PAPER – I (Full Mark -150)

Unit – I	Fundamentals of Computer ……..	65 Marks
Unit – II	Operating System ……..	25 Marks
Unit– III	Word Processing ……..	20 Marks
Unit– IV	Electronic Spreadsheet ……..	25 Marks
Unit– VI	Presentation System ……..	15 Marks

PAPER – II (Full Mark -150)

Unit – I	Data Communication and Networks……..	15 Marks
Unit – II	Internet Technology and Web Design ……..	50 Marks
Unit– III	Programming in C language……..	50 Marks
Unit- IV	Multimedia ……..	15Marks
Unit- V	Aptitude Test……..	20 Marks

PAPER – I (Full Mark -150)

Unit – I Fundamentals of Computer (65 Marks)

a) **Introduction to Computer**
Evolution of Computer, Characteristics and Concept of Computer System,Types of Computer-Analog, Digital, Hybrid, General, Special-Purpose, Microcomputer, Mini Computer.The Computer Generations.

b) **Category of Computers**
Notebook Computers, Personal Computers (PCs), Workstations, Mainframe Systems, Supercomputers, Clients and Servers.

c) **Computer Organization**
Basic components of a computer system - Control Unit, Arithmetic Logic Unit, Input Unit, Output Unit, Central Processing Unit.Memory-RAM, ROM, EPROM, PROM, Cache Memory and other types of Memory.

d) **Input Device**
Keyboard, Mouse, Trackball, Joystick, Webcam,Digitalizing tablet, Scanners, Digital Camera, MICR, OCR, OMR, Bar-Code Reader, Light Pen, Touch Screen,, Electronic Card Reader, Voice Recognition Devices, Vision-Input System

e) **Output Device**
Monitors-Characteristics and types of Monitors – Digital, Analog, Size, Resolution, Refresh Rate, Interlaced/Non-Interlaced, Dot Pitch, Video standard - VGA, SVGA, XGA.
Printers – Daisy Wheel, Dot Matrix, Inkjet, Laser, Line Printer, Plotter.
Sound Card and Speakers.Screen Image Projector, Voice Response Systems

f) **Storage Device**
Storage Fundamentals – Primary vs. Secondary, Data Storage and Retrieval methods – Sequential, Direct and Index-Sequential. Various Storage Devices – Magnetic Tape, Magnetic Disks, Cartridge tape, data drives, hard disk drives, Floppy disk, Optical disk – CD, VCD, CD-R, CD - ROM, CD-WR, and DVD.

g) **Number System**
Data Representation in Computers, Number System of Computers – Decimal, Binary, Octal, Hexadecimal. Conversion between the different number system.Coding System – ASCII, BCD, EBCDIC and Arithmetic of Number System (Addition, Subtraction and Multiplication)

h) **Computer Language**
Machine Language-Advantages and Limitations. Assembly Language-Advantages and Limitations.High-Level Language: Compiler, Linker, Interpreter-Advantages and Limitations.Structure/modular programming, Object-Oriented Programming Languages

Unit – II Operating Systems (25 Marks)

a) **Introduction**
Operating Systems –Definition, Functions, Types- Batch, Single, Multiprogramming. Character User Interface and Graphical User Interface. Multiprocessing Programming languagesMachine, Assembly, High Level, 4GL

b) **Windows**
An overview of different versions of Windows, Basic Windows elements, File and directory management through Windows. Using essential accessories: System tools – Disk cleanup, Disk defragmenter, Compression utilities (WinZip, WinRAR), Calculator, Imaging – Fax, Notepad, Paint, WordPad. Formatting hard disk, floppy disk.
Application Management: Installing, uninstalling, running applications.
Simple Setting: Changing system date and time, changing display properties, add or remove a windows component, changing mouse properties, adding and removing printers

c) **MS DOS**
DOS command for files management and processing files- internal and external commands, Directory navigation, path setting, creatingand using batch files etc.

d) **Linux**
An overview of Linux, Basic Linux elements: System Features, Software Features, File Structure, File handling in Linux

e) **Software**
Relationship between Hardware and Software. Types of Software – System Software, Application Software. Virus- Virus working principles, types of viruses, virus detection and prevention

Unit – III Word Processing (20 Marks)

a) **Word Processing Basics**
Introduction to Word Processing. Features & area of use. Introduction and comparison of various office suites like MS-Office, Lotus-Office, Star-Office, Open-Office, and Libre-Office.
Opening Word Processing Package,Menu Bar, Usingthe Help.
Working with MS Word- Menus & Commands, Rulers, Toolbars& Buttons, Shortcut Menus, Toolbars, Rulers, Menus, and Keyboard Shortcuts.

b) **Opening and closing Documents**
Opening Documents, Save and Save as, PageSetup, PrintPreview, and Printing of Documents. Different Page Views and layouts.Moving, scrolling in a document, opening multi-document windows.

c) **Text Creation and manipulation**
Document Creation, Editing Text, TextSelection, Cut, Copy and Paste, Deleting and Moving Text, Font and Size selection, Alignment of Text and Paragraph

d) **Formatting the Text**
Paragraph Indenting, Bullets and Numbering, Changing case, Auto Formatting, Auto Correct, Using different Text Styles (Bold, Underline, and Italicsetc.)

e) **Table Manipulation**
Draw Table, Changing cell width and height, Alignment of Text in cell, Delete / Insertion of row and column, Border and shading

f) **Advanced Features**

Checking and correcting spellings. Handling Graphics, Creating Tables and Charts, Document Templates and Wizards.Headers & Footers, Inserting - Page Numbers, Pictures, Files, Symbols etc., Working with Columns, Tabs & Indents, Margins & Space management in Document, Adding References and Graphics, Mail Merge, Envelopes & Mailing Labels. Importing and exporting to and from various formats.

Unit – IV **Electronic Spreadsheet** **(25 Marks)**

a) **Elements of Electronic Spread Sheet**

Spreadsheet Concepts. Creating, saving and editing a worksheet.Inserting, Deleting Work Sheets. Opening & Moving around in an existing worksheet. Toolbars and Menus, Keyboard Shortcuts.Opening of Spread Sheet, Addressing of Cells, Printing of Spread Sheet.

b) **Working with Single and multiple worksheet**

Copying, renaming, moving, adding, and deleting, coping entries and moving between worksheets.Previewing & printing worksheet – page setting, print titles, adjustment Margins, page break, headers and footers.

c) **Manipulation of Cells**

Various Data Types- Text, Numbers and Dates etc. Creating Text, Number and Date Series. Editing Worksheet Data. Inserting, Removing & Resizing of Columns & Rows.Changing Cell Height and Width.Using different features with Data and Text.

d) **Formatting a worksheet**

Formatting Cells – changing data alignment, changing date, number, character or currency format, changing font, adding borders and colors. Borders and shading. Working with ranges – Creating, editing and selecting ranges.

e) **Function**

Cell referencing -Absolute & Relative addressing. Working with formulas- Auto sum, Sorting, Filter etc. Copying Formulas. Functions - Mathematical, Logical, Statistical, Text, Financial, Date and Time, Using Function Wizard.

f) **Charts and Graphs**

Using wizards, various chart type, Formatting gridlines & legends. Creating, Previewing, Modifying Charts.

Unit – V **Presentation System** **(15 Marks)**

a) **Basics**
Introduction & area of use. Using PowerPoint, Opening a PowerPoint Presentation, Saving a Presentation

b) **Creation of Presentation**
Creating a Presentation Using a Template, Creating a Blank Presentation, Entering and Editing Text. Inserting, Copying and Deleting Slides in a Presentation, Working in Different Views.

c) **Preparation of Slides**
Inserting Word Table or an Excel Worksheet. Adding Movie and Sound,Clip Art Pictures. Inserting Other Objects, Resizing and Scaling an Object.Working with Notes, Handouts, and Columns& Lists.

d) **Providing Aesthetics**
Enhancing Text Presentation - Formatting Text, Formatting Paragraphs, Checking Spelling and Correcting Typing Mistakes, Working with Color and Line Style, Adding Headers and Footers.

e) **Presentation of Slides**
Viewing a Presentation, Choosing a Set Up for Presentation.Printing Slides,Printing Presentations, Notes, Handouts with print options.

f) **Slide Show**
Running and controlling a Slide Show, Transition and Slide Timings, Automating a Slide Show

PAPER – II (Full Mark -150)

Unit – I Data Communication and Networks (15 Marks)

a) **Data Communication**
Analog & Digital Signals, Communication Process, Direction of Transmissions-Flow-Simplex, Half – Duplex, Full Duplex. Communication Protocols. Communication Channels – Twisted, Coaxial, Fiber optic, serial and Parallel Communication.

b) **Networking Concepts**
Modem – Working and Characteristics, Types of Network connections – Dialup, Leased Lines, ISDN, Types of Network – LAN, WAN, MAN etc. Topologies of LAN – Ring, Bus, Star,Mesh, and Tree Topologies. Component of LAN – Media, NIC, NOS, Bridges, HUB, Routers, Repeaters and Gateways.

c) Network Administration
Installing and configuring the network using Windows NT based System, Administration of Windows NT based network, Creation of user and groups, File Sharing, Printer Sharing

Unit – II InternetTechnology and Web Design (50 Marks)

a) **Introduction to Internet**
Basic Internet Terminology, ARPANET and Internet history of the World Wide Web. Evolution, Internet Concepts, Internet vs. Intranet, Growth of Internet, ISP, Connectivity – Dial – up, Reused Line, VSAT etc., URLs, Domain names, Portals, Internet Applications – Commerce on the Internet, Governance on the Internet, Impact of Internet on Society – Crime on/through the Internet.

b) **Internet Technology and Protocols**
Packet switching technology, Internet Protocols: TCP/IP, Router, Internet Addressing Scheme: Machine Addressing (IP address), E-mail Addresses, Resources Addresses, MAC addressing.Addressing in Internet: DNS, Domain Name and their organization.

c) **WWW(World Wide Web) and Web Browsers**
History, Working, Web Browsers, its Functions, concept of search Engines, Searching the web, HTTP, URLs,Web server, Web Protocols.Web Browsing Software-Popular Web Browsing Software, Configuring Web Browser.
Search Engines -Popular Search Engines / Search for content, Accessing Web Browser, Using Favorites Folder, Downloading Web Pages, Printing Web Pages

d) **Email**
Email - Networks and Servers, Email protocols –SMTP, POP3, IMAP4, MIME6, Structure of an Email – Email Address, Email Header, Body and Attachments, Email Clients: Netscape mail Clients, Outlook Express, Web based E-mail.
Using E-mails-Opening Email Client, Mailbox: Inbox and Outbox, Creating and Sending a new E-mail, Replying to an E-mail message, Forwarding an E-mail message, Sorting and Searching emails. Advance email features- Sending document by E-mail, Activating Spell checking, Using Address book, Sending Softcopy as attachment, Handling SPAM

e) **Services on Internet**
FTP & its usages. IRC,Telnet Concept, Remote Logging,Terminal Emulation, Message Board, Internet Chatting- Voice Chat, Text Chat, Video Chat. Instant Messaging and Collaboration, Internet Etiquettes.

f) **HTML**

Concepts of Hypertext, versions of HTML, Elements of HTML Syntax, Head & Body Sections, Building HTML Documents, Inserting texts, Images, Hyperlinks, Backgrounds and Color 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.

Unit – III **Programming in C language** **(50 Marks)**

a) **Introduction to 'C' Language**

Importance of C. Basic structure of C Program- Compile, Run, Debug. Character set, C tokens, Variables and Identifiers, Built-in Data Types, Variable Definition, Arithmetic operators and Expressions-evaluation of expressions, precedence of arithmetic operators, type conversions in expressions, operator precedence and associativity. Constants and Literals, Simple assignment statement

b) **Managing Input and Output Operators**

Formatted input/output- printf() and scanf() functions. Unformatted input – getchar(), getch(), getche(), gets(). Unformatted output – putchar (), puts ().

c) **Conditional Statements and Loops**

Decision making within a program, Conditions, Relational Operators, Logical Connectives, if statement, if-else statement, Loops: while loop, dowhile, for loop, Nested loops, Infinite loops, Switch statement

d) **Arrays**

Definition, declaration and initialization- One-dimensional arrays, two-dimensional arrays. Multidimensional arrays.One-dimensionalArray manipulation- Searching, Insertion, Deletion, Finding the largest/smallest element in an array; Addition/Multiplication of two matrices, Transpose of a square matrix.Sorting: Bubble and insertion sort. Linear search.

e) **Functions**

Top-down approach of problem solving, Modular programming and functions, Standard Library C functions, Prototype of a function: Formal parameter list, Return Type, Function call, Block structure, Passing arguments to a Function: call by reference, call by value, Recursive Functions, arrays as function arguments.

f) **Storage Classes**

Scope and extent, Storage Classes in a single source file: auto, extern and static, register, Storage Classes in a multiple source files: extern and static

g) **Handling of Character Strings**

Declaring and initializing string variables, reading string from terminal, writing string to screen, string concatenation, comparison of two strings, string handling functions.

h) **Structures and Unions**

Structure variables, initialization, structure assignment, nested structure, structures andfunctions, structures and arrays: arrays of structures, structures containing arrays, unions

i) **Pointers**

Address operators, pointer type declaration, pointer assignment, pointer initialization, pointer arithmetic, functions and pointers, Arrays and Pointers, pointer arrays, pointers and structures, dynamic memory allocation.

j) **File Processing**
Concept of Files, File opening in various modes andclosing of a file, Reading from a file, writing onto a file

Unit – IV **Multimedia** **(15 Marks)**

a) **Introduction**
Components of multimedia, Web and Internet multimedia applications, transition from conventional media to digital media

b) **Computer Fonts**
Usage of text in Multimedia, Families and faces of fonts, outline fonts, bitmap fonts International character sets and hypertext, Digitalfont's techniques.

c) **Audio fundamentals and representation**
Digitization of sound, frequency and bandwidth, decibel system, data rate, audio file format, Sound synthesis, MIDI, wavetable.

d) **Image fundamentals and representation**
Colour Science , Colour, Colour Models, Colour palettes, Dithering, 2D Graphics, Image Compression and File Formats :GIF, JPEG, JPEG 2000,PNG, TIFF, EXIF, PS, PDF

e) **Video and animation**
Video Basics, How Video Works, Broadcast Video Standards, Analog video, Digital video, Video Recording and Tape formats. Video Compression and File Formats. Video compression based on motion compensation. Animation: Cell Animation, Computer Animation, Tweaking, Morphing.

Unit – V **Aptitude Test** **(20 Marks)**

a) Numerical and Figure work Test: (4 marks)
These tests are reflections of fluency with numbers and calculations. It shows how easily a person can think with numbers. The subject will be given a series of numbers. His /Her task is to see how the numbers go together to form a relationship with each other. He /She has to choose a number which would go next in the series.

b) Verbal Analysis and Vocabulary Tests (6 marks)
These tests measure the degree of comfort and fluency with the English language. These tests will measure how a person will reason with words. The subject will be given questions with alternative answers that will reflect his /her command of the rule and use of English language

c) Visual and Spatial/ #-D Ability Tests (4 marks)
These tests are used to measure perceptual speed and acuity. The subject will be shown pictures where he/she is asked to identify the odd one out; or which comes next in the sequence or explores how easily he/she can see and turn around objects in space

d) Abstract and Reasoning Test: (6 marks)
This test measures the ability to analyze information and solve problems on a complex, thought based level. It measures a person's ability to quickly identify patterns, logical rules and trends in new data, integrate this information, and apply it to solve problems