

# **PROGRAMME GUIDE**

## **DISTANCE EDUCATION PROGRAMMES**

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### **POST GRADUATE DIPLOMA IN COMPUTER APPLICATION (PGDCA)**

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- **Scheme of Examination**
- **Detailed Syllabus**
- **Counseling and Study Structure**
- **Study Modules & Books Information**
- **Date Schedule & Instructions for Submitting Assignments**



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## POST GRADUATE DIPLOMA IN COMPUTER APPLICATIONS (PGDCA)

Duration : 12 Months Eligibility : Graduate in any Subject

### New Proposed Scheme of Examination

Course Code	Name of the Course	Credit	Total Marks	Theory		Practical/Viva Marks		Assignments	
				Max	Min	Max	Min	Max	Min
<b>FIRST SEMESTER</b>									
1PGDCA1	Fundamentals of Computers & Information Technology	3	100	70	25	-	-	30	11
1PGDCA2	Windows & MS Office	3	150	70	25	50	18	30	11
1PGDCA3	Programming Methodology & Programming in Foxpro	3	150	70	25	50	18	30	11
1PGDCA4	Computer Networks & Internet	3	100	70	25	-	-	30	11
1PGDCA5	Communication Skills & Personality Development	2	100	70	25	-	-	30	11
<b>Total aggregate required to pass</b>		<b>14</b>	<b>600</b>	<b>350</b>	<b>140</b>	<b>100</b>	<b>40</b>	<b>150</b>	<b>60</b>
<b>SECOND SEMESTER</b>									
2PGDCA1	Objects Oriented Programming with C++	3	150	70	25	50	18	30	11
2PGDCA2	DBMS & SQL (With MS Access / MS SQL Server)	3	150	70	25	50	18	30	11
2PGDCA3	A. Computerised Accounting with Tally	3	150	70	25	50	18	30	11
2PGDCA4	Programming with VB.Net	3	150	70	25	50	18	30	11
2PGDCA5	Project Report***	6	100	-	-	70	25	30	11
<b>Total aggregate required to pass</b>		<b>18</b>	<b>700</b>	<b>280</b>	<b>112</b>	<b>270</b>	<b>108</b>	<b>150</b>	<b>60</b>

### ***Evaluation Scheme***

1. 36% in each theory, practical, project, dissertation & internal assessment
2. 40% Aggregate marks to pass

\*\*\* Marks of 2PGDCA5 - Project Report are to be send by the IODE/Study Institutes after evaluation of project. The distribution of 100 marks are as – Marks given by the external Examiner is out of 70 (50 on Report + 20 on Viva & Presentation), Marks given by the Internal examiner is out of 30 (20 on Project Report + 10 on Viva & Presentation).

### **DETAILED SYLLABUS**

#### **1PGDCA1-FUNDAMENTALS OF COMPUTERS & INFORMATION TECHNOLOGY**

**Know the Computer** -, Introduction, What does computer stand for?, Strengths of computers, Limitations of computers, Fundamental uses of computers, Development of computers, Types of Computers, Generations of Computers

**Personal Computer** - Introduction, Personal computer, Uses of personal computers, Components of personal computers, Evolution of PCs, Developments of processors, Architecture of Pentium IV, Configuration of PC

**Boolean Algebra and Logic Gates** - Introduction, Boolean Algebra, Binary Valued Quantities, And Operator, OR Operator, NOT Operator, Basic Postulates of Boolean Algebra, Theorems of Boolean Algebra, De Morgan's Theorems, Reducing Boolean Expression by their Simplifications, Proving the Equations of Boolean Expressions By Truth Table, Principle of Duality, Standard Forms, Basic Logic Gates, Use of Logic Gates in Circuits, Karnaugh Maps

**Number System** - Introduction, Digital and Analog Operations, Binary Data, Binary Number System, Decimal Number System, Octal Number System, Hexadecimal Number System, Fractional Conversion, Coding System

**Data Representation and Binary Arithmetic** - Introduction, Bits, Nibbles, Bytes and Words, Data Representation, Coding system, Binary Arithmetic, Binary Addition, Binary Subtraction, Binary Multiplication, Binary Division, Character Representation, Checking the Result of Binary Arithmetic

**Input Devices** - Introduction, Input Device, Typing Input Devices, Pointing Input Devices, Scanning Input Devices, Audio Visual Input Devices

**Output Devices** - Introduction, Output Devices, Soft Copy Vs Hard Copy Output, Monitor, Printers, Plotter , Electrostatic Technique, Special Purpose Output Equipments

**Central Processing Unit** - Introduction, What is Central Processing Unit, Arithmetic And Logic Unit, Control Unit, Registers, Instruction set, Processor Speed

**Storage Devices** - Introduction, Storage and its needs, Brain Vs Memory, Storage Evaluation Units, Data Access Methods, Primary Storage, Secondary Storage, Hard Disk Operations, Floppy Disk Drives, Winchester Disk, Optical Disk, VCD, CD-R, CD-RW, DVD, Zip Drive, Flash Drives, Blue Ray Disk, Memory Card, Driving Naming Conventions In a PC

**Basics of Software**- Introduction, What Does Software Stand For ?, Needs of software, Types of software, Open Source Software, Integrated Development Environment

**Operating System** - Introduction, Operating System, Why an Operating System, Functions of Operating System, The Booting Process, Types of Reboot, Booting From Different Operating System, Types of Operating System, Some Prominent Operating Systems

**Disk Operating System** - Introduction, What is DOS?, Functions of DOS, Versions of DOS, DOS Commands , Important Internal Commands of DOS, Important External Commands of dos, Executable Vs Non-Executable Files In Dos

Programming Languages , Introduction, Data, information And Knowledge, Characteristics of Information, Comparison between human language and , Computer Language, What is a program?, What is a Programming language?, Programming development cycle, Algorithm, Program Flowcharts, Pseudo code, Programming approaches, Programming Paradigms, Types of Programming Language, Third Generation Language, Fourth Generation Language

**Computer Virus** - Introduction, Virus, History, Mechanism of virus, How A Virus Spreads , How is virus named, A few Prominent Viruses, Types of Computer Virus, Related Concepts :, Anti Virus Programs, Norton Anti - Virus (NAV), Execution of Norton Anti-Virus

**Communication and IT** - Introduction, Computer Network, Communication Process, Communication Types, Transmission Media, Wireless Media, Communication Channels/Media, Modem, Characteristics of a Modem, Types of Modem

**Networks** - Introduction, Internet Vs Intranet, Types of Network, Topology, Types of Connectivity, Network Devices

**Internet** - Introduction, What is Internet actually ?, Growth of Internet, Owner of the Internet, Internet Service Provider, Anatomy of Internet, ARPANET and Internet history of the World Wide Web, Services Available on Internet (Internet Tools), Basic internet terminologies, net etiquette, Application of internet

**Management Information System** - Introduction, Information System, Management Information System (MIS), Fields of Information System, Elements Of MIS, Objectives Of MIS, Characteristics of MIS, Impact Of MIS, Designing An MIS, Placement Of MIS, Views Of MIS, Pitfalls In Designing an MIS, Advantages of MIS, Disadvantages of MIS

**Applications of Computers and Information Technology** - Introduction, Business And Computer, E-Mail, E-Commerce, Project management, Computers in Personnel Administration, Accounting, Computers in Cost and Budget Control, Marketing, Manufacturing, Materials management, Banking, Insurance And Stock broking, Purchasing, Computers in warehousing

## **1PGDCA2-WINDOWS & MS OFFICE**

**Know the Windows XP** , Introduction, What is Windows XP ?, Evolution of Windows Operating System, Features of Windows XP, What's New in Windows XP, Windows and Its Elements.

**Accessories And Other Tools** , Introduction, The Calculator , Using THE Calculator, The Character Map, Using Outlook Express, The Address Book, The Paint, The Notepad, The WordPad, The NetMeeting, The Internet Explorer, The Windows Media Player, The MS-DOS , The Control Panel , The Windows Picture and Fax Viewer, The HyperTerminal, The Windows Messenger, Using Windows Movie Maker.

**Managing Files and Folders** , Introduction, Viewing files and folders, Arranging files and folders, Creating a new folder, Creating a file using short-cut.

**Customizing Your Computer** , Introduction, customizing Your Desktop, Changing the Start menu style, Setting a screen saver, Reversing your mouse buttons, Changing the appearance of your mouse pointer, Adding a new font to your computer, Logging off from the computer, Adding or Removing Programs, Hiding and displaying quick launch bar.

**Microsoft Office XP Suite With Other Office Suites** , Introduction, Different office suites, Microsoft Office XP Suite, What's Special About Office XP, Voice Dictation and Voice Commands, Smart Tags , The Office Task Panes , The Ask a Question Box, Document Recovery, Product Activation.

**Common Elements Of The Suite** , Introduction, Different Integrated Items in Office Suite, Menu Bars and Toolbars, Shared Tools, ObjectS, Linking, Embedding, Office Assistant and Online Help.

**Office Task Panes** , Introduction, The Task Pane, Displaying And Hiding a Task Pane, Types of Taskpane, Additional Task Panes, Insert ClipArt Task Pane, Styles and Formatting Task Pane, Mail Merge Task Pane, Exercise.

**Word Processing and MS-Word** , Introduction, Features of Word Processor, MS-WORD—a powerful word processor, Starting MS-Word, Chief Elements Of MS-Word Window, Displaying and Hiding the Toolbar, File operations in MS-WORD, Using Help Online, Customizing Office Assistant.

**Text Formatting** , Introduction, Typing the text, Selecting Text with a mouse, Deleting Text, Restoring the deleted text, Typing over the existing text, Undoing/Cancelling the last action, Redoing/Repeating the last action, Formatting font, Advanced text formatting, Customizing Spelling Check, Using the thesaurus.

**Document Formatting** , Itroduction , Using page border, Bullets and numbering, Setting and removing tab stops, Making word count, Using Autotext, Using autocorrect, Headers and Footers, Setting up columns in the document, Removing columns from the document, Inserting page numbering, Formatting the page numbering, manual and automatic page breaks, Setting margins, Inserting date and time, Using Goto, Cursor movement with key-board.

**Tables And Graphics** , Introduction, creating tables, calculating numeric data in a table , Deleting columns and rows, Formatting a table, Aligning text in the table, Formatting text in the table, Applying borders and shadings, Add a border to a table, Automatically format a table

, Using Drawing, Creating a Shape, Using Word Art, Using AutoShapes, Insert a clip from the Clip Organizer, Inserting a text box, What is Drawing Canvas?, Using AutoShapes.

**Mail Merge, Views, Template and Wizard** , Introduction, Mail merge , Views, Overview of templates, Creating a document template, Create a Web page based on a template, Modify a document template, RULER, ZOOM, PROTECTING YOUR DOCUMENT, INSERTING A FILE INTO ANOTHER , overview of wizard , Inserting Hyperlinks to a Web Page or a Word Document , EXERCISE.

**Spreadsheet and MS-Excel** , Introduction , Starting MS-Excel , Spreadsheet and its Elements , Application Window , Document Window, Cell , Standard Toolbar, Formatting Toolbar, Workbook , Worksheet, Handling Files.

**Worksheet Formatting** , Introduction, Entering Text Data, Entering Formula , Editing the Cell Content, Formatting the Cell , Formatting Font, Setting Border Around Cell, Highlighting gridlines, Using Format Painter, Finding and Replacing the Text, Using Spelling and Grammar.

**Function and Operator** , Introduction, Entering Functions , Editing Functions, Using Mathematical Functions, Using Statistical Functions, Using Date & Time Functions, Changing the default date format , Text Function, Logical Functions, Financial Function, Operators, AutoSum, Function Wizard.

**Chart and Web Object** , Introduction, Types of Charts, Creating a Quick Chart Sheet , Parts of a Chart, Types of Charts, Creating A Chart using wizard, Using Pivot Table , Object Linking and Embedding (OLE), Linking Cells, Linking Formula, Hyper Links, Previewing charts, printing charts, Exercise.

Presentation Package And MS-PowerPoint , Introduction, Chief Elements of Presentation, Starting Powerpoint, Creating A Presentation, Creating A Presentation with Auto Content Wizard, Create a presentation using a design template, Creating a blank presentation, Powerpoint window and its Elements, Using Help Online, Customizing Office Assistant .

, **Text Formatting in Slides** , Introduction , Adding text to slides, Editing text on a slide, Using Format Painter, Setting Paragraph Indents, Line Spacing in a Paragraph, Setting and Removing Tab Stops , Checking Spelling of the text , Finding and replacing the text, Moving slides.

**Table, Chart and other Drawing Objects**, Introduction, Creating a table, Creating an embedded Word table, Adding Columns and Rows, Deleting Columns and Rows, Changing Table Borders, Using AutoShapes, Chart, Inserting a clip to your slide, Using Word Art, Inserting A Word Art, Working With Drawing Toolbar, Creating A Shape.

, **Slides, Views, Notes, Handouts** , Introduction, PowerPoint Views, Notes Pages, Using Handouts, Inserting Header and Footer in the, Slide , Transition , Custom Show, Assigning Custom Animation , Adding a motion path, Animating a chart, Publish a presentation or HTML file , to the Web, Preview a presentation as a Web page, Showing Slides , Printing Slides .

**Outlook Express** , introduction, WHAT IS outlook express?, Features of Outlook Express, starting outlook express, Concepts of CC and BCC, Email address, Reading a received message , composing message, Replying And Forwarding Messages, attaching files, Creating signature in outlook express, Formatting message text, What is mime?, applying stationery, Inserting a hyperlink or HTML page into a message, Flagging an e-mail or news message, Importing messages from other e-mail programs, What are newsgroups?, Adding a newsgroup account, Switching between e-mail and news reading, Identities (Multiple Users on A Single Computer), Adding a new identity, Managing contacts with outlook, creating addresses, Importing an address book from another program, Using keyboard shortcuts in Outlook Express ,

## 1 PGDCA 3- PROGRAMMING METHODOLOGY & PROGRAMMING IN FOXPRO

**Principles of Programming**, Introduction to Programming, Program Concept, Characteristics of Programming, Stages in Program Development, Tips for Program Designing, Programming Aids, Algorithms, Notations, Design, Flowcharts, Symbols, Rules

**Programming Techniques and Logic**, Introduction, Introduction to programming techniques, Top-down approach or technique, Bottom-up approach or technique, Unstructured technique of programming, Structured technique of programming, Modular technique of programming, Comparative study of programming techniques, Cohesion , Coupling, Debugging , Syntax Errors, Logical Errors, Data Entry Errors, Linker Errors, Runtime Errors, Program Testing

**DBMS and RDBMS**, Introduction, What is FoxPro, FoxPro System, Creating a Database File in FoxPro, Closing Database File, Opening Database File, Different Data Types of FoxPro, Database Menu, Program Menu

**Displaying & Controlling Data**, Introduction, Displaying the Records of Database Files, Different Designs of List, Principal Designs of Browse, Different Designs of Change Command, Modifying the Structure in Database Files, Displaying list of the Files

**Sorting and Indexing Database Files**, Introduction, Indexing the Files by FoxPro Menu, Use of FIND and SEEK commands, Sorting the Files through FoxPro Menu, Plus Points of Sort command, Minus Points of Sort command

**Memory Variables**, Introduction, Creating and sing the Memory Variables, Creating Array Memory Variables, Copying Multiple Records to Like Test, Display Memory Array, Using ?? Command

**Time & Date Functions and Commands**, Set Clock on, Set Century On/Off, Set Mark to, Day & Month, Date Arithmetic

**Functions Keys and Macros**, Creating and Using the Key board Macros, Creating the Macros, Savings and Restoring the Macros, Using the Macros, Editing the Macros, Recording the Macros, Mathematical Commands and Functions

**Programming with FoxPro**, What is Program Command File, Creating a Program File, Running the Program File or Command File, Creating the Program File with Modify Command,

**Working with Loops**, Do While - End Do, The Classification of Mail.PRG Program, Editing a Program File, Running a Program File Through FoxPro Menu, Adding the Comments to Commands, Other Trim Functions, IIF(, The Compactness IF Function, Nested If-End If Structure, Using Scan - End Scan, Handling Multiple Options with Do Case - End Case, Macro Substitution

**Error Conditions and Program Debugging Aids**, Searching or Displaying Errors before Running a Program File, Unrecognized Command Verb, Saving Screen Activity in An Optical File, Running the Program in Slow Speed, Automatic Documentation with FoxDoc

**Multiple Database Files**, Introduction, Opening Multiple Data Files, Linking the Database with Set Relation, Updating Information with Update, Appending Records from others Files (Append From), Copying the Structure of Database File, Opening the RQBE Window, Arranging and saving the Records in a File

**Custom Screens**, Introduction, Screen Co-ordinates in an User window, Restricting Data Input with Range, Assigning Default Value to Get Variables, Common Function Codes for @ ..... SAY, Validating GET VARIABLES

**Creating Custom Screen & Designing Screen with Builder**, Introduction, Creating the Screen Code, Designing a Custom Screen with CREATE SCREEN, Drawing a BOX, Creating a Push Buttons, Creating Radio Push Buttons

**Creating Query, Report and Label**, Database Query, Changing and Formatting the Report

## 1PGDCA4-COMPUTER NETWORKS & INTERNET

**Introduction To Internet**- introduction, what is internet actually ?, growth of internet , owner of the internet, internet service provider, anatomy of internet, Arpanet and internet history of the world wide web, services available on internet wais , basic internet terminologies, net etiquette, applications, commerce on the internet, governance on/through the internet, impact of internet on society

**TCP/IP - Internet Technology And Protocols**-introduction, switching technology , internet protocols, overview of TCP/IP reference model, introduction to TCP/IP, routers, internet addressing scheme

**Internet Connectivity** - connectivity types, level one connectivity, level two connectivity, level three connectivity, hardware requirements, modems, narrow-band/phone-line dialup modems, software requirements, modem configuration:, telephone line options, making a dial-up connection, protocol options, service options, news services, desktop alerts

**Internet Network**- computer networks, applications of networks, common terminologies :, interoperability, network security, the need for security, common threats, security barriers in network pathways, network components :, communication media, network devices, types of network : client / server & peers, addressing in internet, domain name system (DNS), domain name and their organization, network topology, internet vs. intranet

**Services Of Internet (Definition And Functions)** - introduction, file transfer protocol, ftp related terminologies, ftp servers and authentication, public and private software services, ftp clients, types of ftp client software, displaying files , remote login, chat programs, connecting to a server, search engines

**Electronic Mail** - introduction, what is an e-mail?, email networks and servers, merits of e-mail, limitations, e-mail protocols, structure of an e-mail, e-mail address, Microsoft internet explorer and outlook express, applying stationary, web based emails, working with yahoo, starting the mail program , creating signature in outlook express, creating signature in yahoo, email encryption, why email encryption?, digital certificate

**Current Trends On Internet** -current trends of internet:, languages used on the internet, internet phones, internet video / internet tv, streaming video & audio, collaborative computing, e-commerce, technical and organizational aspects

**Web Publishing**- overview, SGML (standard generalized markup language), what is the need of a website? , types of web sites, components of web publishing , domain name planning and registration, choosing a web host and signing up for an account, web hosting, web design and development, testing your website, promotion of the site, registering your site with a search engine, publishing tools, html editor, image editor, program to transfer your files to a web server, uploading web pages using CuteFTP

**World Wide Web**- introduction , evolution of the www, basic features, mechanism of the world wide web, search and meta-search engines, searching the web, using Boolean operators in your searches, using advanced , using a Metasearch engine, site specific search tools, web protocols, hyper text transfer protocol (http), web server

**Browsers** , introduction, www web browsers, Mozilla Firefox browser, the opera browser, google chrome, what are bookmarks?, adding folders, favorites, deleting favorite folders and pages, history, progress indicator, customizing internet explorer, turning off graphics to display all web pages faster, customizing the toolbar, copying, saving and printing in internet explorer, printing an image from a web page, printing a web page, cookies, what is cache setting ?, internet explorer, the standard toolbar, internet explorer keyboard shortcuts

**Hyper Text Markup Language Programming Basics** - introduction, html editors, elements of html, definition lists , compact attribute, nested list, type attribute, html links, using alt attribute, background graphics, html document tables, creating tables within tables, html frames, html rules, introduction of multimedia, meaning of multimedia, what is multimedia ?, identifying multimedia elements, audio on the web, video on the web

**Introduction To Interactivity Tools**- overview, what is ASP?, functions of asp, the basic syntax rule , writing output to a browser, adding some html to the text, declaring a variable in asp, declaring an array in asp, what is VBScript?, java, features of java, starting with java, Javascript and java, syntax and conventions, FrontPage, introduction to flash, installation of flash MX, creating simple animation for the web, working with layers in flash, masking in flashmx, bouncing effect in flash, to create motion tween , flash ripple effect

**Internet Security Management Concepts, Information Privacy And Copyright Issues** - overview , basic security concepts, security events, measures for check threats, firewalls , monitoring tools, security analysis tools, cryptography , information privacy, copyrights and the internet, copyright legislation in India, key points of copyright, encryption & decryption - cryptography, terminology

**Firewalls** - firewalls, firewall design principles, firewall attributes, firewall strengths and weaknesses, types of firewalls, comparison of firewall types, DMZ DNS server, VLAN

## **1PGDCA5- COMMUNICATION SKILLS & PERSONALITY DEVELOPMENT**

English Language - Listening, Speech, Pronunciation, Reading, Spelling, Writing *Right*

Nouns : Countable and Uncountable, Pronouns : Personal, Relative and Others, Articles

The Parts of Speech, The Prepositions, Clauses : Coordinate, Subordinate, Relative Adverbs, Adjectives and Adjective Phrases, Verb

The Model Auxiliaries, Adverb, Adverb Phrases Comparisons and Intensification, Linking Devices, Subject Verb Agreement, Tenses, Common Errors, Word Building, Vocabulary

Developing Ability of Question and Answer, Body Language and Its Use in Speaking, Group Discussions, Interview Skills

Composition - Making a Technical Report, E-Mails and Text Messages Composing, Letter Writing, Paragraph Writing, E-mail Writing, Writing Resume, Writing a Cover Letter

**Personality development:** Soft Skills Development, Body Language, Behavioral and Symptomatic Soft Skills, Etiquette and Manners, Positive Thinking, Motivation, Goal setting, Team building, Self Confidence, Leadership Skills, Time Management

Introduction to Personality a) Basic of Personality b) Human growth and Behavior c) Theories in Personality d) Motivation

Communication skills and Personality Development a) Intra personal communication and Body Language b) Inter personal Communication and Relationships c) Leadership Skills d) Team Building and public speaking

Techniques in Personality development I a) Self confidence b) Mnemonics c) Goal setting d) Time Management and effective planning

Techniques in Personality Development II a) Stress Management b) Meditation and concentration techniques c) Self hypnotism d) Self acceptance and self growth



## SECOND SEMESTER

### 2PGDCA1-OBJECTS ORIENTED PROGRAMMING WITH C++

**Overview of C++** - Overview of C++, Software crisis, Object oriented programming paradigm, Basic concepts of OOP, Advantages/Benefits of OOP, Usage/applications of OOP

**C++ Environment**, Program development environment, The language and the C++ language standards, Introduction to various C++ compilers, The C++ standard library, Prototype of main() function, i/o operator, manipulator, comments, data types

**Creating and Compiling C++ Programs** - TURBO C++ IDE, Creating, compiling and running a C++ program using ide and through command line, Elements of C++ Language, Structure of a C++ program, C++ tokens, Type conversion in expressions

**Decision Making and Branching** - Introduction, Sequential statements, Mathematical Functions, Branching statements, looping Statements, Nested loops, Programming examples

**Arrays and Functions-** Arrays, The meaning of an array, Single-dimensional arrays, Two-dimensional arrays (Multi-dimensional arrays), User Defined Functions, Elements of user-defined functions, Return values and their types, Function calls, Categories of functions, Passing parameters to functions, Recursion, Command Line Arguments, Storage Class Specifiers

**Classes and Objects** - Classes, Structures and classes, Unions and classes, Friend function, Friend classes, Inline function, Scope resolution operator, Static class members, Static data members, Static member functions, Passing object to functions, Returning objects, Object assignment

**Array, Pointers, References and the Dynamic Allocation Operators** - Array of objects, Pointer to object, Type checking in C++, The this pointer, Pointer to Derived Types, Pointer to class members, References, C++'s Dynamic Allocation Operators

**Constructors and Destructors** - Introduction, Constructors, Default Constructor, Parameterized constructors, Copy Constructors, Multiple Constructors in a class, Constructors with default arguments, Default Arguments, Special Characteristics of Constructor functions, Destructors

**Function and Operator Overloading** - Function overloading, Overloading Constructor Function, Finding the address of an overloaded function, Operator Overloading, Creating a Member Operator Function, Creating Prefix and Postfix forms of the increment (++) and decrement (--) operators (Overloading Unary Operator), Overloading the Shorthand Operators (i.e. +=, -= etc), Operator Overloading Restriction (Rules), Operator Overloading using friend function, Overloading new and delete operator, Overloading some special operators, Overloading [ ] (Subscripting) operator, Overloading() (Function Call) operator, Overloading Binary Arithmetic operators, Concatenating String, Overloading Comma (, ) operator, Overloading the I/O operators

**Inheritance** - Introduction to inheritance, Features or Advantages of Inheritance, Type of Inheritance :, Base Classes and Derived Classes, Base Class Access Control, Protected Members, Protected Base class Inheritance, Inheriting Multiple Base Classes, Constructors, Destructors and Inheritance, Passing Parameters to Base Class Constructors, Granting Access, Virtual Base Classes

**Polymorphism** - Polymorphism, Types of Polymorphism, Virtual Functions and Polymorphism, Pure Virtual Functions, Early Vs Late Binding

**The C++ I/O System Basics** - The C++ I/O System basics, C++ predefined streams, Formatting using the ios members, Clearing Format Flags, An Overloaded form of setf( ), Examining the Formatted Flags, Using width( ), Using precision( ), Using fill( ), Using Manipulators to format I/O, Creating your own Manipulators,

## 2PGDCA2-RDBMS & SQL (WITH MS ACCESS / MS SQL SERVER/ ORACLE)

**Introduction to DBMS & RDBMS** - Introduction to database, Introduction DBMS, Different database models, Structure of DBMS, RDBMS an introduction, Cod's law for RDBMS, Components of rdbms (kernel/data dictionary)

**Introduction to Oracle RDBMS and Client/Server Computing** - Introduction to Oracle, The Features of Oracle 9i, The oracle product details, An introduction to client/server computing, Oracle and client/server computing

**Overview of Oracle Architecture** - Oracle Architecture, Oracle Files, System and User Processes, Oracle Memory, System Database Object, Protecting Data

**Introduction to SQL\*PLUS** -Introduction to SQL, Features of SQL, Components of SQL, Introduction to SQL\*PLUS, Features of SQL\*PLUS, Execution of SQL\*PLUS, Important commands used in SQL\*PLUS, Oracle Data-Types

**Working with Tables** -Tables - An Introduction, Use Of Table In SQL, Viewing The Stored Data In Tables, Filtering Table Data, Updating Data, Deleting Data From Tables, Modifying The Structure Of Tables, Destroying A Table, A Few Other SQL Statements

**Data Constraints** - Data Constraints, The Use of Data Constraints, The Types of Data Constraints, Defining Integrity Constraints By 'Alter Table', Removing Integrity Constraints, 'Null' Value Concept, 'Not Null' Constraint, Default Value Concept, 'User Constraints' Table

**Data Manipulation in SQL** - Oracle Operators, Range Searching, Pattern Matching, LIKE 'IN' and 'NOT IN' Predicates, An Introduction to 'DUAL' Table, An Introduction to 'SYSDATE'

**Oracle Functions** - Oracle Function, Function Types, Group Function, Scalar Function, Working With 'Date' in SQL, Grouping Of Data Of Different Tables In SQL

**Joins, Sub-Queries & Views** - types of joins, use of sub-query, 'union' and clause, 'Intersect' Clause, Minus Clause, Concept of View, Types of View, Use of View

**User Accounts Management & Indexing** - Creation of User Account, User Account Management, Granting Privileges, Revoking Privileges, Modifying Password, Closing User Account, Concept of Index, Creation of Index, Types of Index, Use of Index, Deleting Index

**Introduction to PL/SQL Programming** - Introduction to PL/SQL, Advantages of PL/SQL, Differences between SQL and PL/SQL, PL/SQL Block Structure, PL/SQL Character set, Variable, Constant and Data type, Assignment Operator and the use of 'SELECT...INTO', PL/SQL Program Control Structure, The use of 'IF...THEN...ELSE...ENDIF', Iteration Control (The use of LOOP, WHILE, FOR), The use of 'GOTO Statement

**Cursor** - Cursor an Introduction, Types of Cursor, Features of Cursor, Implicit Cursor, Explicit Cursor, Application of for Loop with Cursor

**Exception Handling in PL/SQL** - Exception Handling in PL/SQL, Built in Exception Handling, User Defined Exception Handling, The Raise Application-error Procedure

**Oracle Transaction** - Oracle Transaction, Commit Statement, Rollback Statement, Save point statement, Concept of lock, Types of locks, Levels of Locks, 'SELECT.....FOR UPDATE' Statement, Removing the Lock

**Procedures and Functions-** Concept of Procedures and Functions, Advantages of Procedure and Function, Creation of Procedure and Function, Deleting Procedure and Function

**Database Triggers** - Concept of Triggers, Types of Triggers, Creation of Triggers, Application of Triggers, Deleting Triggers

## **2PGDCA3-A. COMPUTERISED ACCOUNTING WITH TALLY**

Accounting, Meaning Of Accounting, Objectives Of Accounting, Important Terms, Accounting Equation, Rules Of Debit And Credit- Journal & Ledger, Journal, Ledger, Cash Book, Subsidiary Books, Financial Statement, Trading & P&L A/C, Balance-sheet, Inventory, Adjustment Entries, Bill Of Exchange

Installing Tally 9, Introduction, Tally 9.0 (Release 1.0), Major Enhancements In Tally 9, Minor Enhancements In Tally 9, Multilingual Business Accounting And Inventory Management Features, Performance And Implementation Features, Accounting And Inventory Control Features, Installing Tally 9.0, Application Directory, Data Directory, Configuration Directory, Language Directory, Activating Tally, Activating Tally Gold For Multi User, Registering Tally, Validating Tally, Tally Data Migration Tool, Uninstalling Tally 9

ABC of Company, Creation Of New Company Selection Of New Company Deletion Of Company Alteration Of Company Shut A Company

Company Features, Features Of Company Accounting Features Inventory Features, , Statutory Features

Tally Screen Components, Title Bar, Button Bar, Calculator, Working Area, Quitting, Gateway Of Tally, Current Status Area

Configuration, General, Numeric Symbols, Accts/Inventory Info, Printing, Connectivity, Licensing, Shop, Quit

Budget, Introduction, Budget, Creating Budget, Alter A Budget, Delete Budget, Display Budget/ Budget Variance, Scenarios

Job Costing, Introduction, Enabling Or Configure Job Costing In Tally, Master Creation For Job Costing, Voucher Type And Voucher Class, Job Cost Reports

Reports, Introduction Accounting Reports, Trial Balance, Balance Sheet, Profit & Loss, Cash Flow Statement, Fund Flow Statement, Ratio Analysis, Day Book, Cash/Bank Book Sales Register Purchase Register Outstanding Interest Cost Centers Job Work Analysis Statistics Inventory Reports

Accounts Groups & Ledgers, Introduction Accounts Group Multiple Group Creation Display Group Alter Group Multiple Ledgers Display Ledger Alter Ledger Voucher Types

Payroll Accounting, Introduction, To Activate Payroll In Tally 9, Payroll Menu, Display Pay Heads, Multiple Group Creation, Employee Creation, Salary Detail, Attendance, Attendance Type, Voucher Creation

Export & Import, Introduction, Export, Import, ODBC Compliances

Cost Centre, Introduction Cost Centre, Creating Cost Centre, Display Cost Centre, Alter Cost Centre Cost Category, Create Cost Categories, , Display Cost Categories, Alter Cost Categories Voucher Entry Cost Centre Class, Creating Cost Centre, Invoice Entry Using Cost Centre Reports Related To Cost Centre

Foreign Currencies, Introduction Foreign Currency, Create Foreign Currency, Alter Foreign Currency, Display Foreign Currency, Exchange Rate Entry Voucher Entry Using Foreign Currency Voucher Entry Through Forex Journal Voucher Class Reports Related To Foreign Currency

Interest, Introduction, Interest, Simple Mode, Interest On Outstanding Balances, Reports On Interest Calculated On Outstanding Balances, Advanced Parameter Mode, Interest Calculation Transaction By Transaction/Voucher Interest At Fixed Rate, Voucher Interest At Variable Rate, Statement Of Interest Due On Invoice, Interest Reports, Interest Voucher Class

Printing, Introduction Cheque Printing Printing Of Cheque Multi Account Printing Printing Options General, Purchase Printing, Sales Transaction, Receipt Voucher, Journal/Contra, Debit/Credit Note, Reminder Letter, Confirmation Statement Reports Printing Button Related

Bank Reconciliation, Introduction, Bank Reconciliation In Tally 9, Configuration Of Bank Reconciliation

Security Control, Introduction Security Levels Access Type

Backup & Restore, introduction, Group Company, Create a Group Company, Alter a Group Company, Tally Audit, Splitting Company Data

Inventory, Introduction Stock Group Stock Item Stock Categories Godowns Units Of Measures Rate Of Duty Inventory Vouchers Reorder Level Inventory Reports Inventory Info Inventory Books Statement Of Inventory Batch Wise Details Price List

## **2PGDCA4-PROGRAMMING WITH VB.NET**

**Introduction to .NET** - Introduction, What is a Program?, What is Programming?, What do you mean by .NET Framework?, Features of .NET Framework, VB 6 VS VB.NET, VB.NET VS JAVA, VB.NET VS C#, What is .NET Architecture?, What is CLR?, What do you mean by Class Library?, Versions of .NET Framework, What are Assemblies?, Namespaces, CTS (Common Type System), Interfaces, What is special in VB.NET?

**Visual Studio 2005** - Introduction, What is Visual Studio?, Flavors of Visual Studio, Visual Studio 2005, File Extensions Used in VB.Net, Using Visual Studio 2005, Feature of Visual Studio 2005, Output Window, Components Tray, References and the Reference Window, Quick View of Visual Studio 2005, Opening an existing project, Adding a Form to a Project

**The Visual Basic Language** - Visual Basic Statements, Data Types in VB.NET, Declaring Variables, Declaration of Variables (Advanced), Data Type Conversion, String Functions, Formatting Data, Arithmetic Operators, Parentheses and Precedence, Operator Operation, Constants, Control Statements, Arrays in VB.NET, Specifying Optional Procedure Arguments, Passing a Variable Number of Arguments, Recursion, Using a Delegate

**Working With The Controls** - The Toolbox, Adding and deleting Tools in the Toolbox, creating a tab on the toolbox, Form Designer Basics, The Button, The ComboBox, The ListBox, The Checkbox, The PictureBox, The RadioButtons, The Scroll Bar, Timer, ListView, TreeView, Toolbar, Dialog Boxes, Menus in VB.NET, LinkLabel Control

**Designing Menus** - Menus, Context menu, Event of the MenuItem, Creating menu items in Visual Studio .Net

**Object Oriented Programming with VB.NET** - OOPs?, What is an Object?, What are Classes?, Visual Basic .NET and Object-Oriented, Principles of Object-Oriented Programming, Classes V/s Objects, Inheritance, Polymorphism and Overloading, Scope and Accessibility in Class Modules, Namespaces, Managed Execution, Assemblies, Assemblies in VB .NET

**The .NET Framework Class Library** - The .NET Framework Class Library, The System Namespace, Data Type Conversion Using Convert Class, The Array Class, The Math Class, The String Class, Other Namespaces, System.Collections, System.Data, System.IO

**OLE/COM/Win32 API** - Object Linking and Embedding, History of OLE/COM, Component Object Model (COM), COM interoperability in .NET, Win32 API in .NET, COM Interoperability in .NET, Installation and Registration of Assembly, Microsoft Office solutions with Visual Studio .NET, Automation of Office from Visual Studio .NET, Creating and opening Microsoft Word document from VB.NET

**User Controls in VB.NET** - Introduction, The Control Class, The Control Class' Properties, The Control Class' Methods, Creating the Control Project 1, The RoundButton Control, Creating the Control Project 2, Building the new Button

**A Brief Introduction to Database Access with VB .NET** - Introduction, What is ADO?, What is ADO.NET?, The Connection Object, Connecting to a Database, The Command Object, The DataAdapter Object, The DataReader Object, The DataSet Object, Updating Your Database by Using DataSets, The AcceptChanges () Method, The RejectChanges () Method, The HasChanges () Method, The GetChanges () Method, Working with DataSets in Visual Studio, Moving Around in DataSet and Retrieving Data, Using Strongly Typed DataSets, DataSets With Multiple Tables, Finding and Sorting Data in DataSets, Filtering on Row State and Version, Data View Manager

**Graphics In VB.NET** - Introduction, Service of GDI+, Using GDI+ Manged Classes, BRUSH Class, Bitmap Class, Graphics Class, Simple Drawing, Drawing Text, An Example: Show All Fonts, Printing, Printing Multiple Pages, More on the PrintPageEventArgs Class, Using a Print Dialog Control, Rolling Your Own Printing Code, Print Preview

## 2PGDCA5 – PROJECT REPORT

All the candidates of PGDCA are required to submit a project-report based on the work done by him/her during the project period. A detailed Viva shall be conducted by an external examiner based on the project report. Students are advised to see the detailed project related guidelines on the website of CVRU. ([www.cvrug.ac.in](http://www.cvrug.ac.in)) under Project Guidelines for student section.

## COUNSELLING AND STUDY STRUCTURE

Course Code	Title of the Course	Credit	Total Hours of Study	Counselling and Study Structure (hours)				Project
				Face to Face Counselling	Self study	Practical	Assignments	
First Semester								
1PGDCA1	Fundamentals of Computers & Information Technology	3	90	12	51	-	27	-
1PGDCA2	Windows & MS Office	3	90	12	33	18	27	-
1PGDCA3	Programming Methodology & Programming in FoxPro	3	90	12	33	18	27	-
1PGDCA4	Computer Networks & Internet	3	90	12	33	18	27	-
1PGDCA5	Communication Skills & Personality Development	2	60	8	22	12	18	-
Second Semester								
2PGDCA1	Objects Oriented Programming with C++	3	90	12	33	18	27	-
2PGDCA2	RDBMS & SQL	3	90	12	33	18	27	-
2PGDCA3	A. Computerised Accounting with Tally	3	90	12	33	18	27	-
2PGDCA4	Programming with VB.Net	3	90	12	51	-	27	-
2PGDCA5	Project Report	6	180	-	-	-	-	180

**STUDY MODULES AND BOOKS INFORMATION**

Course Code	Name of the Course	Books / Module to be used
<b>Semester-I</b>		
1PGDCA1	Fundamentals of Computers & Information Technology	Module Prepared by CVRU
1PGDCA2	Windows & MS Office	Module Prepared by CVRU
1PGDCA3	Programming Methodology & Programming in FoxPro	Module Prepared by CVRU
1PGDCA4	Computer Networks & Internet	Module Prepared by CVRU
1PGDCA5	Communication Skills & Personality Development	Module Prepared by CVRU
<b>Semester-II</b>		
2PGDCA1	Objects Oriented Programming with C++	Module Prepared by CVRU
2PGDCA2	RDBMS & SQL	Module Prepared by CVRU
2PGDCA3	A. Computerised Accounting with Tally	Module Prepared by CVRU
2PGDCA4	Programming with VB.Net	Module Prepared by CVRU
2PGDCA5	Project Report	Guidelines provided by CVRU

### DATE SCHEDULE AND INSTRUCTIONS FOR SUBMITTING ASSIGNMENTS

DUE DATE OF SUBMISSION OF ALL ASSIGNMENTS AT THE STUDY CENTRE		
Semester	Assignment No.	Due Date
First Semester	PGDCA (1) PGDCA (2) PGDCA (3) PGDCA (4) PGDCA (5)	<ul style="list-style-type: none"> <li>• April 30 (for January Session )</li> <li>• October 31 (for July session)</li> </ul>
Second Semester	PGDCA (6) PGDCA (7) PGDCA (8) PGDCA (9)	<ul style="list-style-type: none"> <li>• October 31 (for July Session )</li> <li>• April 30 (for January session)</li> </ul>

**Note:** Assignments of the course are available for download at the CVRU Website <http://www.cvrु.ac.in> . You can download the assignments as per your course, follow the instructions given and submit it before due dates at the study centre.