

## **DIPLOMA IN COMPUTER APPLICATION (DCA)**

Mode	Dual Mode University System
Duration	1 Year
Pattern of Examination	Semester
Eligibility	10+2 in relevant subject

### **SCHEME OF EXAMINATION**

<b>Subject Code</b>	<b>Title</b>
<b>1<sup>st</sup>Sem.</b>	
DCA-101	Fundamentals of Computers
DCA-102	DTP ( Desktop Publishing ) – PageMaker
DCA-103	Internet Technologies
DCA-104	OFFICE AUTOMATION SOFTWARE
DCA-105	Project Training
<b>2<sup>nd</sup>Sem.</b>	
DCA-201	Computer Communication & Networking
DCA-202	Programming using C/ C++
DCA-203	Web Programming
DCA-204	Visual Programming using Visual Basic
DCA-205	Project Work

## **DCA-101: FUNDAMENTALS OF COMPUTERS**

### **UNIT-I**

General Applications of Computer: Introduction of Computer, Hardware, Software, Operating System, Computer Networking, Computers use in industry, Office Automation.

### **UNIT-II**

Problem Solving and Flowchart: Problem Solving, Flow Charting, Branching, Looping,

### **UNIT-III**

Basics of BASIC: Importance of BASIC, Programme analysis, Listing & Editing of BASIC Programme, Running the Programme, System Commands, Common BASIC Statements.

### **UNIT-IV**

Constants of Variable: The character set, Constants, Variables, Naming the Variables, getting data into the memory and the RESTORE statement.

### **UNIT-V**

Expression in BASIC: Arithmetic expressions, Hierarchy of operations, Rules of Arithmetic, Evaluation of Expression - LET statement, Refinement in programming, Logical expressions and Library Functions.

### **UNIT-VI**

Printer Controls: Comma Control, Semicolon Control, TAB Function and PRINT USING control.

### **UNIT-VII**

Jumping, Branching and Looping: Jumping - GO TO statement, Branching - IF. .... THEN statement, Multiple branching - ON... GO TO statement and looping - FOR..... NEXT statement.

### **UNIT-VIII**

Subscripted Variables: Single - Subscripted variables, Double subscripted variables and searching and sorting.

### **UNIT-IX**

Functions and Subroutines: User - Defined functions, Subroutines, Multiple - Parameter functions, Multiple - line functions and named subroutines with arguments.

## **DCA-102: DTP (DESKTOP PUBLISHING) – PAGEMAKER**

### **UNIT-I**

Getting Started with Adobe Page Maker 7.0, Creating a Publication, Working with Text Introduction to Desk Top Publishing, Introduction to Page Maker Advantages, Using the Mouse, Components of the Page Maker Window

### **UNIT-II**

Modifying Text, Working with Multiple Pages, Creating A New Document Setting the Margins, Setting the Page Size, Changing the page Orientation, Setting Page Numbers, Changing the Page Size view, Creating New Document Windows: Displaying the Rulers, Changing the Rulers, Using Rulers, Using Guidelines, Positioning Guidelines., Adding Guidelines to Master Pages. Aligning to Guidelines, Displaying Guidelines, Locking Guidelines. Formatting Types: Changing Font Families, Changing Font Sizes, Changing Typeface Style, Changing Character Specifications: Changing Type leading, Changing Character Widths, Changing Tracking, Changing Type Options. Saving Your Document: Saving a new Document, Saving an existing Document, Saving a Document as another document, Reverting to a Previously Saved Version. Developing Paragraphs: Typing Text, Adding special Characters to Text, Aligning Text. Formatting paragraphs: Changing Indents, Changing the space around Paragraphs, Changing paragraph Alignment, controlling How Paragraphs Break Between Pages and Columns, Adding lines Above or Below Your Paragraphs.

### **UNIT-III**

Working with Graphics, Formatting Text Introduction To Creating Frames Converting Other Objects to Frames, Threading and Unthreading Text. Threading additional Text, Threading Text to Different Page, Unthreading Text Blocks, Rethreading Text Blocks, Making Text Blocks Disappear Without Deleting them, Selecting and Dragging Text, Editing Deleting Text, Cut, Copying, Pasting Text, Viewing the Contents of Clipboard, Using Undo and Revert. Inserting and Removing Pages: Inserting and Removing Pages, Adjusting Spacing of Characters, Words, Lines: Adjusting, Spacing and Leading, Setting and changing Tabs.

#### **UNIT-IV**

Using Advanced Graphics, Adding Color and Using Mail Merge Introduction to Auto Flow, page maker Plug-Ins, Drop Cap, Change Case, Bullets and Numbering. Adding Design Elements- Introduction Adding Graphics to your Document, Adding Lines, Changing Lines Specifications, Adding Shapes, changing Shape specifications, Changing Line and fill, Specifications together (Fill and Stroke), Changing Round Corners, Creating Drop-Shadow, Boxes, Text wrap, Changing page maker Options: Adjusting Margins, Setting and Adjusting Columns, Setting Unequal Width Columns, Creating headers and Footers, Creating Graphics in page maker, Rotating Text, Skewing and Mirroring objects with Control Palette. Importing Graphics into page maker : Placing, Sizing, aligning Graphics, Cropping Graphics. Introduction to Using layers, Moving and creating objects. Introduction to Printing- Selecting a Printer, Printing your Document, Printing Document Dialog Box Options.

#### **UNIT-V**

Working with Long Publications, Publishing Electronically Developing Long Documents Introduction – Using Story Editor: Opening Story Editor, How the Story Editor names, TORIES, Switching Between Story Editor and Layout Editors, Closing Story Editor and Placing the Story Editor, Differences between Story Editor and layout Editors. SPELLINGS: Starting the speller, Correcting Misspelled Words, Correcting Duplicate Words, Adding Words to the different Dictionaries, Correcting Duplicate Words, using find Feature, Using the change Feature, using page Maker Help.

Text Book:

Adobe PageMaker 7.0, Kevin Proot, Cengage Learning

## **DCA-103: INTERNET TECHNOLOGIES**

### **UNIT-I**

Internet Protocols DNS, Working of DNS, DNS Header, Type of Records in DNS, forward and Reverse lookup, Configuration of Open Source (OS) DNS, working of DDNS - DHCP, DHCP header, Working of DHCP, Configuration of OS DHCP - FTP, Working of FTP, Configuration of OS Public FTP server and Private FTP server Understanding IPv6, CIDR, Hierarchical Routing, and Routing Protocol over internet. Multimedia over Internet, Voice over IP, Virtual Private network

### **UNIT-II**

Internet as a Distributed computing platform

1. Understanding Web Services technology, REST based web services (Resource Oriented Architecture) and Service oriented Architecture.
2. Introduction to cloud computing, case study and working of Google App engine and Amazon cloud.
3. Working of Peer to Peer over internet with case study of BitTorrent ,

### **UNIT-III**

Internet programming HTML 5.0, Rich Internet Technology, AJAX, FLEX, Integrating PHP and AJAX, Consuming Web Service with AJAX, Resource Syndication (RSS), Working principle of search engines

### **UNIT-IV**

Internet Security Public Key Infrastructure, Client side Vulnerabilities, Server Side Vulnerabilities, Database Vulnerabilities, Secure Payment Mechanism, Security is use in cloud

### **REFERENCE BOOKS:**

1. TCP/IP Protocol Suite : By Behrouz A. Forouzan : Tata McGraw-Hill
2. Cloud Computing : A practical Approach: By Anthony T. Velte : Tata McGraw-Hill
3. Using Google App Engine: By Charles : O'Reilly Press
4. Cloud Application Architecture: By George: O'Reilly Press
5. RESTful web services: By Leonard: O'Reilly Press

## **DCA-104: OFFICE AUTOMATION SOFTWARE**

### **UNIT-I**

Computer & Internet: Desktop computers, Block diagram of a computer, Input and output devices, memory and storage devices, different ports and their uses, Different type of printers. Software: OS, Windows OS, Application software. Networking, different LAN and WAN connections, connecting to a network, testing connection, Internet, IP address, Hypertext, Uniform Resource Locator, Web Browsers, IP Address, Domain Name, Internet Services Providers, Internet Security, Internet Requirements, Web Search Engine, Net Surfing, Internet Services.

### **UNIT-II**

Windows XP Windows concepts, Features, Windows Structure, Desktop, Taskbar, Start Menu, My Computer, Recycle Bin, Windows Accessories- Calculator, Notepad, Paint, Wordpad, Character Map, Windows Explorer, Entertainment, Managing Hardware & Software- Installation of Hardware & Software, Using Scanner, System Tools, Communication, Sharing Information between programs .

### **UNIT-III**

Word Processing MS Word: Features, Creating, Saving and Opening Documents in Word, Interface, Toolbars, Ruler, Menus, Keyboard Shortcut, Editing, Previewing, Printing, & Formatting a Document, Advanced Features of MS Word, Find & Replace, Using Thesaurus, Using Auto- Multiple Functions, Mail Merge, Handling Graphics, Tables & Charts, Converting a word document into various formats like- Text, Rich Text format, Word perfect, HTML, PDF etc.

### **UNIT-IV**

Worksheet- MS-Excel: Worksheet basics, creating worksheet, entering into worksheet, heading information, data, text, dates, alphanumeric values, saving & quitting worksheet, Opening and moving around in an existing worksheet, Toolbars and Menus, Keyboard shortcuts, Working with single and multiple workbook, working with formulae & cell referencing, Auto sum, Copying formulae, Absolute & relative addressing, Worksheet with ranges, formatting of worksheet, Previewing & Printing worksheet, Graphs and charts, Database, Creating and Using macros, Multiple worksheets- concepts, creating and using.

## **UNIT-V**

MS Power Point: Creating slide show with animations. Autocontent Wizard, creating a blank presentation, autolayout, Power point screen: screen layout and Views, insert a new slide, applying design template, changing slide layout, reordering and hiding slides, slide show and editing custom slide. Resizing a text box, Text box properties, Delete a text box, Bulleted lists, Numbered lists, Adding notes, Video and Audio, Adding text Editing options, Formatting text, Replace fonts, Line spacing, Change case Spelling check, Color schemes, Adding clip art, Adding an image from a file Editing graphic, AutoShapes, WordArt, Backgrounds, Action buttons Slide animation preview Slide transitions Slideshow options Slide master Header and footer Slide numbers Date and time

## **UNIT-VI**

Database Management & MS ACCESS Database Basics: Databases, Records & Fields, data types, Database Types & Library Catalogues Introduction into Microsoft Access, Starting Up Microsoft Access, Creating New, and Opening Existing Databases, Creating a database using a wizard Creating a database without using a wizard, Tables - What they are and how they work, Create a table from scratch in Design view, Primary Keys, Switching Views, Entering Data, Manipulating Data, Advanced Table Features Examples, Relationships - How to link multiple tables together, Forms - What they are and how they work, Creating A Form Using A Wizard, Reports - What they are and how they work, Creating A Report Using A Wizard, Creating Mail Merge Labels using a Wizard Intranet tools: E-mail: Anatomy of e-mail, e-mail address, finding e-mail address, adding signature, attaching files, opening attachments, managing e-mail account, Web mail, Case study: Yahoo Mail, Outlook express. FTP, ftp commands, ftp software, Telnet, using telnet, Web pages, HTML, basics of HTML. MS Front page: Page Properties, Text, Hyperlinks, Tables, Graphics and Pictures, Miscellaneous, Shared borders, Navigation bars Cascading Style Sheets, The mess, Frames, Components, Forms, create web site. Uploading and downloading file Portals, creating portals, digital signature, computer virus and antivirus software

## **REFERENCE BOOKS**

1. Professional Office Procedure by Susan H Cooperman, Printice Hall
2. Information Technology: Principles, Practices and Opportunities by James A Senn, Printice Hall
3. Technology And Procedures for Administrative Professionals by Patsy Fulton-Calkins, Thomson Learning



**DCA-105: PROJECT TRAINING**

VOU

## **DCA-201: COMPUTER COMMUNICATION & NETWORKING**

### **UNIT-I**

Course Purpose: Introduction to analysis and design of computer and communication networks through understanding the network layered architecture and the protocol stack and by conducting hands-on programming and lab activities.

### **UNIT-II**

Course Topics:

1. Understanding network architectures, protocol layers, and their service models.
2. Principles of network applications: Application layer protocols such as HTTP, FTP, and SMTP, Peer-to-Peer File Sharing Protocols and Architectures, ISPs and Domain name systems, Socket API and network socket programming.
3. Understanding reliable and unreliable transport-layer protocols: GBN and SR. TCP and UDP. Port numbers, Multiplexing and demultiplexing, Flow control and congestion control. Fairness, Delay, jitter, and loss in packet-switched network, Bandwidth, throughput, and quality-of-service.
4. Understanding network layer services and protocols.
  - o Switching fabric: Routing and forwarding, Queues and buffering, Virtual-circuit and datagram networks, Internet protocol. IPv4 and IPv6. Tunneling, LS and DV algorithms, Routing in the Internet. RIP, OSPF, and BGP, Broadcast and multicast, Handling mobility.
5. Understanding network layer services and protocols:
  - i. Link-layer and its services.
  - ii. Ethernet, hubs, bridges, and switches.
  - iii. Link-layer addressing.
  - iv. Error-detection and error-correction. Parity, check-summing, CRC.
  - v. Manchester encoding. ATM and MPLS.
  - vi. Local area networks and IEEE 802.11 wireless LANs.
  - vii. Multiple-access protocols. Random access.

viii. Efficiency of pure and slotted ALOHA. CSMA, CSMA/CD, and CSMA/CA.

6. Introduction to physical-layer services and systems:

- i. Introduction to physical media.
  - ii. Coax, fiber, twisted pair, DSL, HFC.
  - iii. WiMax, cellular, satellite, and telephone networks.
  - iv. Bit transmission.
  - v. Frequency division multiplexing. Time division multiplexing.
  - vi. Prerequisites:
- vii. Hands-on Activities: Extensive Network Socket Programming using Java

7. Multi-threaded Web Server

8. E-Mail Client

9. UDP Pinger

10. Web Proxy Server

11. Reliable Transport Protocol

12. Extensive WireShark (Packet Sniffer) Lab Experiments

13. Exploring HTTP

14. Exploring DNS

15. Exploring TCP

16. Exploring UDP

17. Exploring ICMP

18. Exploring Ethernet and IEEE 802.3

## **REFERENCES:-**

Computer Networking: A Top-Down Approach, by J. F. Kurose and K. W. Ross, Addison Wesley, 5th Edition, March 2009, ISBN-13: 978-0136079675.

## **DCA-202: PROGRAMMING USING C/ C++**

### **UNIT-I**

Tokens, Expressions And Control Structures, Introduction, Tokens, Keywords, Identifiers, Basic Data types, User Defined Data Types, Derived Data Types, Symbolic Constants, Type Compatibility, Declaration of Variables, Dynamic Initialisation of Variables, Reference Variables, Operators in C++, Scope Resolution Operator, MemberDereferencing Operators, Manipulators, Type Cast Operator, Expressions and Implicit Conversions, OperatorPrecedence, ControlStructures.

### **UNIT-II**

Specifying a Class, Defining Member Functions, Making an Outside Function Inline, Nesting of Member Functions, Private Member Function, Arrays within a Class, Memory Allocation for Objects, Static Data Member, StaticMember Functions, Arrays of Objects, Object as Function, Arguments. Constructors And Destructors Introduction, Constructors, Parameterized Constructors, Multiple Constructors with DefaultArguments, Dynamic Initialisation of Objects, Copy Constructors, Dynamic Constructors, Destructor.

### **UNIT-III**

Functions in C++, The Main Function, Function Prototyping, Call by Reference, Return by Reference, InlineFunctions, Default Argument, Const. Arguments, Function Overloading, Friend and Virtual Function. Operatoroverloading - introduction, methods, binary versus unary operators Inheritance: Extending Classes Introduction, Defining Derived Classes, Single Inheritance, Making a Private Member Inheritable, Multilevel Inheritance, MultipleInheritance, Hierarchical Inheritance, Hybrid Inheritance.

### **UNIT-IV**

Pointers, Virtual Functions and Polymorphism Compile time Polymorphism, run time polymorphism, Pointers toObjects, This Pointer, Pointers to Derived Classes, Virtual Functions, Pure Virtual Functions.

## **UNIT-V**

C++, AN OVERVIEW: Getting started, the C++ program, Preprocessor Directives, The Built-In Array Data Type, Dynamic Memory Allocation and Pointers, An Object – based Design, An Object-Oriented Design, An Exception –based Design, An array.

## **UNIT - VI**

THE BASIC LANGUAGE: Literal Constant, Variables, Pointer Type, String Types, const Qualifier, Reference Types, the Tool type, Enumeration types, Array types. The vector container type.

## **UNIT - VII**

OPERATORS: Arithmetic Operators, Equality, Relational and Logical operators, Assignment operators, Increment and Decrement operator, The conditional Operator, Bitwise operator, bitset operations. Statements: if, switch, for Loop

## **UNIT - VIII**

FUNCTIONS: Prototype, Argument passing, Recursion and linear function

## **UNIT - IX**

EXCEPTION HANDLING: Throwing an Exception, Catching an exception, Exception Specification and Exceptions and Design Issues

## **DCA-203: WEB PROGRAMMING**

### **UNIT-I**

Introduction and Web Development Strategies, History of Web, Protocols governing Web, Creating Websites for individual and Corporate World, Cyber Laws Web Applications, Writing Web Projects, Identification of Objects, Target Users, Web Team, Planning and Process Development.

### **UNIT-II**

HTML, XML and Scripting List, Tables, Images, Forms, Frames, CSS, Document type definition, XML schemes, Object Models, Presenting XML, Using XML Processors: DOM and SAX, Introduction to Java Script, Object in Java Script, Dynamic HTML with Java Script.

### **UNIT-III**

Java Beans and Web Servers: Introduction to Java Beans, Advantage, Properties, SDK, Introduction to EJB, Java Beans API Introduction to Servlets, Lifecycle, JSDK, Served API, Servlet Packages: HTTP package, working with Http request and response, Security Issues.

### **UNIT-IV**

JSP: Introduction to JSP, JSP processing, JSP Application Design, Tomcat Server, Implicit JSP objects, Conditional Processing, Declaring variables and methods, Error Handling and Debugging, Sharing data between JSP pages- Sharing Session and Application Data.

.

## **UNIT-V**

Database Connectivity Database Programming using JDBC, Studying Javax.sql.\*package, accessing a database from a JSP page, Application-specific Database Action, Developing Java Beans in a JSP page, introduction to Struts framework.

### **REFERNCES BOOKS:-**

1. Birdman, "Collaborative Web Development" Addison Wesley.
2. Chris Bates, "Web Programming Building Internet Applications", 2nd Edition, WILEY, Dreamtech.
3. Digital Circuit & Logic Design, by Bosworth
4. Digital Design by M Moris Mano, 2nd Edn. PHI
5. Hans Bergsten, "Java Server Pages", SPD O'Reilly
6. Herbert Shield, "The Complete Reference: Java", TMH.
7. Horstmann, "Core Java", Addison Wesley.
8. Introduction to Digital Microelectronic Circuits, by Copeland, TMH
9. Joel Sklar, "Principal of web Design" Vikash and Thomas Learning
10. Switching Circuit & Logic Design by Hill & Peterson, Wiley

## **DCA-204: VISUAL PROGRAMMING USING VISUAL BASIC**

### **UNIT-I**

Windows Programming: Traditional Programming Paradigms – Overview of Windows Programming – Data Types – Resources – Windows Messages – Device Contexts – Document Interfaces – Dynamic Linking Libraries – Software Development Kit (SDK) Tools – Context Help.

### **UNIT-II**

Visual Basic Programming: Introduction – Forms – Variables, Types – Properties – Decision Making – Looping – Modules – Procedures – Functions-Tool Box Controls – Menus – Grid Controls – Dialog Boxes – Database Manager – Data Control – Record set Objects.

### **UNIT-III**

Visual C++ Programming: Objects – Classes - VC++ Components – Resources – Event Handling – Menus – Dialog Boxes – Importing VBX Controls – Files – MFC File Handling – Document View Architecture – Serialization.

### **UNIT-IV**

Interfacing Other Applications – Multiple Document Interface (MDI) – Splitter Windows – Exception Handling – Debugging – Object Linking and Embedding (OLE) – Database Application – DLL – ODBC.

### **UNIT-V**



Introduction to Visual BASIC Introduction to Visual Basic, Features of VB, The controls, The Properties, Events, Methods, Developing an Application, Design the User Interface, Write code to respond to UserInput/Events

### **UNIT-VI**

Creating an Application The objective, The tool box, Project Explorer, The Properties Window, The Form Window, Understanding Projects, Customizing the Toolbar, what is on the Toolbar, Text Control Bar, The Picture Box, Label Box, Option Button, Frame, List Box, Combo Box, Data, Command Button, Check Box etc.

### **UNIT VII**

Programming Fundamental Declaring variables, Data Types, The Null Value, The Error Value, The Empty Value, Scope of Variable, Modules, Modules level Properties, Constants, Creating your own Constants, Arrays, Multidimensional Arrays, Declaring Fixed Size Arrays, Procedures, Subroutine & Functions, Split Bar, The Loops.

### **UNIT VIII**

Menus & MDI Objectives, Building the User Interface, Overcrowding, Consistency, All about Menus, The Menu Systems, Menu Conventions, The Menu Editor, Using the Menu Editor, Writing Code for Menu Controls, Dialog Boxes, MDI Applications, Menu in MDI Applications, Adding Status Bar, Adding Tool Bar, Adding Data File.

### **UNIT IX**

Graphics in Visual Basic Form , picture box , image box , sizing images , coordinate system , scale properties And methods , drawing curves , drawing pixels , drawing boxes , fillings . timer control MDI form and their properties , interfacing with other packages. VB interfacing with office 97, VB interfacing with MS Access, VB interfacing with Oracle, Creation of setup files.

### **REFERENCES:**

1. Programming in Visual Basic 6.0,Bradly (TMH).

2. Visual Basic 6: Forms and Groundup , Cornell(TMh).
3. Mastering Visual Basic 6 (BPB).
4. Beginning Visual Basic 6 & SQL Server 7, Cornell (SPD)

**DCA-205: PROJECT WORK**

V O U