ANNUXERE - I

SYLLABUS FOR
POST GRADUATE DIPLOMA IN COMPUTER APPLICATIONS

Year - 2022-23

Paper – I Introduction to Information Technology

Unit – I

Introduction to Computer – What is a Computer – Different Uses of Computer – Characteristics of Computer – Limitations of Computers – Units of Computer System – Block Diagram of computer – Types of computer – Hard ware and Software

Unit – II

Introduction to Input/Output and Storage Devices – Input Devices – Keyboard, Mouse, Scanner, Light Pen, Touch Screen, OCR, MICR, BCR – Out Devices – Monitors, Printers, and Plotters – Computer's Memory – Internal and External Memory - Various Storage Devices

Unit – III

Software – Introduction – Types – System Software – Types, Features and Functions – Application Software – Types – Machine Language –Number System – Binary Number System – Octal Decimal Number System - Hex Decimal Number System – Binary Arithmetic - Boolean Algebra – Logical Gates – Assembly Language – High Level Languages

Unit – IV

Computer Networks – Terminology – Server – Workstations – Network Hardware – Hub, Switch, Bridge, Router – Communication Channels – Topologies – Advantages of Networks – Types of Networks – LAN, MAN, WAN

Unit – V

Internet – Advantages and Disadvantages – www – protocols – FTP, HTTP, PPP, SMTP, TCP/IP, POP – Web Server – Web Browser – ISP – Types of Connections – Web site – Types of Web sites – E-mail - Searching

Prescribed Text Book

P.K. Sinha – Computer Fundamentals

Reference Books

1. Comdex Information Technology Course Kit – by Vikas Gupta, Dreamtech
2. Introduction to Computers by Rajaraman

Paper – II Introduction to Operating Systems

Unit-I

Operating Systems – Introduction, Features, Functions – Process Management, Memory Management, Multi tasking, Peripheral Device Management, Time-sharing – Types of Operating Systems – Real time Operating Systems, Single User Operating Systems, Multi User Operating Systems

Unit – II

MS – DOS – Introduction, Features – File Systems - DOS commands, Command Syntax Elements-Internal Commands – MD, CD, DIR, COPY, DEL, RD, REN TYPE, ECHO, DATE, TIME, INPUT/OUTPUT Redirection, Wild Card characters, Files – Types of Files, File naming, File Attributes – Batch Files – Important DOS Files - AUTOEXEC.BAT, Config.Sys, Command.Com files – External Commands

Unit - III

Micro Soft Windows

Introduction – Features – File system – FAT, FAT 32, NTFS – Terminology – Window, Mouse Pointer, Desktop, Task Bar – Folder, Short Cuts – Working with Windows – Creating folders, Removing Folders, Renaming Folders, Creating Short Cuts, Parts of Window – My Computer – My documents – My Network Places – Internet Explorer – Recycle Bin – Moving Items to Recycle Bin, Emptying Recycle Bin

Unit – IV

Control Panel – Adding and Removing Hardware – Adding and Removing Programs – Administrative Tools – Working with DATE & TIME – Changing Display Settings – Working with Fonts – Network Connections – Adding Printers – Regional & Language Settings – Creating User IDs – Removing User IDs – Permissions

Unit – V

Linux - Introduction – Features and Advantages – Structure – File System – Shell – types of shells – Basic Shell Commands – mkdir, cd, ls, mv, cp, rm, cat, wild card characters – Creating files, file name conventions, File Access Permissions – working with vi editor – Working with Shell Script

Prescribed Text Books

1. Comdex Information Technology Course Kit – by Vikas Gupta, Dreamtech
2. PC PACKAGE
3. Operating Systems – CBH

Reference Books

1. Windows 98/2000 – Hemant Kumar Goyal

Paper – III PC-Packages

Unit – I

Introduction – Introduction to Office Automation – What is an Office, Functions of Office, Structure of an Organisation – Office Automations Hard ware and Software Requirements – MS – Office 2003 – Features – Components of MS – Office

Unit – II

MS – Word – Introduction, Word Processor basics, Guide lines for typing, Menus in MS Word, Saving the Document, Opening the Documents, Previewing and Printing the document, Page Settings, Editing the document, Find, Replace and Goto, Header and Footer, Foot notes – Inserting Pictures, files – Organization chart – Working with Clip Arts, Auto shapes – Formatting the document, Bullets and Numbering, Document alignment – Spelling and Grammatical Check – Thesaurus – Mail Merge, Macros, Creating tables – Sorting, Converting, Applying Formula

Unit – III

MS – Power Point

Introduction – Features – Creating Presentations – Open the presentation, Saving – Slides – Inserting Slides – Delete slides – Normal, Slide Sorter, Slide Show, Grid Guides – Inserting Pictures, Sounds, Movie – Slide Design, Slide layout, Adjusting back ground, Using Templates – Slide Show, Action Buttons, Custom Animation

Unit – IV

MS – Excel

Introduction – Features – Spread Sheet basics – labels, Values and functions – Saving the Work book, Printing – Set print area – Cell and Cell Address – Cell Pointer – Mathematical Calculations – Formulas, Formula bar, Automatic Recalculation – Function – Arithmetic Functions, String Functions, Date and Time Functions – Financial Functions – Formatting Spread Sheet – Inserting and deleting rows, columns – Sorting – Adding a Sheet to the workbook – renaming the sheet – copying data between sheets – protecting the workbook – deleting sheet from the work book – Working with Charts

Unit – V

MS – Access

Introduction – Features – Database – Under stating RDBMS – Objects of RDBMS – Tables, Queries, Reports – Functions of Database Management Systems – Creating a Database – Creating a Table – Fields, Data types, Field Name conventions – Indexes – Keys – Query – Creating a Query – Types of Queries – using criteria – building expressions – running the query – Working with Forms – Basic Controls – Properties – Navigating the records – Adding New Record – Deleting a Record from the Form – Working with Reports – Understanding the Sections of Reports – Basic Controls – Setting Properties – Previewing the Report

Prescribed Text Books

1. R.K. Taxali – MS Office
2. MS-Office – BPB publications

Reference Books

1. Comdex Information Technology Course Kit – by Vikas Gupta, Dreamtech

Paper-IV Programming With Visual Basic 6.0

Unit - I

Introduction - IDE - Menu Bar - Toolbars - Project Explorer - Toolbox - Properties window - Form Designer - Form Layout - Immediate Window - Saving the Project - Elements of the User Interface - Designing the User Interface - Aligning the Controls - running the Applications - Event Driven programming - A few common properties - Common Methods - Common Events - Docking the tool bar

Unit - II

The Language - Declaring the Variables, Types of Variables, Converting the Variable Types, User - defined Data Types, Special Values, Examining the Variable Types - Scope of the Variable - Control Flow Statements - if .. then, if .. then .. else, Select Case statements - Loop Statements - Do .. Loop, For .. Next, while .. Wend, Nested Control Structures, Exit Statement - Arrays - Declaring Arrays, specifying the limits, Multi dimensional Arrays - Dynamic Arrays - Control Arrays - Procedures - Subroutines - functions - calling procedures - Passing Arguments - File Handling

Unit - III

Working with Forms - Start up form, Loading, Showing and hiding Forms, Controlling one form from within another form - Designing Menus - Programming Menu Commands - Form events - Building Dynamic Forms at runtime - SDI and MDI - Multiple document Interface - MDI applications - Basics, Built-in Capabilities of MDI, Parent and Child Menus, Accessing child Forms, Loading and Unloading Child forms, Ending and MDI Application, Implementing Scrolling Forms.

Unit - IV

Database Programming - Introduction to DBMS - Recordsets - Relational concepts - Primary Key, Foreing Key, Indices - Introduction to SQL - Data Control - Data Control Properties & Methods - Adding Records - Editing Records - Deleting Records - Updating the tables - Introduction to ADO control - ADO object Model - using ADO, Establishing Connection, Executing SQL Statements - Cursor Types and Locking Mechanisms, Manipulating the Recordset Objects, Simple Record Editing and Updating

Unit - V

VB & Web - Introduction to Web - HTML Pages - Server-Client Interaction - Structure of HTML documents - Basic HTML tags - Inserting Graphics - Tables - Frames - Forms & Controls - Building Parameter String - Contacting a Server Application - Connecting to Web server - ASP - Creating and ASP, Active and Server's Objects - Intrinsic Objects, Basic Objects - the Response Object - the Request Object - The Server Object - The Session and Application Objects - Start and End Events - Setting Up and ODBC Data Source - Opening the Database - Building a Recordset - Using the Record Set

Prescribed Text Books

1. Visual Basic 6.0, Pragya Publications
2. Visual Basic 6.0, BPB Publications (Hindi Edition)

Reference Books

1. VB 6.0 Black Books
2. Mastering the Visual Basic 6.0 - BPB Publications

Paper V : DATABASE MANAGEMENT SYSTEM

UNIT – I

Basic concepts: database, database management system, data independence - Architecture of Database system. Database administrator – Database languages: DDL, DML & DCL.

Unit II

Data models: Relational data model, Network model, Hierarchical model – Entity Relationship Model: concepts, ER Diagram.

Unit III

SQL: Basic Structure, Features, Set Operations, Aggregate functions, Nested Sub queries, views, Joined Relations, DDL, DML, Domain Constraints, Referential Integrity, Assertions, Triggers, Security and Authorization.

Unit IV

Relational Database Design: Normalization: First Normal Form, Functional Dependencies, Decomposition, BCNF, Third Normal Form, Fourth Normal form

UNIT V

Transaction Management: Transaction: Concept, State, Concurrent Executions, Serializability, Recoverability. Concurrency Control: Lock-Based Protocols, Timestamp-Based Protocols, Deadlock Handling. Recovery System: Failure Classification, Storage Structure, Recovery and Atomicity, Log-Based Recovery, Shadow Paging, Recovery with Concurrent Transactions, Buffer Management, Failure with Loss of Nonvolatile Storage, Advanced Recovery Techniques, Remote Backup Systems.

Prescribed Text Books :

1. Henry F.Korth, Abraham Silberschatz, Database System concepts, 3rd edition, and McGraw Hill publishing company Limited.

Paper – VI Programming with C++

Unit- I

Object-Oriented Paradigm, Structured Versus Object-Oriented Development , Encapsulation and Data Abstraction, Inheritance, Delegation-Object Composition, Polymorphism, Message Communication, Popular OOP Languages, Merits and Demerits of OOPs Methodology, C++ at a Glance, Introduction, Data Encapsulation and Abstraction-Classes, Inheritance-Derived Classes, Polymorphism-Operator Overloading, Friend Functions, Polymorphism-Virtual Functions, Generic Classes-Class Templates, Exception Handling, Streams Computation, Introduction of C++,, Character Set, Tokens, Identifiers, and Keywords, Variables, Data Types and Sizes, Variable Definition, Variable Initialization, Characters and Character Strings, Operators and Expressions, Qualifiers, Typedef Statement, Promotion and Type Conversion, Constants, Declaring Symbolic Constants-Literals, Enumerated Data Types, Macro Functions, Operator Precedence and Associatively,

Unit- II

Control Flow Statements , Introduction, If Statement, switch statement, for Loop, while loop, do-while Loop, break statement, continue statement, goto statement, wild statements, Arrays and Strings, Introduction, Operations on Arrays, Modular Programming with Functions, Introduction, Function Components, Passing Data to Functions, Function Return Data Type, Library Functions, Parameter Passing, Return by Reference, Default Arguments, Inline Functions, Function Overloading, Function Templates, Arrays and Functions C++ stack, Scope and Extent of Variables, Storage Classes, Functions with Variables Number of Arguments, Recursive Functions, Structures and Unions, Introduction, Structure Declaration, Structure Definition, Accessing Structure Members, Structure Initialization, Nesting Of Structures, Array Of Structures, Structures and Functions, Data Type Enhancement, Using typedef, Structures and Encapsulation, Unions, Differences between Structures and Unions

Unit- III

Pointers and Runtime Binding, Introduction, Pointers and their Binding, Address Operator &, Pointer Variables, Void Pointers, Pointer Arithmetic, Runtime Memory Management, Pointers to Pointers, Array of Pointers, Dynamic Multi-dimensional Arrays, Pointer Constants, Pointers and String Functions, Environment Specific Issues, Pointers to Constants Objects, Constant Pointers, Pointer to Structures, Wild Pointers, Classes and Objects, Introduction, Class Specification, Class Specification, Class Objects, Accessing Class Members, Defining Member Functions, Outside Member Functions within the Class, Data Hiding, Access Boundary of Objects Revisited, Empty Classes, Pointers within a Class, Passing Objects as Arguments, Returning Objects from Functions, Friends Functions and Friend Classes, Constant Parameters and Member Functions, Structures and Classes, Static Data and Member Functions, Class, Objects and Memory Resource, Class Design Steps, Object Initialization and Cleanup, Class Revisited, Constructors, Parameterized Constructors, Destructor, Constructor Overloading, Order of Constructions and Destruction, Constructors with Default Arguments, Nameless Objects, Dynamic Initialization through Constructors, Constructors with Dynamic Operations, Copy Constructor, Constructors for Two-dimensional Arrays, Constant Objects and Constructor, Static Data Members with Constructors and Destructors, Nested Classes Dynamic Objects, Introduction, Pointers to Objects, Live Objects, Array of Objects, Array of Pointers to Objects, Pointers to Object Members, Function this Pointer, Self-referential Classes, Guidelines for Passing Object Parameters

Unit- IV

Operator Overloading, Introduction , Unary Operator Overloading, Operator Keyword, Operator Return Values, Limitations of Increment/Decrement Operators, Binary Operator Overloading, Arithmetic Operators, Concatenation of Strings, Comparison Operators, Arithmetic Assignment Operators, Overloading of new and delete operators, Data Conversion, Conversion Between Basic Data Types, Conversion Between Objects and Basic Types, Conversion Between Objects of Different Classes, Subscript operator Overloading, Overloading with Friend Functions, Assignment Operator Overloading, Tracing Memory Leaks, Niceties of Operator Overloading and Conversions, Inheritance, Introduction, Class Revisited, Derived Class Declaration, Forms of Inheritance, Inheritance and Member Accessibility, Constructors in Derived Classes, Destructors in Derived Classes, Constructors

Invocation and Data Members Initialization, Overloaded Member Functions, Abstract Classes , Multilevel Inheritance, Multiple Inheritance, Hierarchical inheritance, Multi-path inheritance and Virtual Base Classes, Hybrid Inheritance, Object Composition-Delegation, When to Use Inheritance?, Benefits of inheritance, Cost of Inheritance

Unit-V

Virtual Functions, Introduction, Need for Virtual Functions, Pointer to Derived Class Objects, Definition of Virtual Functions, Array of Pointers to Base Class Objects, Pure Virtual Functions, Abstract Classes, Virtual Destructors, How is Dynamic Binding Achieved?, Rules for Virtual Functions, Streams Computation with Console, What are Streams? Predefined Console Streams, Hierarchy of Console Stream Classes, Unformatted I/O Operations, Formatted Console I/O Operations, Manipulators, Custom/User-Defined Manipulators, Stream Operator with User-defined Classes, Streams Computation with Files, Introduction, Hierarchy of File Stream Classes, Opening and Closing of Files, Testing for Errors, File Modes, File Pointers and their Manipulations, Sequential Access to a File, ASCII and Binary Files, Saving and Retrieving of Objects, File Input/Output with fstream class, Random Access to a File, In-Memory Buffers and Data Formatting, Error Handling During File Manipulations, Filter Utilities

Paper VII : . DTP (PageMaker & Photo Shop)

Unit I

Introduction to DTP: Hardware requirements – General design considerations – Text Organization. Designing Common Media Publications: Newsletters, Letter Heads, Small Advertisements, Long Advertisements, Visiting Cards, Brochures, Catalogs – Redesigning. PageMaker basics – Editing Text: Opening and Editing Publication – The Story Editor: Finding a word, searching by format, closing the Story Editor, Correcting Mistakes – Saving and Closing the Publication.

Unit II

Formatting Text: Changing the Font, Font Size, Aligning the Text, Tracking, kerning, Leading – Styles Sheets: Creating Styles, Appling and Importing Styles – Bullets and Numbering. Master Pages: Adding Text to the Publication, Auto flow, Removing Unwanted Text Blocks – Placing Elements on Master Pages, Placing guidelines – Creating Master Pages – Applying, Removing, Editing a Master Page – Creating a new Publication.

Unit III

Graphics and Objects: Creating simple Graphics, Displaying the colors palate – Wrapping Text around a Graphic – Importing, resizing, moving cropping a Graphic – Links – The Links Manager. Managing and Printing and a Publication: Page Orientation, Page Numbering, Page Size, Dimensions, Margins – Table of Contents – Managing Books – Printing a Publication.

Unit IV

Photoshop: Basics – Creating a new file, saving and closing files – Working with Images and Colors: Image size, Editing images, Color Modes, File Formats, Setting the current Foreground and Background colors, The Color Picker Palette, The Eye-dropper Tool, The Swatches Palette. Selection Tools – Grow and Similar Commands – Moving a Selection – Editing Selection – Filling a Selection – Transforming Selection – Inverting a Selection – Painting Tools – Drawing Tools – Editing Tools – Toning Tools – Eraser Tools.

Unit V

Layers: Creating a new layer, Selecting Layers, Hiding/Showing layers, Deleting Layers, Sorting layers, Merging layers, Linking layers, Layer effects, Transforming Layers – Type: Creating type, Changing type settings, Styles – Filters: The filters menu, Artistic, Pixel rate, Render, Sketch and Stylize Filters.

Prescribed Text Book:

1. Comdex Desktop Publishing Course Kit by Vikas Gupta, Dreamtech Press, New Delhi.

Lab I: Document Processing using Page Maker.

Lab II: Project work to publish a book.

Paper VIII: Internet Technologies and Web Design

Unit I

Introduction to Internet: History – The way internet works- Connecting to Internet – Uses of Internet – Internet Service Providers. Internet Access Tools: Information Retrieval Tools: FTP, Gopher – Communication tools: Telnet, Usenet – Multimedia Information tools: Home Page – Information Search tools: Archie – Veronica – WAIS.

Unit II

World Wide Web (WWW): What is WWW – Web page– Web site – Web browsers – Uniform Resource Locator (URL) – Search Engines – DNS – Electronic mail: Introduction – Advantages of E-mail – Address – E-mail components – E-mail functions.

Unit III

Introduction to Web Design: What is Web Design – Web Design process – Site types and Architecture – Navigation theory and practice – HTML: Basic concepts – Structure of HTML document : HTML elements.

Unit IV

Links and Addressing: Linking Basics, URL - HTML and Images: HTML Image Basics – Frames: Overview of Frames, Frame Targeting, Floating Frames – Styles sheets: Style sheet basic, Style sheet properties.

Unit V

Basic Interactivity with forms: form elements, controls – Introduction to Scripting: VB Script – Including the script in HTML document – DHTML: Document Object Model**.**

Prescribed Text Books :

1. Fundamentals of Internet and WWW by Reymond Greenlaw and Ellen Hepp, Tata Mc Graw Hill.
2. The Complete Reference Web Design by Thomas A. Powell, Tata McGraw Hill edition. (Chapters: 1, 2, 4, 5)
3. The Complete Reference HTML by Thomas A. Powell, Tata McGraw Hill Second edition (Chapters 3, 4, 5, 8, 10, 11, 13, 14)