-II

Signal Transmission- Digital signaling, analog signaling, bits synchronization, baseband and broadband transmission, Network media types-Properties and specialties, comparative studies, Network adapters- working principle, configuration.

UNIT-III

OSI, TCP/IP model, Comparison between OSI and TCP/IP, IEEE 802 standards- 802.3(CSMA/CD Bus), 802.4(Token Bus),802.5 (Token Ring),Ethernet - working principle, 10&100 MBPS Ethernet, Hubs, FDDI.

UNIT-IV

Networking Technologies- Fiber Channel, ATM, Network Connectivity- Hubs,Bridges,Repeaters, Multiplexers, Internet Connectivity- Routers and Brouters, Gateways.

UNIT-V

Various Server and Client hardware and Softwares, Overview of Internet: Internet and TCP/IP, Internet addressing, Concepts of ISP, Concept of URL addresses, Hypertext Concepts and WWW, FTP, NNTP, Email, SMTP. Internet Security- Internet Security Issues, Embedded and Software based firewall, Data Encryption, Digital Signatures.

Text Books-

Computer Networks, 3rd edition, 1997, by A.S Tanenbaum.
Local Area Networks – 5th Edition, S.K. Basandra and S. Jaiswal.

Reference Books-

Data and Computer Communication, 1996, William Stallings, PHI
Data Communication and Networking 2nd edition by Behrouz A. Forouzan, at McGraw- Hill

**BCA V SEMESTER
PAPER IV
SUBJECT: PROGRAMMING WITH .NET USING C# LANGUAGE**

| Lectures/Unit | Theory | | Internals | | Practical | |
|---------------|--------|-----|-----------|-----|-----------|-----|
| | Max | Min | Max | Min | Max | Min |
| 14 | 100 | 40 | 20 | 10 | 100 | 50 |

UNIT-I

Introduction to .NET : .NET Framework, Structure of .NET Architecture, Web Application in ASP.NET:-Coding models, Page directives, Page Events and page Life Cycle, Postback, Application directory structure, Application compilation models, State Management: Client-side Techniques(View, Hidden, Cookies, Control State, Query Strings) Server-side Techniques(Session State, Application State). Control Statements.

UNIT-II

HTML Server controls: HtmlForm, HtmlInputText, HtmlTextArea, HtmlAnchor, HtmlButton, HtmlImage, HtmlInputCheckBox, HtmlInputRadioButton, HtmlTable, HtmlTableRow, HtmlTableCell. Web Server Controls: Label, ListBox, CheckBox, Calendar, ImageButton, Panel, TextBox, Image, Image Map, CheckBoxList, Button, HyperLink, RadioButtonList, DropDownList, AdRotator, RadioButton, LinkButton, Table.

UNIT-III

Validation Controls: RequiredFieldValidation Control, CompareValidator Control, RangeValidator Control, RegularExpressionValidator Control, CustomValidator Control, ValidationSummary. Navigation Control: SiteMapPath, Menu, TreeView.

UNIT-IV

Master pages & Themes, Introduction of SqlServer: Creating tables, Altering tables, Adding new columns, Altering existing columns, Data type Decrease/Increase. Insert data into tables: Simple insert Columns by insert, Bulk insert, Insert using union, Identity and its properties. Update, delete, Select statements.

UNIT-V

ADO.NET, Data Controls: GridView, DataList, Detailsview, Formview, Listview, Repeater, SqlDataSource, AccessDataSource, SiteMapDataSource. AJAX Extensions: ScriptManager, UpdatePanel.

Text Books-

.NET Programming Black Book by Steven Holzner –Dream Tech Publications.

Reference Books-

Mastering VB.NET by Evangelos Petroustos-BPB publications.

Introduction to .NET framework-Worx publication. msdn.microsoft.com/net/

BCA V SEMESTER
SUBJECT- SCIENTIFIC ENGLISH LANGUAGE
PAPER – V

| Lectures/Unit | Theory | | Internals | | Practical | |
|---------------|--------|-----|-----------|-----|-----------|-----|
| | Max | Min | Max | Min | Max | Min |
| 14 | 50 | 20 | 20 | 10 | 50 | 25 |

UNIT-I

K. Aludia Pillai: Communication Education and Information Technology
 Julian Huxley : War as a Biological Phenomenon
 Ruskin Bond : The Cherry Tree

UNIT-II

Scientific Essay of about 200-250 words

UNIT-III

Translation of Sentences (Science Based)

UNIT-IV

Drafting CV

UNIT-V

Language Skills

One -word substitution, homonyms, homophones, words that confuse.

Text Books-

English Language and Aspects of Development

Reference Books-

English Grammar by Wren & Martin

Windshuttle, Keith and Elizabeth Eliot.1999. Writing, Researching and Communicating :
 Communication Skills for the Information Age. 3rd Reprint. Tata McGraw-Hill, Australia.

Dignen, Flinders and Sweeney. English 365. Cambridge University Press.

I. Jayakaran. 2000. Everyone's Guide to Effective Writing.2 M Publishing International,
 Chennai.

Varinder Kumar, Bodh Raj, Manocha, Business Communication Skills, Kalyani Publishers,
 New Delhi, latest edition.

Ravi Aggarwal : Communication Today and Tomorrow, Sublime Publications, Jaipur, 2008.

Practicals

UNIT I

Introducing Yourself

- Verbal and non-verbal introduction.
- Tips on body language, gestures, maintaining eye-contact.
- Speaking clearly with proper pauses and intonation.

Pragmatic Grammar

- Describing an experience.

UNIT II

Science and Technology (II)

- Giving technical information.
- Describing a gadget.
- Giving operating instructions.

Conversational skills (II)

- Module on conversation.
- Greeting, making requests, parting.
- Making an observation.

UNIT III

Interview skills

- Facing interviews.
- Manners, etiquette, dress code for an interview.
- Do's and Don'ts for an interview.
- Conducting an interview with alumni and presentation of report.

UNIT IV

Presentation Skills

- Presenting any one of the following speeches:
 - Welcome Speech.
 - Farewell speech.
 - Extempore speech
 - Vote of thanks.

Group Discussion

- Initiating a group discussion.
- Do's and Don'ts for a group discussion.

UNIT V

Career Skills

- Applying for a job- preparation of CV and Resume writing.

BCA VI SEMESTER
PAPER-I
SUBJECT: SOFTWARE TESTING & INTERNET ETHICS

| Lectures/Unit | Theory | | Internals | |
|---------------|--------|-----|-----------|-----|
| | Max | Min | Max | Min |
| 10 | 100 | 40 | 25 | 12 |

UNIT – I

Introduction: What is Testing, Purpose of testing, Dichotomies, A model for testing, Rules of Model, what is Bug, Importance of Bugs, consequences of bugs, taxonomy of bugs, remedies for bugs.

UNIT - II

Flow graphs and Path testing: Basics concepts of path testing, Control Flow Graphs, elements of flow graph, control flow graph Vs flowcharts, concepts of path testing, criteria of path testing, control flow graph and path testing, predicates, path predicates and achievable paths, path sensitizing, path instrumentation.

UNIT - III

IPV 4 Addresses and Protocol and IPV6 Addresses and Protocol, Address Resolution Protocol (ARP), Internet Control Message Protocol Version 4 (ICMPv4), Unicast Routing Protocols (RIP, OSPF and BGP)

UNIT-IV

User Datagram Protocol (UDP), Transmission Control Protocol (TCP), Domain Name System (DNS), Electronic Mail: SMTP, POP, IMAP and MIME, Multimedia.

UNIT-V

Cyber Ethics, Security & Privacy: - Email, Internet & Social Networking Ethics, Types of viruses & antivirus, Cyber Policies, Intellectual Property Rights(IPR), Violation of Copyright & Redressal.

Text Books:

Software Testing techniques - Baris Beizer, Dreamtech, second edition.
Software Testing Tools – Dr.K.V.K.K.Prasad, Dreamtech.
TCP/IP Protocol Suite, Behrouz A. Forouzan, 4th Edition, Tata McGrawHill

Reference Books:

The craft of software testing - Brian Marick, Pearson Education.
Software Testing Techniques – SPD(Oreille)
Software Testing in the Real World – Edward Kit, Pearson.
Effective methods of Software Testing, Perry, John Wiley.
Art of Software Testing – Meyers, John Wiley.
<http://infosecawareness.in/students>

BCA VI SEMESTER
PAPER-II
SUBJECT-: PRINCIPLES OF MATHEMATICS OF COMPUTER SCIENCE

| Lectures/Unit | Theory | | Internals | |
|---------------|--------|-----|-----------|-----|
| | Max | Min | Max | Min |
| 10 | | | | |
| | 100 | 40 | 25 | 13 |

UNIT-I

Lattices: Partial order set, Hasse diagrams, upper bounds, lower bounds, Maximal and minimal element, first and last element, Lattices, sub lattices, Isotonicity, distributive inequality, Lattice homomorphism, lattice isomorphism, complete lattice, complemented lattice distribution lattice.

UNIT-II

Mathematical Logic: Mathematical Logic, Conjunction, Disjunction and Negations, Basic logical operations, Tautology, Contradiction, Logical Equivalence, Algebra of Proposition, Converse, Inverse and Contra positive proposition. The characteristics functions and Mathematical Induction.

UNIT-III

Groups and Fields: Group axioms, permutation group, sub group, co-sets, normal subgroup, semi group, Lagrange theorem, fields, minimal polynomials, reducible polynomials, primitive polynomial, polynomial roots, applications.

UNIT-IV

Graphs: Introduction, Finite and Infinite Graphs Incidence and Degree, Isolated vertex, Pendant Vertex & Null Graphs, Isomorphism between two graphs, Sub graphs, operations on graphs, Walk, Paths and Circuits, Connected graphs, Disconnected graphs and Components, Euler Graphs, Hamiltonian path and Circuits.

UNIT-V

Trees: Definition and properties of tree, Pendant, Vertices in a tree, Distance and centers in a tree, Rooted and Binary trees, Spanning Trees, Weighted graph, Minimal Spanning Tree in a weighted connected graph, Kruskal's and Prim's Algorithm for finding minimal spanning tree.

Text Books:

J.P.Tremblay and R. Manohar; Discrete Mathematical Structures with Applications to Computer Science, Tata Mc-Graw-Hill Edition, 1997.

E.Balaguruswamy "Numerical Methods." Tata Mc-Graw Hill Co. Ltd. 2000.

J.P.Trembley & R.P.Manohar, "Discrete Mathematical Structure with applications to Computer Science".

Kenneth H. Rosen-203 "Discrete Math & its Applications" 5th ed.

K.A. Ross and C.R.B. Writht "Discrete Mathematics".

Bernard Kolman & Robert C. Busby "Discrete Mathematical Structures for Computer Science".

Reference Books:

E.V.Krishnamurthy & S.K.Sen "Computer based numerical algorithms.

Alan Doerr and Kenneth Levasseur; Applied Discrete Structures for Computer Science, (Asian Student Edition), Galgotia Pub. Ltd., 1996 Narsingh Deo

Graph Theory with Applications in Engineering and Computer Science, PHI