Kalinga University Atal Nagar (C.G.)

SCHEME OF EXAMINATION
& SYLLABUS

of

DCA

(DIPLOMA IN COMPUTER APPLICATION)

UNDER

Faculty of Information Technology

w.e.f. Session 2021-22

DCA I SEMESTER

Subject code	Subject Name	Credit	University Exam Marks	Internal Marks	Total Marks
DCA101	Fundamental of IT	4	70	30	100
DCA102	Introduction to computer Networks and Web design	4	70	30	100
DCA103	Programming in C++	4	70	30	100
DCA104	Business Communication	4	70	30	100
DCA105	Practical Based on DCA101 and DCA102	2	30	20	50
DCA106	Practical Based on DCA103	2	30	20	50
	Total	**20**	**340**	**160**	**500**

DCA II SEMESTER

Subject code	Subject Name	Credit	University Exam Marks	Internal Marks	Total Marks
DCA201	GUI – Programming in Visual Basic	4	70	30	100
DCA202	Desktop Publishing	4	70	30	100
DCA203	Data Base Management Systems	4	70	30	100
DCA204	Project	4	70	30	100
DCA205	Practical Based on DCA201	2	30	20	50
DCA206	Practical Based on DCA203	2	30	20	50
	Total	**20**	**340**	**160**	**500**
	Grand Total(SEM I +SEM II)	**40**	**680**	**320**	**1000**

DCA101
Fundamentals of Information Technology

UNIT – I: Brief history of development of computers, Computer system concepts, Computer system characteristics, Capabilities and limitations, Types of computers Generations of computers, Personal Computer (PCs) – evolution of PCs, configurations of PCs- Pentium and Newer, PCs specifications and main characteristics. Basic Components of a computer system - Control unit, ALU, Input/output functions and characteristics, memory - RAM, ROM, EPROM, PROM and other types of memory, Number System.

UNIT – II: Input/output& Storage Units-:Keyboard, Mouse, Trackball, Joystick, Scanners, Digital Camera, MICR, OCR,OMR, Bar-code Reader, Voice Recognition, Light pen, Touch Screen, Printers & types - Daisywheel, Dot Matrix, Inkjet, Laser, Line Printer, Plotter, Sound Card and Speakers, Storage fundamentals - Primary Vs Secondary Data Storage and Retrieval methods - Sequential, Direct and Index Sequential, Various Storage Devices - Magnetic Tape, Magnetic Disks, Cartridge Tape, Hard Disk Drives, Floppy Disks(Winchester Disk), Optical Disks, CD, CD-R, CD-RW, Zip Drive, flash Physical structure of floppy & hard disk.

UNIT – III: Software and its Need, Types of Software - System software, Application software, System Software - Operating System, Utility Program, Programming languages, Assemblers, Compilers and Interpreter, Introduction to operating system for PCs-DOS Windows, Linux, File Allocation Table, files & directory structure and its naming rules, booting process, Programming languages- Machine, Assembly, High Level, 4GL, their merits and demerits, Application Software and its types - Word-processing, Spreadsheet, Presentation Graphics, Data Base Management Software, characteristics, Uses and examples and area of applications of each of them, DOS commands.
Multimedia concepts, multimedia system configuration, types of multimedia, application of Multimedia.

UNIT – IV: Use of communication and IT , Communication Process, Communication types- Simplex, Half Duplex, Full Duplex, Communication Protocols, Communication Channels - Twisted, Coaxial, Fiber Optic, Serial and Parallel Communication, Modem - Working and characteristics, Types of network Connections - Dialup, Leased Lines, ISDN, DSL, RF, Broad band ,Types of Network - LAN, WAN, MAN ,Internet, VPN etc., Topologies of LAN - Ring, Bus, Star, Mesh and Tree topologies, Components of LAN -Media, NIC, NOS, Bridges, HUB, Routers, Repeater and Gateways. Internet-Evolution, World Wide Web Internet Services and E - Commerce

UNIT – V: System Planning and initial investigation: basis for planning in systems analysis, initial investigation, fact finding, fact analysis, determination of feasibility. Information Gathering: Kind of information, Information gathering tools, Structured Analysis, DFD, Data Dictionary, Decision Tree, Structured English, Decision Table. System Performance & Feasibility Study. Software Engineering Fundamentals: Software Design Life cycle The Role of System Analyst

TEXT & REFERENCE BOOKS:
- Anurag Seetha, "Introduction to Computers and Information Technology", Ram Prasad & Sons, Bhopal.
- S.K.Basandra, "Computers Today ", Galgotia Publications.
- Chetan Shrivastav "Fundamental of IT"
- P.K. Sinha," Fundamental of Computers"
- System Analysis and Design - Elias M. Awad.
- System Analysis and Design - Alan Dennis & Barbara Haley Wixo
- Introduction to Data communication & Networking - Behrouz &Forouzan
- Computer Networking - Andres & Tanenbaum

DCA/102
Introduction to computer Networks and Web design

MODULE - I

Use of communication and IT , Communication Process, Communication types- Simplex, Half Duplex, Full Duplex, Communication Protocols, Communication Channels - Twisted, Coaxial, Fiber Optic, Serial and Parallel Communication, Modem - Working and characteristics, Types of network Connections - Dialup, Leased Lines, ISDN, DSL, RF, Broad band ,Types of Network - LAN, WAN, MAN ,Internet, VPN etc., Topologies of LAN - Ring, Bus, Star, Mesh and Tree topologies, Components of LAN -Media, NIC, NOS, Bridges, HUB, Routers, Repeater and Gateways. Internet-Evolution, World Wide Web Internet Services and E - Commerce

MODULE - II

WebPages; Hyper Text Transfer Protocol (HTTP); File Transfer Protocol (FTP) Domain Names; URL, Website, Web browser, Web Servers; Basic Tags of HTML: HTML, HEAD, TITLE, BODY, Heading tag (H1 to H6) and attributes,FONT tag and Attributes, P, BR, Comment in HTML (<! >), Formatting Text (B, I, U, EM, BLOCKQUOTE,PREFORMATTED, SUB, SUP, STRIKE), Ordered List- OL Unordered List, ADDRESS Tag; Creating Links: Link to other HTML documents or data objects, Links to other places in the same HTML documents, Links to places in other HTML documents; Anchor Tag <A HREF> and <A NAME>, Inserting Images Image Link, Horizontal Rules <HR ALIGN, WIDTH, SIZE, NOSHADE>;

MODULE - III

Tables: Creating Tables, Border, TH, TR, TD, CELLSPACING, CELLPADDING, WIDTH,COLSPAN, CAPTION, ALIGN, CENTER;Frames: Percentage dimensions, Relative dimensions, Frame – Src, Frameborder, height and width, Creating two or more rows Frames <FRAMESET ROWS >, Creating two or more Page 3 Columns Frames <FRAMESET COLS >, <FRAME NAME SRC MARGINHEIGHT MARGINWIDTH SCROLLING AUTO NORESIZE>, <NOFRAMES>, </NOFRAMES>; Forms: Definition, Form Tags: FORM, <SELECT NAME, SIZE, MULTIPLE / SINGLE><OPTION></SELECT>, <TEXTAREA NAME ROWS COLS > , </TEXTAREA>, METHOD,CHECKBOX, HIDDEN, IMAGE, RADIO, RESET, SUBMIT, INPUT <VALUE, SRC,CHECKED, SIZE, MAXLENGTH, ALIGN>;

MODULE - IV

CSS, the Benefits of CSS ,How CSS Works ,Rule Syntax ,Adding Styles to a Document ,Key Concepts ,Specifying Values, Browser Support , Type (Element) Selector ,Font Family ,Font Size ,Other Font Settings ,Text Transformation (Capitalization) Text Decoration, Line Height, Text Alignment Properties, Text Spacing, Text Direction, Margins, Borders, Padding, Foreground Color, Background Color, Background Images, working with tables

MODULE - V

Introduction, Adding VBScript code to HTML page, VBScript Data type, VBScript Variables, VBScript Constants, VBScript Operators, and Operator Precedence; MsgBox: functions of message box , Return values of MsgBox function, Conditional statements: If Then.. Else, Select case; Loops: Do loops, While… Wend, For.. Next, For..Each..Next; Sub procedures, Function procedures;

Reference Books:
- HTML & XHTML: The Complete Reference Guide, 5th Edition
- Web Design in a Nutshell, Second Edition by Jennifer Niederst Robbins, Second Edition September 2001
- Learning Web Design: HTML, Graphics, and Animation
- A Beginner's Guide to HTML, Graphics, and Beyond by Jennifer Niederst Robbins
- Introduction to HTML- Kamlesh N agrawal
- Data communication and networking - Ferozon
- Networking Concepts - Tanunbaum

DCA103
Programming with C++

UNIT– I: Idea of Algorithm: Representation of Algorithm, Flowchart, Pseudo code with examples, Fromalgorithms to programs, source code.Programming Language, high level and low level languages, Procedural Vs Object oriented language, Object oriented programming Concepts, Advantages, Usage, object oriented language features, Introduction to various C++ compilers, C++ standard libraries, Data types, comments, main function in C++, function prototyping, default arguments and argument matching. User defined data types: enumerated types.

Classes & Objects : Classes, Structure & Classes, Union & Classes, functions , System define and library function, Inline Function, Scope Resolution operator, Static Class Members: Static Data Member, Static Member Function, Passing Objects to Function, Returning Objects, Object Assignment, Friend Function, Friend Classes.

UNIT– II: Array, Pointers References & The Dynamic Allocation Operators: Array of Objects, Pointers to Object, Type Checking C++ Pointers, The This Pointer, Pointer to Derived Types, Pointer to Class Members, References: Reference Parameter, call by reference and return by reference Passing References to Objects, Returning Reference, Independent Reference, C++ Dynamic Memory Allocation, Allocating Array, Allocating Objects, Constructor & Destructor : Introduction, Constructor, access specifiers for constructors, and instantiation, Parameterized Constructor, Multiple Constructor in A Class, Constructor with Default Argument, Copy Constructor, Destructor.

UNIT– III: Overloading as polymorphism: Function & Operator Overloading: Function Overloading, Overloading Constructor Function Finding the Address of an Overloaded Function, Operator Overloading: Creating A Member Operator Function, Creating Prefix & Postfix Forms of the Increment & Decrement Operation, Overloading The Shorthand Operation (I.E. +=,-= Etc), Operator Overloading Restrictions, Operator Overloading Using Friend Function, Overloading New & Delete, Overloading Some Special Operators, Overloading [ ], ( ), -, Comma Operator, Overloading << and concepts of namespaces

UNIT– IV: Inheritance : Base Class Access Control, Inheritance & Protected Members, Protected Base Class Inheritance, Inheriting Multiple Base Classes, Constructors, Destructors & Inheritance, When Constructor & Destructor Function are Executed, Passing Parameters to Base Class Constructors, Granting Access, Virtual Base Classes ,Virtual Functions & Polymorphism: Virtual Function, Pure Virtual Functions, Early Vs. Late Binding.

UNIT– V: File I/O, use of File functions, reading and writing from File Templates and Exception Handling: Exception handling in C++, try, throw, catch sequence, multiple catch blocks, uncaught exceptions, catch-all exception handler Templates: Reason for templates compactness and flexibility, function template examples explicit specialization, class templates, out of class definition of member functions, The C++ I/O System Basics : C++ Streams, The Basic Stream Classes, C++ Predefined Streams, Formatted I/O: Formatting Using the IOS Members, Setting The Formal Flags, Clearing Format Flags, An Overloaded Form Of Setf ( ), Using Width() Precision() and Fill(), Using Manipulators to Format I/O, Creating Your own Manipulators.

TEXT & REFERENCE BOOKS:
1. Herbert Schildt, "C++ The complete reference " - TMH Publication   ISBN 0-07-463880-7
2. E. Balguruswamy, "C++ ", TMH Publication ISBN 0-07-462038-x
3. M Kumar "Programming in C++", TMH Publications
4. Mastering C++, "Venugopal"

DCA104
Business Communication

Unit-I

Fundamental of Grammar and their Usage: How to Improve Command over Spoken and Written English with Stress on Noun, Verb, Tense and Adjective. Sentence Errors, Punctuation, Vocabulary Building to Encourage the Individual to Communicate Effectively, Common Errors in Business Writing.

Unit-II

Introduction to Business Communication: Basic Forms of Communication, Process of Communication, Principles of Effective Business Communication, 7Cs; Media of Communication: Types of Communication: Barriers of Communication (Practical exercise in communication)

Unit-III

Business letter writing: Need, Functions and Kinds, Layout of Letter Writing, Types of Letter Writing: Persuasive Letters, Request Letters, Sales Letters, Complaints and Adjustments; Departmental Communication: Meaning, Need and Types: Interview Letters, Promotion. Letters, Resignation Letters, News Letters, Circulars, Agenda, Notice, Office Memorandums, Office Orders, Press Release.

Unit-IV

Business Etiquettes and Public Speaking: Business Manners. Body Language Gestures, Email and Net Etiquettes, Etiquette of the Written Word, Etiquettes on the Telephone, Handling Business Meetings; Introducing Characteristic, Model Speeches, Role Play on Selected Topics with Case Analysis and Real Life Experiences.

Reference Books

1. Boove, C.L., Thill, J.V., and Chaturvedi, M., (2009) Business Communication Today, Pearson Education.
2. Murphy and Hildebrandt, (2008) Effective Business Communication, McGraw Hill Education.
3. Krizan, A. C. Buddy, and Merrier, Patricia (2008) Effective Business Communication, 7th Edition, Cengage Learning.
4. Lesikar, (2009), Business Communication: Making Connections in a Digital World, McGraw Hill Education.
5. McGraw, S. J., (2008) Basic Managerial Skills for All, 8th edition, Prentice Hall of India.
6. Wren & Martin, (2008), English Grammar and Composition, Sultan chand & Sons.

DCA107-P
Computer based Lab based PC packages

1. Text Manipulations
2. Usage of Numbering, Bullets, Tools and Headers
3. Usage of Spell Check and Find and Replace
4. Text Formatting
5. Picture Insertion and Alignment
6. Creation of Documents Using Templates`
7. Creation of Templates
8. Mail Merge Concept
9. Copying Text and Picture from Excel
10. Creation of Tables, Formatting Tables
11. Splitting the Screen
12. Opening Multiple Document, Inserting Symbols in Documents

MS-EXCEL

1. Creation of Worksheet and Entering Information
2. Aligning, Editing Data in Cell
3. Excel Function (Date, Time, Statistical, Mathematical, Financial Functions)
4. Changing of Column Width and Row Height (Column and Range of Column)
5. Moving, copying, Inserting and Deleting Rows and Columns
6. Formatting Numbers and Other Numeric Formats
7. Drawing Borders around Cells
8. Creation of Charts Raising Moving
9. Changing Chart Type
10. Controlling the Appearance of a Chart

MS -POWER POINT
Working with Slides
1. Creating, saving, closing presentation
2. Adding Headers and footers
3. Changing slide layout
4. Working fonts and bullets
5. Inserting Clip art: working with clipart,
6. Applying Transition and animation effects
7. Run and Slide Show

DOS
1. Basics of DOS
2. DOS (Internal & External Commands)
3. Use of Wild Card Character

DCA108-P
Programming in C –Lab

BASICTE CHNIQUES: Swapping of the content soft variables -Finding the sum of digit sofa given number- Reversing a given number.

DECISIONMAKING: Finding the large stand the smallest of a given array- solving a quadratic equation- selecting an operation based on a menu.

LOOPING TECHNIQUES & ARRAYS : Find in gthesumt on term sofa sine series-MatrixMultiplication-Transpose-Polynomialaddition-PolynomialMultiplication- Sorting algorithms-Searching algorithms.

CHARACTERSANDSTRINGHANDLING: Finding the length of string- reversal of string-concatenationoftwostrings-checkingwhetheritisapalindromeornot-convertinguppercasealphabetstolowercaseandviceversainastring.

POINTERS,STRUCTURESANDUNIONS: Findingthesumofallelementsofanarray usingpointers-Swappingthecontentsoftwovariablesusingpointers-Findingthefirst andsecondrankholdersandprintingtheirnamesandrollnumbers,inaclassof60 studentsusingstructures-Definingacomplexnumberasstructureandwringaprogram toillustratetheoperationsoncomplexnumbers-SomeexamplesofUnions.

DCA/201
GUI-Programming in Visual Basic

MODULE I:

Editions of Visual Basic, Event Driven Programming, Terminology, Working environment, project and executable files ,Understanding MODULEs, Using the code editor window, Other code navigation features, Code documentation and formatting, environment options, code formatting option, Automatic code completion features.
Creating Programs - Introduction to objects, Controlling objects, Properties, methods and events, Working with forms, Interacting with the user: MsgBox function, InputBox function, Code statements, Managing forms, Creating a program in Visual Basic, Printing.

MODULE II:

Overview of variables, Declaring, Scope, arrays, User-defined data types, constants working with Procedures, working with dates and times, using the Format function, Manipulating text strings, **Controlling Program Execution -**Comparison and logical operators, If Then statements, Select Case Statements looping structures, Using Do…Loop structures, For…Next statement, Exiting a loop.

MODULE III:

Types of controls, Overview of standard controls, Combo Box and List Box, Option Button and Frame controls Menu, Status bars, Toolbars, Advanced standard controls, ActiveX controls, Insertable objects, Validation, **Error Trapping & Debugging -** Overview of run-time errors, error handling process, The Err object, Errors and calling chain, Errors in an error-handling routine, Inline error handling, Error-handling styles, General error-trapping options Type of errors, Break mode Debug toolbar, Watch window, Immediate window, Local window, Tracing program flow with the Call Stack.

MODULE IV:

Saving data to file, basic filling, data analysis and file, the extended text editor, Random access file, the design and coding,**Data Access Using the ADO Data Control -**Overview of ActiveX data Objects, Visual Basic data access features, Relational database concepts Using the ADO Data control to access data, Overview of DAO, RDO, Data Control, structured query language (SQL), Manipulating data Using Data Form Wizard.

MODULE V:

Overview of Report, Data Report, Add groups, Data Environment, Connection to database Introduction to Crystal Report Generator. Overview of drag and drop, Mouse events, Drag-and drop basics, Date Time Control, Calendar, Print Dialog, MDI(Multiple Document Interface).

BOOK RECOMMENDED:
- Mastering Visual Basic 6 Fundamentals – By Microsoft
- Mastering in Visual Basic – By BPB Publications.
- Introduction to VB Programming – V.K.Jain

DCA/202
DESKTOP Publishing

MODULE–I

DTP, Introductions to Printing, Types of Printing, Offset Printing, Working of offset Printing, Transparent Printout, Negative & Positives for Plate were making, Use of Desk Top Publishing in Publications, Importance of D.T.P in Publication, Advantage of D.T.P in Publication, Mixing of graphics & Image in a single page production, Laser printers - Use, Types, Advantage of laser printer in publication.

MODULE –II

Introductions To Page Maker, Page Maker Icon and help, Tool Box, Styles, Menus etc., Different screen Views, Importing text/Pictures, Auto Flow, Columns, **Page Layout** Different page format / Layouts, News paper page format, Page orientations, Columns & Gutters, Printing in reduced sizes.

MODULE –III

Master Pages and Stories, Story Editor, Menu Commands and short-cut commands, Spell check, Find & Replace, Import Export etc., Fonts, Points Sizes, Spacing etc., Installing Printers, Scaling (Percentages), Printer setup, Use of D.T.P. in Advertisements, Books & Magazines, News Paper, Table.

MODULE –IV

Introduction to Adobe Photoshop & Documents, Various Graphic Files and Extensions, Vector Image and Raster Images, Various Colour Modes and Models

MODULE –V

Introduction to Screen and Work Area, Photoshop Tools & Palettes ,Use of Layers & Filters, Working with Images.

TEXT & REFERENCE BOOKS:

1. PAGE MAKER 4.0 & 5.0 BY B.P.B. PUBLICATIONS.
2. PRAKHAR COMPLETE COURSE FOR DTP (CORELDRAW, PAGEMAKER, PHOTOSHOP)

Practical LAB:

1. Complete Page Maker S/W
2. Complete Adobe Photoshop
3. Hindi Typing on Page Maker and MS-Word.

DCA203
Data Base Management Systems

UNIT – I

Introduction: Characteristics of database approach, data models, DBMS architecture anddataindependence.E-R Modeling: Entity types, entity set, attribute and key, relationships, relation types, roles and structural constraints, weak entities, enhanced E-R and object modeling, Sub Classes: Super classes, inheritance, specialization and generalization.

UNIT – II

File Organization: Indexed sequential access files, implementation using B++ trees, hashing, hashing functions, collision resolution, extendible hashing, dynamic hashing approach-implementation and performance.

UNIT – III

Relational Data Model: Relational model concepts, relational constraints, relational algebra. SQL: SQL queries, programming using SQLEER and ER to relational Mapping: Data base design using EER to relational language.

UNIT – IV

Data Normalization: Functional dependencies, Normal form up to 3rd normal form. Concurrency Control: Transaction processing, locking techniques and associated, database recovery, security and authorization.Recovery Techniques, Database Security

Text Books:

1. R. Elmarsi and SB Navathe, "Fundamentals of Database Systems", Addison Wesley, 4th Ed., 2004

Reference Books:

1. Abraham Silberschatz, Henry Korth, S. Sudarshan, "Database Systems Concepts", 4th Edition, McGraw Hill, 1997.
2. Jim Melton, Alan Simon, "Understanding the new SQL: A complete Guide", Morgan Kaufmann Publishers, 1993. A. K. Majumdar, P. Battacharya, "Data Base Management Systems', TMH, 1996.
3. Bipin Desai, "An Introduction to database Systems", Galgotia Publications, 1991.